2010 Urban Water Management Plan

Attachment 4

City of Big Bear Lake
Department of Water and Power

FINAL

2010 Urban Water Management Plan

July 2012

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Engineers...Working Wonders With Water™

July 11, 2012

Mr. Reggie Lamson
City of Big Bear Lake
Department of Water and Power
41972 Garstin Dr.
Big Bear Lake, CA 92315

Subject: 2010 Urban Water Management Plan

Dear Mr. Lamson:

We are pleased to present the 2010 Urban Water Management Plan (UWMP) to you and the City of Big Bear Lake Department of Water and Power staff. Enclosed are 5 copies of the UWMP report for your use.

We want to thank you for the opportunity to work with you on this interesting project. Please feel free to contact us if you have any questions or need any further assistance.

Sincerely,

CAROLLO ENGINEERS, INC.

Inge Wiersema, P.E.

IW:lc

Enclosures: 2010 UWMP – 5 copies
2010 UWMP – 1 electronic copy

City of Big Bear Lake Department of Water and Power
2010 Urban Water Management Plan

Contact Sheet

Date plan submitted to the Department of Water Resources: _____

Name of person(s) preparing this plan:

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The Water supplier is a: **Municipality**

The Water supplier is a: **Retailer**

Utility services provided by the water supplier include: **Water**

Is This Agency a Bureau of Reclamation Contractor? **No**

Is This Agency a State Water Project Contractor? **No**

Table I-2 Urban Water Management Plan checklist, organized by subject

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	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.	10620(d)(2)		Section 1.3 Appendix B
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1.4 Appendix B
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Appendix B
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Section 1.3 Appendix B
55	Provide supporting documentation that the water supplier has encouraged 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.	10642		Appendix B
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Section 1.4 Appendix B
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix B
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Section 6.1.7

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Section 1.4 Appendix B
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Section 1.4 Appendix B
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Chapter 2 Figure 2.1
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Sections 2.3 and 2.4
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2.3
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.3
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2.3
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 6.2 Section 5.1 Tables 6.1 to 6.4
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 1.4

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		Not Applicable Until 2015
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (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, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Section 5.2 Table 5.3
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Not Applicable.
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Table 5.4
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 3.1 Table 3.1
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 3.2
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		Section 3.2
16	Describe the groundwater basin.	10631(b)(2)		Section 3.2
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		Section 3.2

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Not Applicable.
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Section 3.2
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 3.2
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 3.2
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 7.6
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 7.3
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 3.5 Section 7.7
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Chapter 4
45	Describe 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.	10633(a)		Section 4.1

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 4.1
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Section 4.2
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 4.3
49	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.	10633(e)		Sections 4.2 and 4.3
50	Describe the 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.	10633(f)		Section 4.4
51	Provide 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.	10633(g)		Not Applicable
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b]				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 3.3, 3,4 and 3.5
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Sections 7.4 and 7.5
23	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.	10631(c)(2)		Section 7.3
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Chapter 8

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
36	Provide 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.	10632(b)		Section 7.5
37	Identify 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.	10632(c)		Sections 8.5
38	Identify 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.	10632(d)		Section 8.3
39	Specify 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.	10632(e)		Section 8.1.1
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 8.3.1
41	Provide 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.	10632(g)		Section 8.4
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Section 8.1 Appendix E
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 8.6
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 3.2.2

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 7.5
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 6.2
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 6.2
28	Provide 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 ability to further reduce demand.	10631(f)(4)		Section 6.2
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Not Applicable
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Not Applicable

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.

City of Big Bear Lake Department of Water and Power

URBAN WATER MANAGEMENT PLAN

Final Draft
July 2012

199 SOUTH LOS ROBLES AVENUE • SUITE 530 • PASADENA, CALIFORNIA 91101 • (626) 535-0180 • FAX (626) 535-0185

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City of Big Bear Lake

Urban Water Management Plan

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LIST OF ABBREVIATIONS

Abbreviation	Description
AB	Assembly Bill
af	Acre Feet
afy	Acre Feet per Year
Basin	Bear Valley Groundwater Basin
BBCCSD	Big Bear City Community Services District
BBARWA	Big Bear Area Regional Wastewater Agency
BMP	Best Management Practice
CII	Commercial/Industrial/Institutional
City	City of Big Bear Lake
CLAWA	Crestline Lake Arrowhead Water Agency
CIMIS	California Irrigation Management Information System
CUWCC	California Urban Water Conservation Council
DWP	City of Big Bear Lake Department of Water and Power
DWR	Department of Water Resources
DMMs	Demand Management Measures
DWR	Department of Water Resources
ETo	Evapotranspiration
gpd	Gallons per Day
gpcd	Gallons per Capita per Day
gpm	Gallons per Minute
mgd	Million Gallons per Day
MOU	Memorandum of Understanding
RHNA	Regional Housing Needs and Allocation
SB	Senate Bill
ULFT	Ultra Low Flush Toilet
UWMP	Urban Water Management Plan
UWMPA	Urban Water Management Planning Act
Valley	Bear Valley

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Chapter 1

INTRODUCTION

1.1 PURPOSE

The California Water Code requires urban water suppliers to prepare and adopt Urban Water Management Plans (UWMPs) for submission to the California Department of Water Resources (DWR). The UWMPs must be filed every five years to satisfy the requirements of the Urban Water Management Planning Act (UWMPA). The UWMPA requires urban water suppliers servicing 3,000 or more connections or supplying more than 3,000 acre-feet (af) of water annually, to prepare an UWMP.

The purpose of the UWMP is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, verify that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during drought conditions. This report, which was prepared in compliance with the California Water Code and as set forth in the guidelines established by the DWR, constitutes the City of Big Bear Lake's 2010 UWMP.

1.2 BACKGROUND

1.2.1 Urban Water Management Planning Act

The California Water Code Division 6 was modified by AB 797 and the creation of the UWMPA in 1983. Several amendments to the original UWMPA increased data requirements and the planning elements to be included in the 2005 and 2010 UWMPs.

Initial amendments to the UWMPA required that total projected water use be compared to water supply sources over 20 years, in 5-year periods. Recent DWR guidelines also suggest projecting through a 25-year planning horizon to maintain a 20-year timeframe until the next UWMP update has been completed and for use in developing Water Supply Assessments.

Other amendments require that UWMPs include provisions for recycled water use, demand management measures, and a water shortage contingency plan. Recycled water was added to the reporting requirements for water usage and figures prominently in the requirements for evaluation of alternative water supplies when supply shortages are predicted. Each water supplier must also describe Best Management Practices (BMPs) that are implemented or scheduled for implementation.

In addition to the UWMPA and its amendments, there are several other regulations that are related to the content of the UWMP. In summary, the key relevant regulations are as follows.

- AB 1420: Requires implementation of demand management measures/ BMPs and meeting a 20 percent demand reduction by 2020 to qualify for water management grants or loans.
- AB 1465: Requires water suppliers to describe opportunities related to recycled water use and stormwater recapture to offset potable water use.
- SB 1087: Requires water suppliers to report projected water demands for planned lower income units.
- Amendment SB 318 (Alpert, 2004): Requires the UWMP to describe the opportunities for development of desalinated water, including but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
- AB 105 (Wiggins, 2004): Requires urban water suppliers to submit their UWMPs to the California State Library.
- SBx7-7 (Water Conservation Act of 2009): Requires development and use of new methodologies for reporting population growth estimates, baseline per capita use, and per capita targets for 2015 and 2020. This bill also extended the 2010 UWMP adoption deadline for retail agencies to July 1, 2011.

References used in the writing of this report can be found in Appendix A. Appendix B contains the various documents used in report's adoption, while the UWMPA is included for reference in Appendix C.

1.2.2 Previous Urban Water Management Plan

The City of Big Bear Lake (City) previously prepared an UWMP in 2005, which was approved and adopted on April 25, 2006. The 2010 UWMP report serves as an update to the 2005 UWMP and pulls extensively from that report.

1.3 COORDINATION WITH APPROPRIATE AGENCIES

The UWMPA requires that the UWMP identify the water agency's coordination with appropriate nearby agencies.

> *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.*

While preparing the 2010 UWMP, the City of Big Bear Lake Department of Water and Power (DWP) coordinated its efforts with relevant agencies to ensure that the data and issues discussed in the plan were presented accurately. Table 1.1 summarizes how the UWMP preparation was coordinated with different agencies.

Table 1.1 Coordination with Appropriate Agencies

Agencies	Participated in Developing the Plan	Commented on the Draft	Attended Public Meetings	Was Contacted for Assistance	Was Sent a Copy of the Draft Plan	Was Sent a Notice of Intention to Adopt	Not Involved/ Not Informed
Big Bear Area Regional Wastewater Agency		X		X	X		
Crestline Lake Arrowhead Water Agency				X	X		
San Bernardino County				X	X		
Big Bear City Community Services District				X	X		
City of Big Bear Lake Planning Department				X	X		
Big Bear Municipal Water District		X		X	X		

1.4 PUBLIC PARTICIPATION AND PLAN ADOPTION

The UWMPA requires that the UWMP show the water agency solicited public participation.

> *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 … After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*

In accordance with the UWMPA, the DWP held a public hearing and adopted the 2010 UWMP on June 26, 2012. A copy of the associated documentation is included in Appendix B.

Notices were published informing interested parties that the draft 2010 UWMP was available for review. Pursuant to California Code Section 6066, a notification of the time and place of the public hearing was published in the local newspaper on June 6, 2012 and June 13, 2012. A notice was also posted on DWP's website. Copies of these notifications are included in Appendix B.

The Final Draft 2010 UWMP was presented to the DWP's Board of Commissioners as an action item on June 26, 2012 and was adopted by resolution following a public hearing. This hearing provided an opportunity for the DWP's customers, residents, and employees to learn and ask questions about the current and future water supply of the DWP.

1.5 REPORT ORGANIZATION

The UWMP contains eight chapters, followed by appendices that provide supporting documentation for the information presented in the report. The chapters are briefly described below:

Chapter 1 – Introduction. This chapter presents the purpose of this UWMP as well as coordination efforts with appropriate local agencies and discusses the measures used to solicit public participation during the development of the UWMP.

Chapter 2 – Service Area. This chapter presents a description of the water purveyor's service area and its characteristics including climate, population, and other demographic factors.

Chapter 3 – Water Supply Sources. This chapter presents a description of the DWP's water supply sources including information on the usage of groundwater, imported water and an overview of usage of recycled water.

Chapter 4 – Recycled Water. This chapter includes information on the DWP's future considerations of a recycled water system.

Chapter 5 – Water Demand. This chapter presents a discussion of water demands within the DWP's service area and provides water demand projections through year 2035.

Chapter 6 – Water Conservation. This chapter provides analyses associated with calculations of the water conservation target pursuant to SBx7-7 as well as a description of the DWP's water conservation efforts and BMPs.

Chapter 7 – Water Supply Reliability. This chapter presents the reliability of the DWP's water supplies. This includes a discussion on future imported water reliability. In addition, there is an analysis of supply availability in a single dry year and in multiple dry years.

Chapter 8 – Water Shortage Contingency Plan. This chapter includes an urban water shortage contingency analysis that includes stages of action to be undertaken in the event of water supply shortages; a draft water shortage contingency resolution; prohibitions, consumption reduction methods and penalties; an analysis of revenue and expenditure issues and measures to overcome these problems; actions to be taken during a catastrophic interruption of service; and a mechanism for measuring water use reduction.

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Chapter 2

SERVICE AREA AND POPULATION

The UWMPA requires that UWMPs include a description of the water supplier's service area and various aspects of the area served including climate and population.

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

2.1 LOCATION

The DWP's water service area is located in Bear Valley (Valley), as well as Rimforest south of Lake Arrowhead, as depicted in Figure 2.1. These areas are located in the San Bernardino Mountains in San Bernardino County, California. Within the Valley, the DWP's service area is located primarily along the south shore of Big Bear Lake. Fawnskin lies to the north of the lake, and the Sugarloaf-Erwin Lake and Lake William systems are located east of Big Bear Lake. In total, the DWP's service areas encompass 5,970 acres, or approximately 9.3 square miles (CDM, 2006).

2.2 LAND USE

The DWP's service area is primarily residential. Recreation has been the most important economic factor in the Valley for nearly a century. As such, residential use composes 95 percent of the total service area. Commercial accounts make up approximately 5 percent and industrial accounts are less than 1 percent of total accounts (CDM, 2005).

2.3 POPULATION

The development of historical population estimates and future population projections for DWP's service area was difficult to estimate due to the low full-time occupancy rate. Therefore, it was important to note that a distinction must be made between the full-time population and the average annual population, which also includes temporary visitors. It was estimated that recreational visitors can increase the current full-time population of approximately 11,000 by as much as 100,000 on peak days, resulting in an average annual population of about 25,000.

2.3.1 Historical Population

Population estimates were obtained from the 2010 U.S. Census. Census data was used to determine the average household size for different sub-areas throughout the DWP service area. Full-time connections comprised approximately one third of all connections, so the number of full-time residential households was identified by dividing the number of all residential connections by three. Full-time residential connections were multiplied by average household size to yield a full-time service area population estimate of 11,320.

The full-time service area population, for previous years, was estimated by combining 2010 full-time residential population data with 2010 residential account data to create an account-to-population ratio. This ratio was combined with historical connection data to estimate historical full-time population data.

Given the influx of weekend and holiday visitors to the service area, it was estimated that average weekend and holiday population would be 5 times the full-time population, or roughly 55,000. This figure was based on discussions with the DWP and City planning staffs. Assuming the DWP served a population of 55,000 for all weekends and holidays throughout the year (totaling 114 days), average annual population was estimated to be 25,500 in 2010. A factor of 2.25 was then applied to all historical full-time populations to produce historical average annual population data (Figure 2.2).

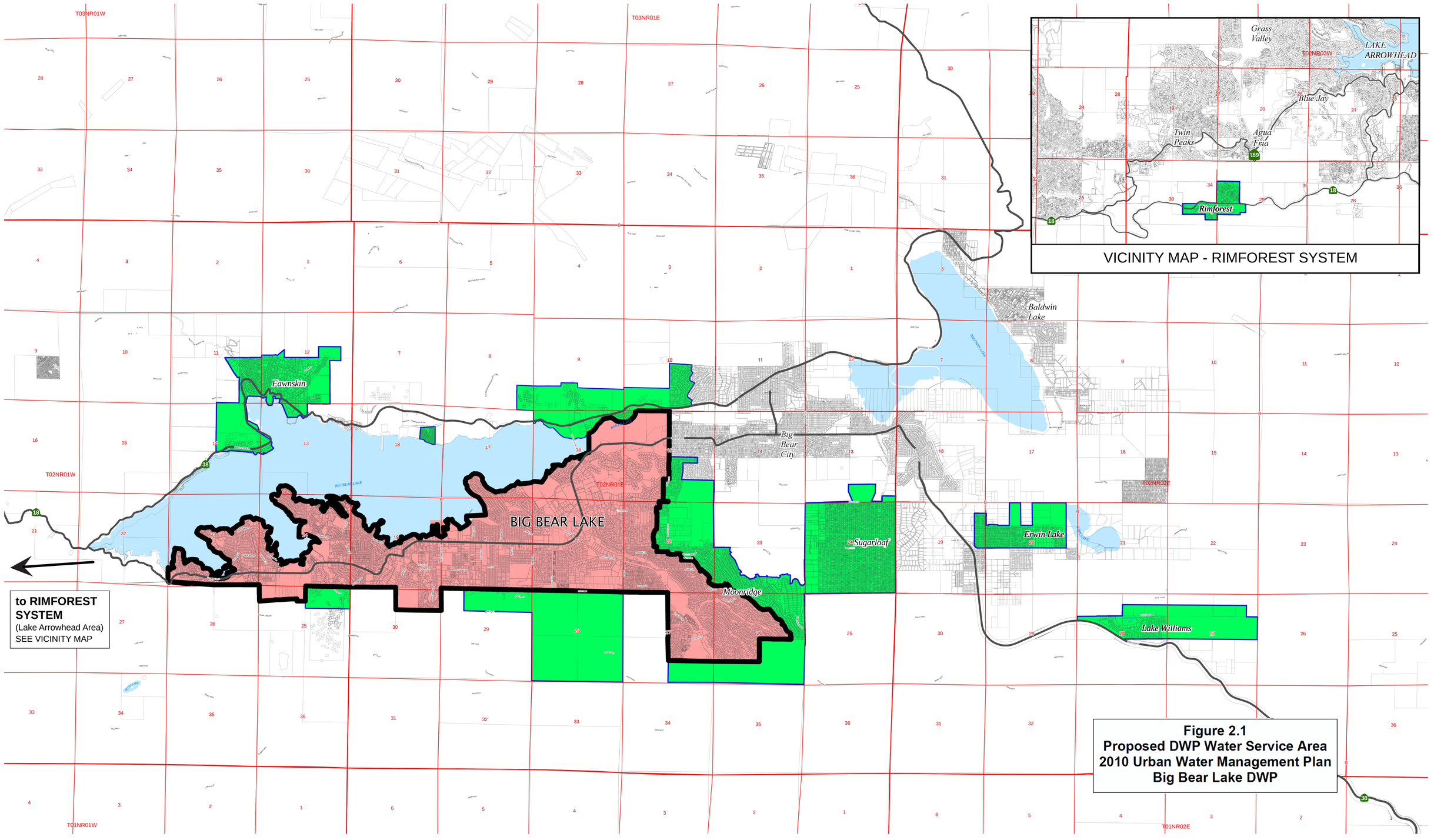

Figure provided by Big Bear Lake DWP staff.

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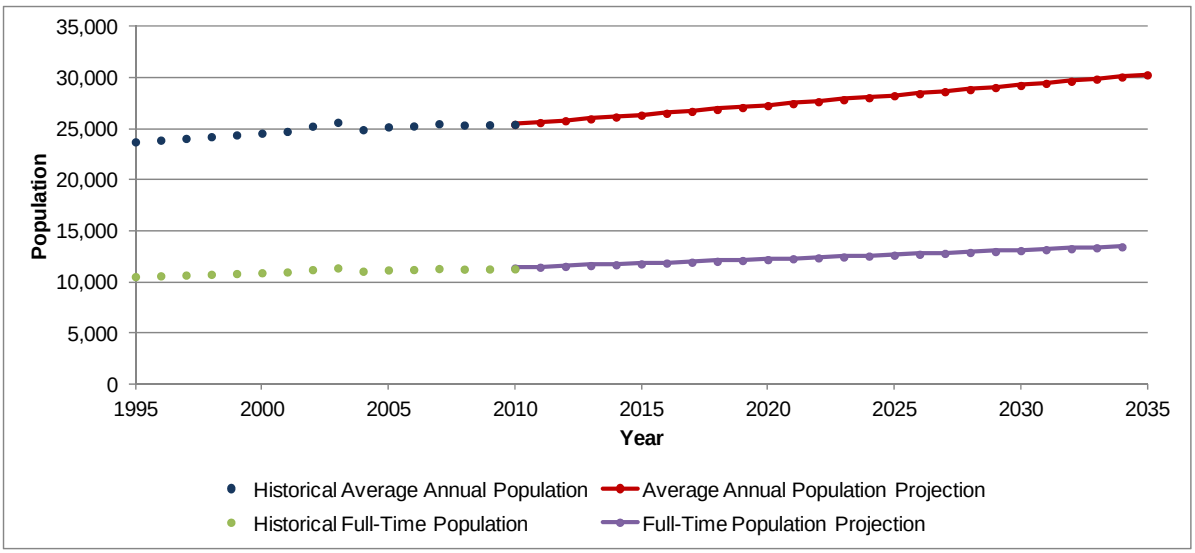

Figure 2.2 Full-Time and Average Annual Historical and Projected Population

2.3.2 Future Population Projections

To generate population projections for future years, an annual growth rate of 0.7 percent was utilized based on long-term historical data collected by both the City and the DWP. Estimated full-time and average annual population projections are listed in Table 2.1 and graphically presented in Figure 2.2. These population projections were used to forecast water requirements for the DWP through year 2035.

Table 2.1 Population Projections

Population	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Full-Time Residents	11,320	11,722	12,138	12,569	13,015	13,477
Average Temporary Population	14,142	14,644	15,164	15,702	16,260	16,837
Average Annual Population(1)	**25,462**	**26,366**	**27,302**	**28,271**	**29,274**	**30,313**

Notes:
(1) Assumes a 0.7% annual growth rate beginning in 2010

It is anticipated that the DWP's service area average annual population will grow by approximately 5,000 over the 25 years to roughly 30,000 in year 2035. The population projections shown in this report represent a more moderate projection than the estimates in previous planning studies for the DWP's service area.

2.4 CLIMATE

The DWP's service area climate is a semi-arid, Mediterranean environment with cold winters, warm summers, and moderate rainfall. Average monthly evapotranspiration (ETo) rates, rainfall, and temperature are summarized in Table 2.2.

The Bear Valley's average monthly temperature ranges from about 34 to 64 degrees Fahrenheit (°F), with an average annual temperature of 47°F. Average annual values of ETo and precipitation are 59 inches and 22 inches, respectively. Records show that the average monthly precipitation ranges from nearly 0 inches to 4.6 inches. Most of the precipitation typically occurs from November through April.

Table 2.2 Climate Characteristics

Month	Standard Average Monthly ETo[1] (inches)	Average Monthly Precipitation[2] (inches)	Average Monthly Temperature[2] (°F)		
			Average	Minimum	Maximum
January	1.8	4.6	33.8	20.2	47.4
February	2.6	4.2	34.8	21.7	47.8
March	4.6	3.1	37.6	24.0	51.2
April	6.0	1.3	42.8	28.0	57.5
May	7.0	0.5	50.6	34.6	66.6
June	7.6	0.1	58.3	40.9	75.6
July	8.1	0.7	64.2	47.5	80.8
August	7.4	0.9	63.3	46.9	79.6
September	5.4	0.5	57.3	40.7	73.9
October	4.1	0.8	48.7	32.4	64.9
November	2.4	2.0	39.8	25.3	54.3
December	1.8	3.2	34.0	20.4	47.5
Annual	**58.6**	**22.0**	**47.1**	**31.9**	**62.2**

Notes:
(1) Source: California Irrigation Management Information System (CIMIS) Station 199 – Big Bear Lake (www.cimis.water.ca.gov). Represents monthly average ETo from July 2005 to March 2012.
(2) (3) Source: Western Regional Climate Center (WRCC) Station 040741 – Big Bear Lake (http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0741). Represents monthly average data from July 1960 to January 2012.

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Chapter 3

WATER SUPPLY SOURCES

The UWMPA requires that UWMPs include a description of the agency's existing and future water supply sources for the next 20 years. The description of water supplies must include detailed information on surface water, groundwater, the groundwater basin, potential opportunities for desalination of groundwater and seawater, and detailed information on the agency's imported water.

> *10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:*
>
> *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 10631 (a)*

3.1 OVERVIEW OF SUPPLIES AND DISTRIBUTION SYSTEMS

The DWP primarily produces potable water from groundwater wells. These wells produce water from the subunits of the Bear Valley groundwater basin, through pumping or by gravity. The DWP does not currently use surface or imported water to meet its water demand, with the exception of the Rimforest area, which is served by imported water delivered from the Crestline Lake Arrowhead Water Agency (CLAWA). The DWP's projected water supplies are summarized in Table 3.1. These quantities meet all state water conservation requirements. As shown, the average annual demand is under the safe yield of the basin, which is 3,100 acre-feet per year (afy), and within DWP's allocation. The perennial yield of the basin is estimated at 4,800 afy (Geoscience, 2006).

Table 3.1 Current and Projected Demand

	Annual Pumping (afy)					
Supply Source	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Groundwater	2,152	2,228	2,307	2,389	2,474	2,562
Imported to Rimforest	53	55	57	59	61	63
Total	**2,205**	**2,283**	**2,364**	**2,448**	**2,535**	**2,625**

Notes:

Supply shown is based on the demands projected in Chapter 5 and meet water conservation requirements associated with the Water Conservation Act of 2009, discussed in Chapter 6. The calculations used for the demands are based on a 0.7% growth in demand each year, beginning in 2010.

3.1.1 Potable Water Systems

The DWP distributes their potable water supply through a distribution system consisting of five water systems with 15 separate pressure zones, 176 miles of pipeline, 62 wells, 16 reservoirs, 12 booster stations, 41 pressure reducing valves, 26 chlorination stations, and

22 sample stations. The DWP operates a total of 62 wells, 39 vertical wells and 23 slant wells.

Potable water meeting all state and federal drinking water standards is delivered from CLAWA to the Rimforest development, providing approximately 60 to 70 afy. Because the Rimforest area is essentially fully developed, demand has historically remained constant and is projected to remain unchanged in the future.

3.1.2 Recycled Water System

The DWP does not supply recycled water within its service area. In a few limited cases, Big Bear Area Regional Wastewater Agency (BBARWA), the regional wastewater agency, supplied recycled water to some customers. This water came directly from BBARWA's treatment plant. There are currently no plans in place to provide recycled water service to the DWP customers.

3.2 GROUNDWATER

10631 (a) [to 20 years or as far as data is available]. 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:

10631 (b) (1) A copy of any groundwater management plan adopted by the urban water supplier…

10631 (b) (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 board has adjudicated the rights to pump groundwater…For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted…

10631 (b) (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 records.

10631 (b) (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 reasonable available, including, but not limited to, historic use records.

Groundwater underlying the DWP's service area is of good quality and requires little treatment before use in the potable water supply system. Maximum perennial yield for the Bear Valley groundwater basin has been estimated at 4,800 afy with approximately 3,100 afy of that volume being available to the DWP (CDM, 2006).

3.2.1 Groundwater Basin Description

Bear Valley lies in the northeastern portion of the Santa Ana River Watershed. The Bear Valley groundwater basin (Basin) is primarily composed of alluvium and the main tributaries include Grout Creek, Van Dusen Canyon, Sawmill Canyon, Sand Canyon, Knickerbocker Creek, Metcalf Creek, and North Creek. Based on the drainage system, Bear Valley is divided into 16 hydrologic subunits (LCA, 1987 a & b).

The water bearing deposits within the Valley have been divided into upper, middle, and lower aquifers. The upper and middle aquifers are the primary water-producing formations. The upper aquifer extends through the eastern part of the Basin where it reaches more than 200 feet thick, but is thin and unsaturated in the western portion of the Basin. The middle aquifer is found throughout the Basin and ranges from 150 to more than 800 feet thick (DWR, 2004).

Basin recharge is from percolation of precipitation and runoff, as well as underflow from fractured rock formations. Groundwater levels generally correlate with annual fluctuations of precipitation.

Total storage capacity of the Basin is estimated at 42,000 af. Average inflow is 6,240 afy and main losses to the basin are outflow and pumping (DWR, 2004).

3.2.2 Historical Groundwater Concerns

None of the groundwater basins in the DWP service area are adjudicated. At present, no subunit within the Bear Valley groundwater basin is in overdraft. While the Village subunit was overdrafted in previous years, it has since recovered (CDM, 2005).

3.2.3 Groundwater Pumping

The DWP uses 62 wells to extract water from the Basin. Of these wells, 23 are slant wells and 39 are typical pump powered vertical wells. Annual use of the groundwater has remained relatively constant over the reported timeframe (Table 3.2).

Table 3.2 Amount of Groundwater Pumped by DWP

	Historical Groundwater Pumped from Basin (afy)				
Basin Name	**2006**	**2007**	**2008**	**2009**	**2010**
Bear Valley Basin	2,473	2,672	2,452	2,316	2,152
% of Total Water Supply	**98%**	**98%**	**98%**	**98%**	**98%**

Demand projections are based on the assumption that groundwater will be used to meet all of the DWP's water supply in the Valley, and it is anticipated that the amount of groundwater pumped will gradually increase through year 2035. Groundwater wells will be added to the water systems as needed.

Table 3.3 Amount of Groundwater to be Pumped						
	Projected Annual Groundwater Pumped from Basin (afy)					
Basin Name	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Bear Valley Basin	2,152	2,228	2,307	2,389	2,474	2,562
Total	**2,160**	**2,228**	**2,307**	**2,389**	**2,474**	**2,562**

Notes:
(1) Based on total demand in 2010 using population projections from Table 2.1

3.3 IMPORTED WATER

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 indentifies 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 5 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 information requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Imported water is only used to meet demands in Rimforest. This area is geographically separate from Bear Valley and receives water from CLAWA. Typically, Rimforest's annual demand is approximately 60 afy, or 2 percent of DWP's total annual demand. DWP also has interconnections with Big Bear City Community Services District (BBCCSD) in order to transfer water in the event of an emergency shortage. These connections are for critical periods and are therefore not factored into demand projections.

Because Rimforest is essentially fully developed, demand volume is anticipated to remain relatively constant (Table 3.4).

Table 3.4 Projected CLAWA Purchases for Rimforest						
	Annual Supply (afy)					
Supply Source	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
CLAWA	53	55	57	59	61	63
Total	**53**	**55**	**57**	**59**	**61**	**63**

Notes:

As with both population and demand projections, imported supply purchases for Rimforest are anticipated to grow at a rate of 0.7% annually

Rimforest's potable water demand will be supplied entirely through imported water from CLAWA and is anticipated to remain relatively constant at 60 afy through year 2035.

3.4 RECYCLED WATER

The DWP does not have a recycled water system. BBARWA provided water in the past as part of an experimental program. Recycled water is currently not available. More details of the region's recycled water system are discussed in Chapter 4.

3.5 DESALINATED WATER

Opportunities for future desalinated water supplies are discussed at the end of Chapter 7.

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Chapter 4

RECYCLED WATER

In accordance with the UWMPA, this chapter includes information on water recycling and its potential for use as a water source for the DWP.

> *10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:*
>
> *10633 (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.*
>
> *10633 (b) A description of the recycled water currently being used in the supplier's service area, including but not limited to, the type, place and quantity of use.*
>
> *10633 (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse determination with regard to the technical and economic feasibility of serving those uses, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*
>
> *10633 (d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.*
>
> *10633 (e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.*
>
> *10633 (f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems and to promote recirculating uses.*

4.1 COLLECTION AND TREATMENT SYSTEMS

Wastewater collection systems within the service area for the DWP are operated by the City of Big Bear Lake, BBCCSD, and the County of San Bernardino County Service Area 53B. The collection systems deliver wastewater to BBARWA's interceptor system. BBARWA was formed in March 1974 and its service area includes the entire 79,000 acres of Bear Valley. BBAWRA operates three main lines; the low pressure sewer (LPS) force main that services the City's wastewater system, the North Shore Interceptor that services the county's wastewater system, and the BBARWA Trunk Line that services the BBCCSD's wastewater system and conveys flow from the North Shore Interceptor to the treatment plant. Wastewater flows from the three main lines is conveyed to the BBARWA treatment plant located on a 94-acre parcel near Baldwin Lake in Big Bear City (ER, 2010).

The plant occupies about 11.2 acres, leaving 82.3 acres for evaporation ponds and other purposes. The plant has a peak hydraulic capacity of 9.1 million gallons per day (mgd), a

secondary wastewater treatment capacity of 4.9 mgd and, as of 2010, is operating at about 2.5 mgd (ER, 2010).

Table 4.1 Current and Projected Wastewater Collection and Treatment by BBARWA

	Projected Annual Flow (afy)					
Type of Wastewater	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Wastewater Collected and Treated in BBAWRA Service Area(1)	3,114	3,237	3,361	3,484	3,607	3,730
Wastewater volume collected and treated from DWP's service area(2)	1,926	1,996	2,069	2,145	2,224	2,305
Wastewater volume collected and treated from DWP's service area that meets Recycled Water Standard(3)	0	0	0	0	0	0

Notes:
(1) Based on 2010 to 2030 projections presented in BBARWA 2010 Master Plan linearly interpolated for intermediate years
(2) Based on BBAWRA, City, and Fawnskin service areas collection and treatment data for 2010, while 2015 through 2035 are based on 62% of the total regional flows
(3) Neither DWP nor BBAWRA have future plans to implement recycled water usage

Total wastewater flows for BBARWA are projected to increase gradually by approximately 600 af over the next 25 years. In their 2010 Master Plan, BBARWA reports that DWP's service area accounts for approximately 62 percent of BBARWA flows. This 62 percent factor was then used to project all future flows for the DWP service area based on BBARWA flow projections (ER, 2010).

No water is predicted to meet recycled water standards. There are currently no plans for BBARWA to produce recycled water, and the DWP has no plans to incorporate recycled water during this planning period.

4.1.1 Disposal of Non-Recycled Wastewater

Currently, BBARWA discharges the secondary wastewater treatment plant effluent to a 480-acre site in Lucerne Valley where it is used to irrigate feed crops. The sludge is collected, dewatered, and hauled to disposal facilities. BBARWA is permitted to discharge treated wastewater for irrigation, construction compaction, dust control, and wildland firefighting in the Valley (CDM, 2005).

4.2 CURRENT RECYCLED WATER USES

Recycled water is not available and is not currently utilized in the DWP's service area.

4.3 POTENTIAL USES AND PROJECTED DEMAND

Because the DWP's customer base is primarily residential connections with limited landscaping, uses and demand for non-potable water is low. Furthermore, because Lucerne Valley is utilizing the secondary treated effluent, there is currently little need for recycled water in the DWP's service area.

In the DWP's 2006 Water Master Plan, it was speculated that recycled water would best be utilized by the DWP for groundwater replenishment. These findings were echoed in the DWP's *Reconnaissance Analysis of Alternative Water Sources* document (DWP 2010).

Table 4.2 Potential Future Recycled Water Use (DWP 2010)

User Type	Treatment Level	Potential Recycled Water Demand (afy)
Groundwater/Bear Creek/Bear Lake Recharge	Advanced Water Purification(1)	500 - 2,000
Snowmaking	Advanced Water Purification(1)	1,100
Golf Course Irrigation	Advanced Water Purification(1,2)	120

Notes:
(1) Secondary wastewater treatment, microfiltration, reverse osmosis, ultraviolet disinfection, and advanced oxidation.
(2) Due to public concern regarding possible contamination of the small Rathbone groundwater subunit, advanced purification may be necessary

Thus, groundwater or surface water replenishment are the primary projected uses of recycled water in the DWP's service area. It was estimated that recycled water could potentially enhance the DWP's water supply by up to 1,000 afy.

Similarly, recycled water could be used to enhance Bear Creek. Another application for recycled water is snowmaking, which is currently being taken from Big Bear Lake. Finally, recycled water could be used to irrigate the Bear Mountain Golf Course, which currently irrigates with groundwater. This would allow the DWP to increase its pumping from the Rathbone Hydrologic Subunit.

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Chapter 5

WATER DEMAND

5.1 GENERAL

The UWMPA requires that UWMPs identify the agency's water demand and include a breakdown by user classification.

> 10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:
>
> 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; and (I) Agricultural.
>
> (2) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.

5.2 PAST, CURRENT, AND PROJECTED WATER USE

This section describes the historical, current, and projected water use through year 2035. It also describes the types of customer accounts in the DWP's service area.

5.2.1 Customer Accounts

As of 2010, the DWP maintains 15,738 water meters, in which 14,904 are residential and 838 are commercial. Thus, about 95 percent of the accounts are residential (Figure 5.1).

This ratio was used for projecting into the future. Multi-family residential accounts are grouped in commercial accounts.

5.2.2 Historical Water Use

The historical water use varied from 110 to 77 gpcd. Water demand began dropping in 2002, most likely due to water conservation efforts by the DWP. Per capita consumption continues to decrease gradually.

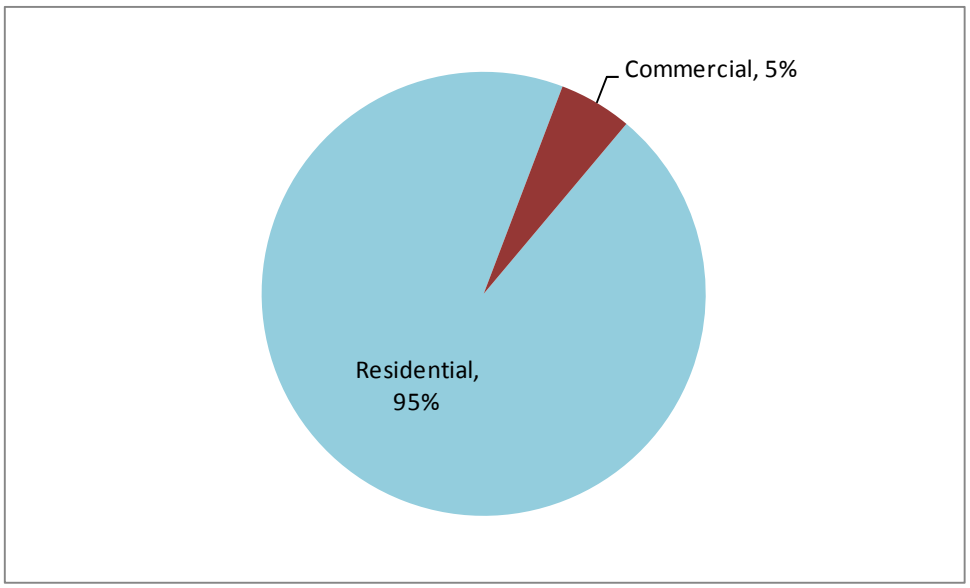

Figure 5.1 Breakdown of Accounts by Account Type

Table 5.1 Historical Water Use

Year	Average Annual Population[(1)]	Water Demand (afy)	Per Capita Consumption (gpcd)
1995	23,754	2,624	99
1996	23,922	2,658	99
1997	24,090	2,719	101
1998	24,260	2,766	102
1999	24,431	2,828	103
2000	24,604	2,999	109
2001	24,777	3,044	110
2002	25,290	2,948	104
2003	25,667	2,655	92
2004	24,946	2,667	95
2005	25,220	2,514	89
2006	25,307	2,547	90
2007	25,529	2,736	96
2008	25,397	2,483	87
2009	25,426	2,374	83
2010	25,462	2,205	77
Average	**24,880**	**2,673**	**96**

Notes:

(1) Since annual population estimates for the DWP service area were not available, historic population estimates were calculated from the number of service connections for each year between 2001 and 2010. A benchmark of the year 2010 was used based on U.S. Census data (USCB, 2010). Average annual population includes an adjustment for seasonal population as discussed in Chapter 2.

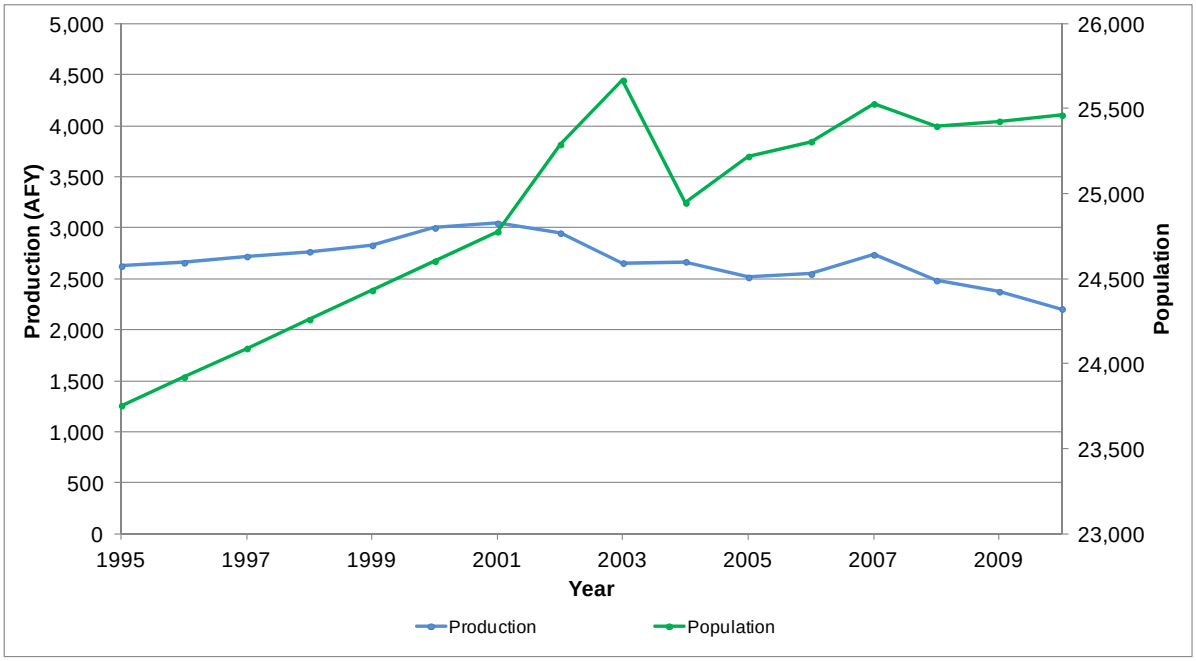

Figure 5.2 Production and Population Over Time

5.2.3 Current Water Use

The per capita consumption is the average amount of water consumed per person per day. This consumption is calculated by dividing total water production by population and 365 days.

In 2010, the DWP supplied 2,205 af of potable water to its customers, which is equivalent to 2 mgd. With a 2010 population of 25,462, the average per capita consumption was 77 gpcd.

The 2010 per capita consumption rate was used in combination with the population projections (see Chapter 2) to estimate the DWP's future water demand. Projected demand was used to evaluate the adequacy of DWP's water supply. Overall, the population has grown gradually while demand has declined.

5.2.4 Projected Water Use

Based on the projected trends in population and historical consumption rates, DWP's projected future water demand was estimated and summarized in Table 5.2 and Figure 5.3. The demand projection is based on a 0.7% growth rate beginning in 2010.

Projected per capita water use for 2020 meets the requirements established in SB-7x7.

Table 5.2 Demand Projections

Year	Average Annual Population[(1)]	Per Capita Consumption (gpcd)	Demand (afy)
2010	25,462	77	2,205
2015	26,366	77	2,283
2020	27,302	77	2,364
2025	28,271	77	2,448
2030	29,274	77	2,535
2035	30,313	77	2,625

Notes:
1. Population projections from Table 2.2

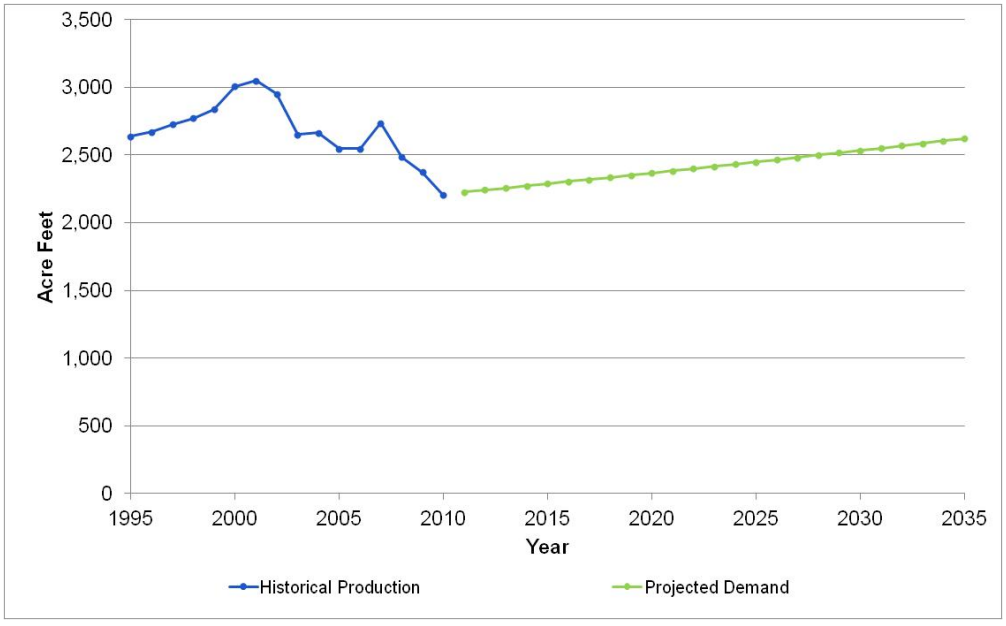

Figure 5.3 Past, Current, and Projected Water Use

5.3 WATER USAGE BY CLASSIFICATION

Projected water deliveries by customer class are summarized in Table 5.4. There are no unmetered accounts in the DWP service area. Average system water loss is 9.7 percent.

5.4 LOW-INCOME HOUSING

The UWMPA requires that the UWMP identify planned low-income housing developments within the agency's service area and develop demand projections for those units.

> 10631.1(a). The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier

The City's General Plan (GP, 2008) provides information on Regional Housing Needs Allocation progress (RHNA). The Housing Element of the General Plan identified the need to construct 57 extremely low-income, 56 very low-income, and 80 low-income housing units between 2006 and 2014.

The 2008 General Plan Update did not provide information on single-family versus multi-family low income dwelling units, so the average number of people per dwelling unit was assumed to be the same as the rest of the City at 2.4 people per dwelling unit. Assuming that these 193 dwelling units reflect an average of 2.4 people per dwelling unit and the projected per capita water usage of 77 gpcd, the total demand associated with low-income housing is estimated to be 40 afy. Since the General Plan does not indicate any additional need for low-income housing beyond year 2014, the projected demand after 2015 is assumed to remain constant through year 2035.

Table 5.3 Low-Income Projected Water Demands

	Demand (afy)				
	2015	**2020**	**2025**	**2030**	**2035**
Low-Income Housing[(1)]	40	40	40	40	40

Table 5.4 Water Demand Projections by Customer Class								
	2005		2010		2015		2020	
Customer Class	No. of accounts(1)	Demand (afy)	No. of accounts(1)	Demand (afy)	No. of accounts(1)	Demand (afy)	No. of accounts(1)	Demand (afy)
Single-Family	14,758	1,584	14,900	1,437	15,429	1,488	15,976	1,541
Multi-family	-	-	-	-	-	-	-	-
Commercial	608	710	838	554	868	574	899	594
Industrial	-	-	-	-	-	-	-	-
Government	-	-	-	-	-	-	-	-
System Losses(2)	-	244	-	214	-	221	-	229
Total	**15,366**	**2,514**	**15,738**	**2,205**	**16,297**	**2,283**	**16,875**	**2,364**

Notes:

(1) Future account breakdown is a based on average account breakdown.

(2) System losses based on historic average of 9.7 percent.

Table 5.4 Water Demand Projections by Customer Class (Continued)						
	2025		2030		2035	
Customer Class	No. of accounts(1)	Demand (afy)	No. of accounts(1)	Demand (afy)	No. of accounts(1)	Demand (afy)
Single-Family	16,544	1,596	17,131	1,652	17,739	1,711
Multi-family	-	-	-	-	-	-
Commercial	930	615	963	637	998	660
Industrial	-	-	-	-	-	-
Government	-	-	-	-	-	-
System Losses(2)	-	237	-	246	-	255
Total	**17,474**	**2,448**	**18,094**	**2,535**	**18,736**	**2,625**

Notes: (see above)

5.5 DEMAND PROJECTIONS AND WATER CONSERVATION

The projected water demand, with and without the target water conservation is graphically depicted in Figure 5.4. Demand is not predicted to exceed maximum allowable demand.

Table 5.5 Demand Projections

Year	Average Annual Population[1]	Projected Demand[2] (afy)	Maximum Allowable Demand to meet SB-7x7 Conservation Target[3] (afy)
2010	25,462	2,205	4,050
2015	26,366	2,283	4,637
2020	27,302	2,364	4,343
2025	28,271	2,448	4,497
2030	29,274	2,535	4,657
2035	30,313	2,625	4,822

Notes:

(1) Population Projections from Table 2.1.

(2) Demand projections based on 2010 average consumption of 77 gpcd.

(3) Conservation requirements based on an average per capita demand of 142 gpcd combined with average annual population estimates. Data represents maximum possible production that will still result in the DWP meeting state conservation requirements given population projections.

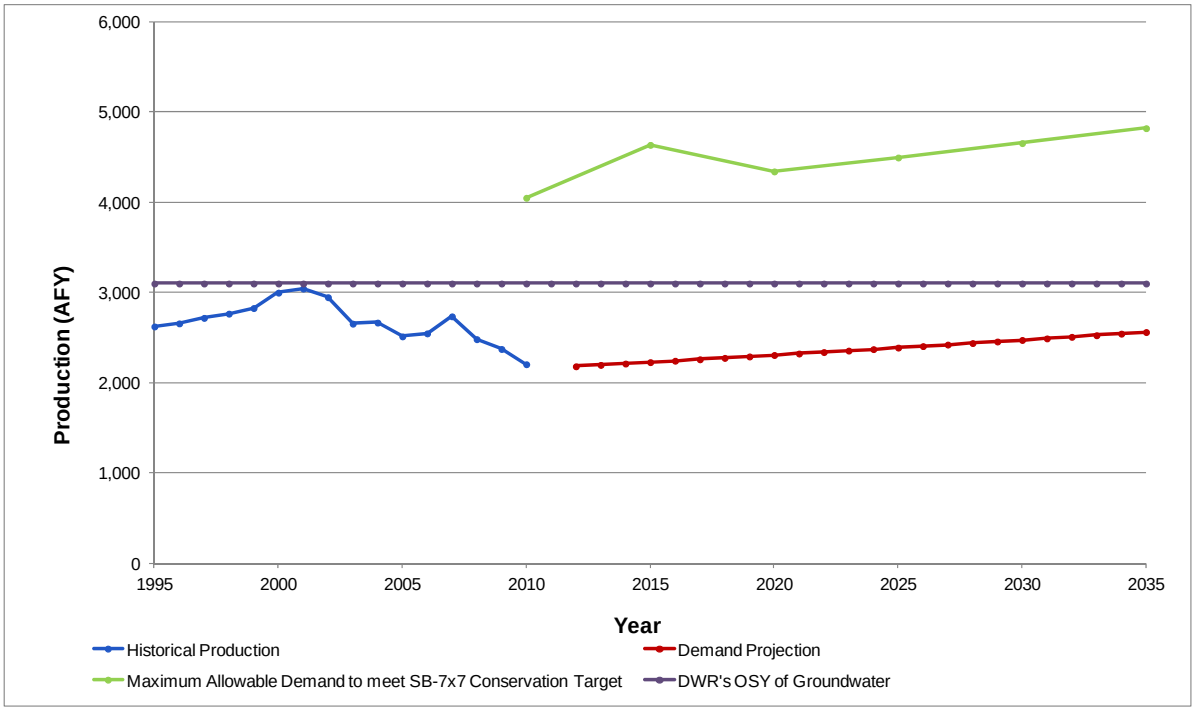

Figure 5.4 Projected Water Demands

The maximum allowable water demand, for the DWP, based on water conservation Method 3, was substantially higher than the projected water demand for the DWP. Hence, the DWP

will meet the SB-7x7 requirements by maintaining its current per capita consumption of 77 gpcd.

Chapter 6

WATER CONSERVATION

The UWMPA requires that the UWMP involve a discussion of the agency's water conservation measures. This includes an overview of the supplier's BMPs as well as a discussion of how the supplier intends to meet the water conservation targets established by SBx7-7.

> 10608.20. (a) (1) Each urban retail water supplier will develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis. (2) It is the intent of the Legislature that the urban water use targets described in subdivision (a) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020

6.1 WATER CONSERVATION

6.1.1 Water Conservation Target Methods per SBx7-7

SBx7-7 requires that all water suppliers increase water use efficiency by decreasing per capita consumption by 20 percent by year 2020. The DWR provided four different methods to establish water conservation targets. These four methods can be summarized as follows.

- **Method 1 – Baseline Reduction Method.** This method is defined as a 20 percent reduction of average per capita demand during a 10-year baseline period ending between 2005 and 2010.
- **Method 2 – Efficiency Standard Method.** This method is based on calculating efficiency standards for indoor use separately from outdoor use for residential sectors and an overall reduction of 10 percent for commercial, industrial, and institutional (CII) sectors. The aggregated total of the efficiency standards in each area is then used to create a conservation target.
- **Method 3 – Hydrologic Region Method.** This method uses ten regional urban water use targets. Based on the water supplier's location, the regional water conservation target for 2015 and 2020 must be met.
- **Method 4 – BMP-based Method.** This method uses previous BMPs of the supplier to establish a conservation target for 2020. Depending on how aggressively the water supplier has pursued water reduction and conservation in the past, a new conservation target for 2020 is calculated.

6.1.2 Method 1

Method 1 establishes a 10-year and 5-year baseline water consumption in gpcd based on historical population and demand numbers. Any 10-year period from 1995 and 2010 (but it

cannot end before December 31, 2004) can be selected to establish the baseline per capita demand for the water supplier using the average per capita consumption in gpcd. If an agency used 10 percent or more recycled water in year 2008, the baseline value can also be determined with a 15-year consecutive period between 1990 and 2010. Since the DWP did not utilize recycled water for more than 10 percent of their 2008 demand, the baseline period must be 10 years in length and end between December 31, 2004 and December 31, 2010. A 5-year period needs to be selected in any year ending no earlier than 2007 to determine the minimum required reduction in water use. The baseline value is then reduced by 20 percent to determine the year 2020 conservation target. The intermediate target for year 2015 is the mid-point value between the baseline and year 2010 target values.

Table 6.1 Base Period Ranges

Base	Parameter	Value	Units
Water Deliveries	2008 total water deliveries	2,483	af
	2008 total volume of delivered recycled water	0	af
	2008 recycled water as a percent of total deliveries	0	%
10-year Base Period	Number of years in base period	10	years
	Year beginning base period range	1995	
	Year ending base period range	2004	
5-year Base Period	Number of years in base period	5	years
	Year beginning base period range	2003	
	Year ending base period range	2007	

Table 6.1 shows the characteristics of the 10- and 5-year periods selected as the baselines for the DWP. The 10-year period with the highest baseline consumption starts in 1995 and ends in 2004 (Figure 6.1).

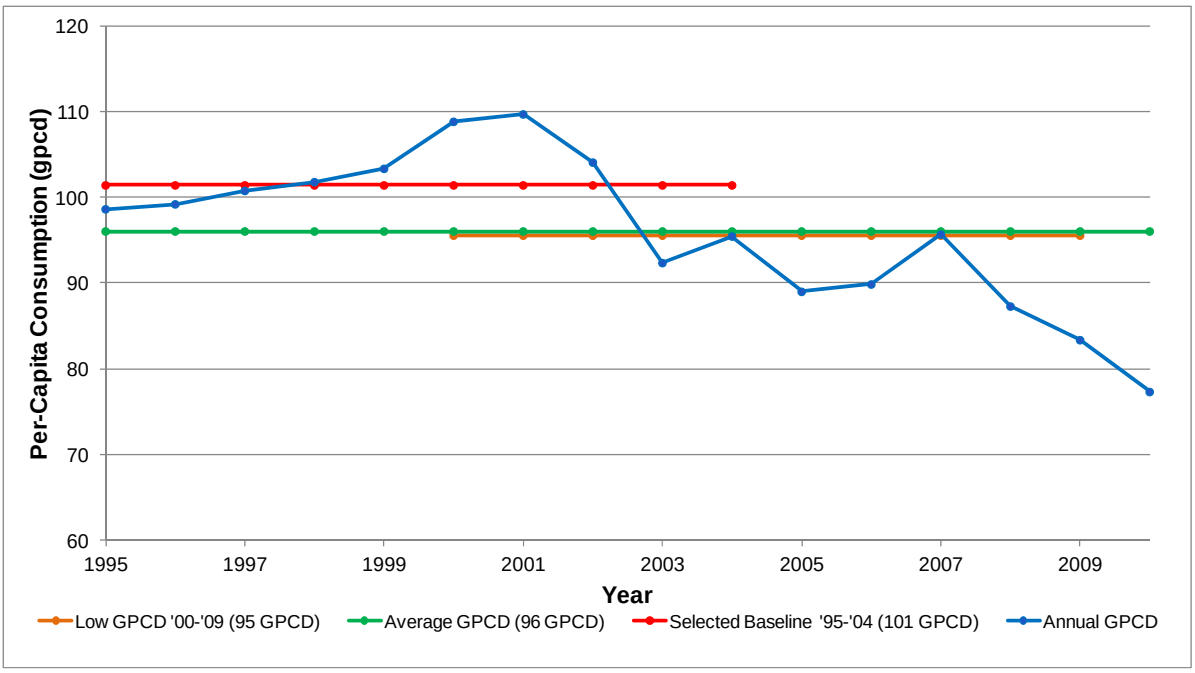

Figure 6.1 Minimum, Average, and Maximum 10-Year Baseline Consumption

Although the yearly per capita demand varies significantly between 1995 and 2010, the high-average value, low-average value, and 16 year historical average are all relatively close in value. Although recent per capita demand values have declined compared to previous years, this is likely due to the economic downturn as well as aggressive conservation outreach efforts by the DWP.

Table 6.2 Daily Per Capita Water Use, 10-Year Range: 1995-2004

Base Period Year		Distribution System Population	Daily System Gross Water Use (mgd)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year			
Year 1	1995	23,754	2.3	99
Year 2	1996	23,922	2.4	99
Year 3	1997	24,090	2.4	101
Year 4	1998	24,260	2.5	102
Year 5	1999	24,431	2.5	103
Year 6	2000	24,604	2.7	109
Year 7	2001	24,777	2.7	110
Year 8	2002	25,290	2.6	104
Year 9	2003	25,667	2.4	92
Year 10	2004	24,946	2.4	95
Average	**n/a**	**24,574**	**2.5**	**101**

Table 6.2 shows the DWP population, total volume of consumption, and per capita consumption of the selected 10-year baseline period. The average per capita consumption

during this period was 101 gpcd. Based on Method 1, a 20 percent reduction from this baseline period would be 81 gpcd.

Table 6.3 shows the population, total average daily system demand, and the per capita consumption of the 5-year baseline period, 2003 to 2007, was 92 gpcd. The 5-year baseline value is used to determine the minimum required reduction in water use.

Table 6.3 Daily Per Capita Water Use, 5-Year Range: 2003-2007

Base Period Year		Distribution System Population	Average Daily System Demand (mgd)	Average Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year			
Year 1	2003	25,667	2.4	92
Year 2	2004	24,946	2.4	95
Year 3	2005	25,220	2.2	89
Year 4	2006	25,307	2.3	90
Year 5	2007	25,529	2.4	96
Average		**25,334**	**2.3**	**92**

The minimum per capita consumption for year 2020 is defined as 95 percent of the 5-year gpcd. This establishes the minimum water conservation target at 88 gpcd.

Since the water conservation target derived from 95 percent of the 5-year baseline period (88 gpcd) is higher than the Method 1 2020 water conservation target (81 gpcd), the DWP's Method 1 water conservation targets are as follows:

- Year 2015 Target: 91 gpcd
- Year 2020 Target: 81 gpcd

6.1.3 Method 2

Sufficient data to calculate Method 2 for DWP was not available since the effort associated with digitizing or surveying the amount of irrigated landscape within the DWP's service area would be significant.

6.1.4 Method 3

The State's 20 by 2020 water conservation plan has identified specific urban water use targets for 2015 and 2020 for each of the ten hydrologic regions shown in Figure 6.2. The DWP falls in Hydrologic Region 4 (South Coast) which has a target use of 142 gpcd for year 2020.

In most circumstances, all four methods require to be checked to ensure that the 2020 goal reduces consumption to at least 95 percent of the 5-year baseline daily water consumption calculated in Method 1. This would result in a required gpcd of much lower than the 142 gpcd target for Method 3. However, if the 5-year baseline daily per capita use falls below 100 gpcd, then no adjustment to the water use target is needed. Therefore, the Method 3 hydrologic region goal may be adopted without further calculation.

The DWP's water conservation targets using Method 3 are as follows:

- Year 2015 Target: 157 gpcd
- Year 2020 Target: 142 gpcd

6.1.5 Method 4

Method 4 uses the supplier's BMP reports as a guide to set the 2020 conservation target. The intent behind Method 4 is to use the BMP reports to account for what water conserving measures the supplier has already taken in order to set an accurate and realistic target for the future and take into consideration the supplier's previous water conservation efforts.

At this time, the DWP has inadequate records on BMP practices to implement Method 4.

6.1.6 Recommended Method

The water conservation targets for each are presented in Table 6.4. Method 3 will provide the DWP with the optimal conservation goal.

Table 6.4 Conservation Method Overview

Conservation Calculation	Conservation Target (gpcd)		Reduction by 2020	
	Year 2015	Year 2020	From Baseline(1)	From 2010 Usage(2)
Method 1	91	81	-20%	+5%
Method 2	n/a	n/a	n/a	n/a
Method 3	157	142	+41%	+84%
Method 4	n/a	n/a	n/a	n/a

Notes:
1) Baseline consumption is 101 gpcd
2) 2010 consumption is 77 gpcd

6.1.7 Demand Projections with Water Conservation

Table 6.5 presents DWP demand projections with and without water conservation targets. The demand projections in afy were derived from the population projections presented in Chapter 2 and the per capita consumption targets described above.

Table 6.5 Demand Projections

Year	Projected Demand (afy)	Maximum Allowable Demand to meet SB-7x7 Conservation Target (afy)
2010	2,205	4,050
2015	2,283	4,637
2020	2,364	4,343
2025	2,448	4,497
2030	2,535	4,657
2035	2,625	4,822

Notes:

(1) Population Projections are taken from Table 2.2.

(2) Non-conservation projections are based on population growth combined assuming continuing per-capita demands of 77 gpcd. Maximum Water Demand per Conservation Targets are based on Method 3 conservation target consumption of 142 gpcd for 2020.

As shown in Table 6.5 and graphically in Figure 6.3, water conservation requirements of SBx7-7 show DWP's projected demands to be below the maximum water demand based on the conservation targets.

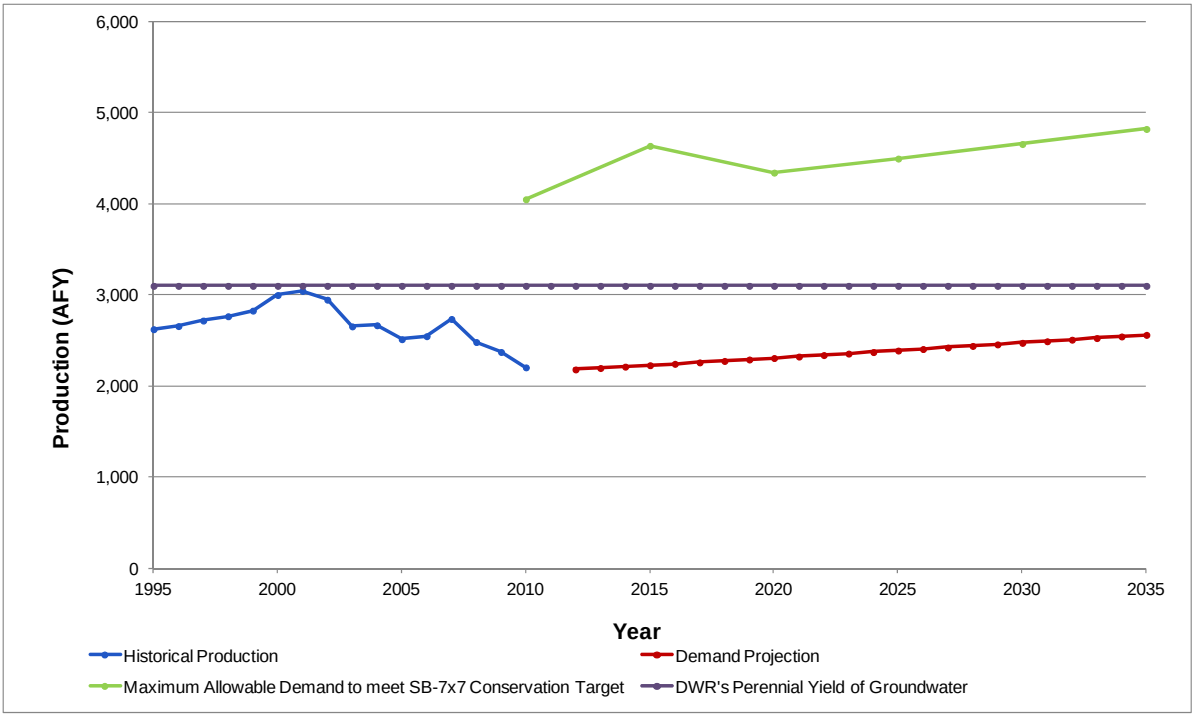

Figure 6.3 Projected Water Demands with and without Conservation

The allowable water demand is substantially higher than the projected water demand for the DWP. Hence, the DWP is projected to meet the SB-7x7 requirements by maintaining its current per capita consumption of 77 gpcd.

6.2 BEST MANAGEMENT PRACTICES

The DWP is a member of the California Urban Water Conservation Council (CUWCC) and is therefore a signatory to the Memorandum of Understanding (MOU) regarding urban water conservation in California. The DWP became a signatory to the MOU in December 2004. The BMPs are conservation practices established by the CUWWC and detailed in conferences, BMP workshops, and free publications. The UWMPA requires that the UWMP discuss the agency's water conservation measures.

> 10631 (F) Provide a description of the supplier's water demand management measures. This description will include all of the following:
>
> (1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
>
> (A) Water survey programs for single-family residential and multi-family residential customers.
>
> (B) Residential plumbing retrofit.
>
> (C) System water audits, leak detection, and repair.
>
> (D) Metering with commodity rates for all new connections and retrofit of existing connections.
>
> (E) Large landscape conservation programs and incentives.
>
> (F) High-efficiency washing machine rebate programs.
>
> (G) Public information programs.
>
> (H) School education programs.
>
> (I) Conservation programs for commercial, industrial, and institutional accounts.
>
> (J) Wholesale agency programs.
>
> (K) Conservation pricing.
>
> (L) Water conservation coordinator.
>
> (M) Water waste prohibitions.
>
> (N) Residential ultra-low-flush toilet replacement programs.

The DWP plans to address all of the BMP targets listed in the CUWCC MOU except where mentioned below. BMP Number 10 applies only to wholesale agencies and is not reported in this plan. The DWP has continually made efforts to meet all BMP requirements but has not submitted the 2009-2010 BMP reports and is therefore out of compliance. The DWP realizes the importance of the BMPs to ensure a reliable future water supply. The DWP's 2005 UWMP provided information regarding conservation measures already in place and those that would improve the efficiency of water use within the service area.

While the CUWCC has re-classified the BMPs, the numbered classification system will be used in this discussion since the DWP's efforts have been categorized accordingly (Table 6.6).

Table 6.6 Best Management Practices

Best Management	Implemented	Planned for Implementation	Not Applicable
BMP 1 - Water Survey Programs	✓		
BMP 2 - Residential Plumbing Retrofit	✓		
BMP 3 - Water System Audits	✓		
BMP 4 - Metering with Commodity Rates	✓		
BMP 5 - Landscape Irrigation Programs	✓		
BMP 6 - Washing Machine Rebate Program		✓	
BMP 7 - Public Information Program	✓		
BMP 8 - School Education Program		✓	
BMP 9 - Commercial, Industrial, and Institutional Conservation Programs	✓		
BMP 10 - Wholesale Agency Programs			✓
BMP 11 - Conservation Pricing	✓		
BMP 12 - Water Conservation Coordinator	✓		
BMP 13 - Water Waste Prohibition	✓		
BMP 14 - Ultra-Low-Flush Toilet Replacement	✓		

6.2.1 BMP 1 - WATER SURVEY PROGRAMS

This program consists of offering water audits to single-family and multi-family residential customers. Audits include reviewing water usage history with the customer, identifying leaks inside and outside the home, and recommending improvements.

The DWP is currently conducting targeted and untargeted residential surveys at no cost to the customer. The DWP contacts and conducts targeted water surveys of the top residential users in the system with a goal of contacting the top 20 percent of users. Untargeted surveys include customer requests and those generated as a result of the Retrofit on Change of Service program. These surveys are a cost effective means of getting customers to participate in the DWP's water-use efficiency campaign.

The DWP performs indoor audits by checking plumbing fixtures and outdoor audits by checking the landscaping and irrigation systems to make recommendations for improving the customer's water-use efficiency. If field personnel notice leaks or unusually high water consumption, they will leave a door tag alerting the customer to check for leaks. In addition, field personnel will also look for landscape ordinance and water use regulation violations, and issue a door tag if a violation is observed.

By 2005, the DWP had completed 455 surveys. Between 2006 and 2010, the DWP conducted an 635 indoor and 164 outdoor residential audits.

6.2.2 BMP 2 - RESIDENTIAL PLUMBING RETROFIT

This program traditionally consists of installing physical devices to reduce the volume of water used in accordance with State law, low-flow fixtures have been required on all new construction since 1978. In addition, the State requires all new buildings to install ultra-low-flush toilets (ULFT). The DWP provides indoor audits, low-flow bathroom aerators, and low-flow showerheads at no cost.

A BMP requirement is to obtain 75 percent saturation of single-family residences retrofittings, it was calculated that 9,750 homes would need retrofitting. For multi-family residences, 315 would need retrofitting. The goal of the DWP is to complete 10,000 retrofits by 2015. Assuming two bathrooms per residence, 20,000 showerheads and conservation kits would need to be distributed.

Water savings based on installing low-flow showerheads, faucet aerators, and toilet displacement devices was estimated by the CUWCC to be 5.5 gallons per day (gpd), 1.5 gpd, and 4 gpd respectively. All three devices are generally distributed concurrently, so for the purposes of this BMP the total estimated water savings is based on the cumulative savings of 11 gallons per day.

From 1992 to 2005, the DWP has distributed approximately 13,800 showerheads and water conservation kits, reaching approximately 69 percent of the total single and multi-family residences. This was determined by comparing the number of low-flow devices distributed to single and multi-family residences by the DWP to the number of accounts prior to 1992. Since 2006, the DWP has distributed 3,000 bathroom aerators and 4,000 showerheads.

The DWP instituted a Retrofit on Change of Service program, Resolution No. DWP 2007-08, in April 2007 (see Appendix F). This resolution requires that all faucets and showerheads have flow rates of 2.5 gallons or less and toilets have a volume of 1.6 gallons per flush or less. Property owners must inspect fixtures to ensure compliance and provide a signed certificate to the DWP. From 2005 to 2010, the DWP has provided a $100 rebate per toilet for up to two toilets.

6.2.3 BMP 3 - SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR

A water audit is a process of accounting for water use throughout a water system in order to quantify unmetered water usage. Unaccounted-for-water is the difference between metered production and metered usage on a system-wide basis.

The DWP conducts regular mass balance audits of metered water production versus metered water sales to detect unusual changes in the water operation. The goal is to minimize water losses and increase overall system efficiencies.

The DWP performed a full water system audit in 2001, when 167 miles of the distribution system was surveyed. The DWP has been active in locating and repairing leaks, and responding immediately to repair leaks. Field personnel are trained to recognize potential service and main line leaks. Pipelines with chronic leak problems are replaced.

When the DWP purchased the system from Southern California Water Company in 1989, the percent of unaccounted-for-water was 29.6 percent. At that time, the DWP applied for and obtained a low-interest loan from the State of California, and began a significant leak detection and repair program. Between 1990 and 2000, the DWP replaced over 108,000 feet (20.5 miles) of the leakiest pipes in the system, reducing the unaccounted-for-water from 29.6 to 11.05 percent. Recent records show a 9.7 percent unaccounted-for-water loss, which is typical for Southern California water agencies.

The DWP will continue conducting system water audits, leak detection, and repairs.

6.2.4 BMP 4 - METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

This BMP requires water meters for all connections, new and existing. Beginning in 1989, the DWP required water meters for all new and existing services, upon a change of ownership, as well as all consumers who used large quantities of water. The last non-metered account was changed to a metered account in 2003. All connections within the DWP service area are currently metered and customers are billed for usage. The DWP considered implementing a program that provided incentives to exchange mixed-use accounts to install dedicated landscape meters, but determined such a program would not be cost effective. The DWP found it more cost effective and water efficient to pursue a total reduction in heavily irrigated landscapes, which was accomplished through a landscape ordinance (see Appendix F) and a Turf Buy-Back Program.

6.2.5 BMP 5 - LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES

BMP 5 calls for agencies to start assigning water budgets based on a reference evapotranspiration rate (ETo) based water budgets to accounts with dedicated irrigation meters and to provide water use audits to accounts with mixed use meters. Landscape surveys are performed by the Water Conservation Specialist or Technician on request. During these surveys, the Specialist or Technician examines the sprinkler system, landscaping, and makes recommendations for improving water use efficiency. In 2005, the DWP began performing and tracking outdoor irrigation audits. From 2005 to 2010, 164 outdoor audits were performed.

At present, the DWP has very few customers with irrigation meters and has not assigned water-use budgets to any of these accounts. The DWP provides a number of incentives to encourage landscape water use efficiency. In 2005, a Turf Buy-Back Program was implemented in which the DWP reimbursed customers who voluntarily removed turf from

their property. Under this program, the reimbursement rate was and is $0.50 per square foot for landscapes with more than 500 square feet of turf. The program has resulted in the removal of 268,141 square feet of turf grass from 2005 to 2010.

Through the DWP's tiered pricing structure, customers are encouraged to minimize landscape water use in order to avoid the high water bills. New customers, and those changing service, are notified of the landscape water use regulations.

The CUWCC's requirements state that no less than 20 percent of CII accounts with mixed-use meters should be contacted each year and offered a landscape water use survey. The DWP began implementing this program in 2004, offering its commercial account customers the opportunity to have landscape surveys.

Ordinance No. 2005-348 (see Appendix F) was approved in 2005 alongwith Resolution No. DWP 2005-02, which included planning and installation of appropriate water-conserving landscapes within the DWP service area. Water use policies and requirements pertaining to landscaping and water conservation include:

- Customers are encouraged to use native and water-conserving plants for landscaping.
- Customers are required to minimize the use of turf at all new and retrofitted commercial and residential landscapes.
- The DWP requires and promotes development of water conservation plans for all customers whose water use exceeds reasonable guidelines developed by the DWP.
- The DWP requires repair of all leaks, once they are detected.
- All outdoor irrigation systems must be shut off and winterized between November 1st and April 1st annually.
- The DWP will establish reasonable water use and irrigation standards for all residential and commercial customers in its service area

The ordinance also included new requirements for the submission of landscape plans, penalties for failure to comply, and an appeal process. This ordinance applies to new construction, or renovation of existing properties. These requirements are not retroactive to existing residents and customers.

6.2.6 BMP 6 - HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAM

This program provides financial incentives (rebate offers) to qualifying customers who install high-efficiency washing machines in their homes. The DWP does not presently have a high-efficiency washing machine rebate program, but instead the DWP has an ordinance

requiring the use of high-efficiency washing machines in new construction. This provision is part of DWP's water waste prohibition.

There are potential water savings limitations associated with the implementation of a high-efficiency washing machine rebate program. Since 70 percent of the homes in the DWP's service area are vacation or second homes, the water savings estimated would be realized by the 30 percent that are full-time residents. In addition, there is a concern that once the rebate is received from the DWP for the washing machine, the customer could remove the machine and reinstall it in their primary home outside the DWP service area, resulting in no water savings for the DWP. Additionally, since so many homes are vacation and second homes, those homes commonly do not have washing machines at all. The DWP may implement a high-efficiency washing machine rebate program in the future, once it has exhausted the available ULFT, showerhead, and faucet aerator retrofits.

6.2.7 BMP 7 - PUBLIC INFORMATION PROGRAMS

The DWP maintains an active public information program, administered by the Public Information/Water Conservation Specialist. It is designed to educate the public and businesses on water supply issues and conservation through a variety of means. These include local newspapers and radio advertisements, restaurant table cards, hotel door hangers, business placards, and an informative website.

6.2.8 BMP 8 - SCHOOL EDUCATION PROGRAM

This BMP requires water suppliers to implement a school education program that includes providing educational materials and instructional assistance. The DWP currently has no school education program but is planning to re-institute water education programs for fourth graders in all three elementary schools in its service area. This program was implemented intermittently until 2009.

6.2.9 BMP 9 - CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL ACCOUNTS

The DWP has not implemented a formal conservation program for its CII accounts. There are no industrial accounts in the DWP system. The DWP included commercial accounts in several implemented conservation programs. Large landscape conservation programs and incentives were provided to CII customers. ULFT replacements and bathroom retrofits have been provided to CII customers as well.

CUWCC's guidelines call for 10 percent of CII accounts to be surveyed in 10 years. As of 2005, there were 525 commercial accounts and 39 institutional accounts. The guidelines also suggest that 10 percent of all commercial customers be contacted each year with an offer to have a water use survey performed. The survey must include a site visit, evaluation of water using apparatuses and processes, and a report to the customer identifying

recommended efficiency measures. A follow-up visit is to be held one year after the survey. From 2006 to 2010, the DWP conducted 10 commercial audits.

Savings are based on the types of conservation measures available for implementation. The CUWCC estimates a water savings of approximately 12 percent following a water survey.

6.2.10 BMP 10 - WHOLESALE AGENCY PROGRAMS

The DWP is not a wholesale agency.

6.2.11 BMP 11 - CONSERVATION PRICING

The DWP applies a tiered rate structure to all residential connections.

Table 6.7 Bi-monthly Rate Structure

Bi-monthly Consumption (hcf)	Tier	Rate/hcf
9-24	One	$2.45
25-40	Two	$3.40
41-60	Three	$5.07
61-100	Four	$8.36
100+	Five	$11.61
4+	Commercial Rate	$3.51
1+	Rimforest	$4.83

Notes: Rates are current as of May 2012 and available at: http://www.bbldwp.com/

Commercial and Rimforest customers pay a flat rate. In addition to volume charges, a bi-monthly service charge is assessed based on meter size and varies from $81.32 to $96.24.

Table 6.8 Bi-Monthly Service Charge

User Type	Meter Size	Bi-Monthly Service Charge
Residential	5/8 inch meter	$81.32
Commercial	5/8 inch meter	$96.24
Rimforest	5/8 inch meter	$88.60

Notes: Rates are current as of May 2012 and available at: http://www.bbldwp.com/

6.2.12 BMP 12 - WATER CONSERVATION COORDINATOR

The DWP employs one full-time staff person as Public Information/Water Conservation Specialist and one seasonal Water Conservation Technician to manage the responsibilities of the water conservation program.

6.2.13 BMP 13 - WATER WASTE PROHIBITION

The DWP has approved resolutions to address water waste. These prohibitions are discussed further in Chapter 8.

6.2.14 BMP 14 - RESIDENTIAL ULTRA-LOW-FLUSH TOILET REPLACEMENT PROGRAMS

The DWP instituted an ULFT replacement program in 1999, which was briefly suspended in 2000 due to inadequate funding. The ULFTs were purchased by the DWP and installed by customers. A member of the DWP staff would confirm that a non-ULFT was being replaced and that a ULFT was actually installed. Other than installation costs, this program was free to the customers.

A toilet rebate program was then implemented in January 2004, providing customers a rebate of $75 per ULFT retrofitted. The purchase and installation of the UFLT was the responsibility of the customer. Prior to the installation, DWP conservation staff would verify that the existing toilet was a non-ULFT. The rebate was credited to the customer's account.

In August 2005, the DWP retrofitted high-flush toilets for free covering the cost of the toilet and installation. This project was funded by the City's Water Demand Offset Program, which required contractors and developers to pay a Water Demand Offset Fee based on the future demand of their respective developments.

The DWP calculated the water savings from toilet replacement to be 31 gallons per day per toilet. For purposes of this BMP, 31 gpd per toilet, or 0.0347 acre-feet per year per toilet will be used in both single- and multi-family dwellings. The cost per acre-foot of water savings is approximately $2,111 for toilet rebates and $6,700 for direct installs for the first year. Assuming a 20-year life for a toilet, the cost per acre-foot over the lifetime of the toilet comes out to $106 per acre-foot for rebates, and $335 per acre-foot for direct installs. While the cost per acre-foot for rebates is significantly cheaper than for direct installs, customer participation is much higher for direct installs, allowing more toilets to be retrofitted. The WDO fee was replaced in 2009 and funding for the toilet rebate program now comes from DWP's operations and maintenance budget.

Many homes in the DWP service area were built before 1992. Seventy percent of the homes in the Bear Valley are either vacation and/or second homes. Retrofitting ULFTs into these residences will result in significantly less water savings than if that same toilet was installed in a full-time residence. Therefore, the DWP qualifies customers for toilet rebates. Water usage must average 1.8 units per month over a 6-month period. Prior to installation,

DWP conservation staff performs an indoor audit to ensure the existing toilet is a non-ULFT. Once the toilet has been installed, the customer delivers a receipt or invoice to the DWP and the rebate is issued. The DWP will rebate the customer up to $100 per toilet, two toilets per household. Between 2005 and 2010, the DWP processed 628 toilet rebates.

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Chapter 7

WATER SUPPLY RELIABILITY

7.1 INTRODUCTION

UWMPs are required to address the reliability of the agency's water supply, seasonal and long-term supply vulnerability, and the affect of water quality on supply. Finally, vulnerabilities for a single-dry year and in multiple-dry years must be addressed.

> *10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:*
>
> *10631 (c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable.*
>
> *10631 (c) 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 replace that source with alternative sources or water demand management measures, to the extent practicable.*
>
> *10631 (c) Provide data for each of the following: (1) An average water year, (2) A single dry water year, (3) Multiple dry water years.*
>
> *10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:*
>
> *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.*
>
> *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 management strategies and supply reliability.*

7.2 WATER SUPPLY RELIABILITY

Ninety-eight percent of the DWP's current and future water supply is groundwater, and the current estimate of perennial yield available to the DWP is 3,100 afy.

7.3 FUTURE SUPPLY PROJECTS AND PROGRAMS

While no future supply projects are currently planned for the DWP, the DWP has identified and evaluated alternative water sources for its service area and determined that some local options have yet to be explored. Sixteen alternative water sources were evaluated in the *Reconnaissance Analysis of Alternative Water Sources* document (see Appendix D). The alternative sources were evaluated by potential volume supplied, capital costs, operations and maintenance costs, technical feasibility, and political feasibility.

Based on the study, four alternatives will be focused on in the next 10 to 20 years:

- maximizing extraction from each hydrologic subunit.
- Enhance groundwater recharge.
- Purchase excess water supply from BBCCSD.
- Utilize previously unused high fluoride wells belonging to BBCCSD through cooperative blending using DWP water.

Together, these four sources have the potential to increase the DWP's supply by several hundred acre-feet per year. A list of all potential projects investigated by the DWP can be found in the document.

7.4 FACTORS IMPACTING SUPPLY RELIABILITY

There are a variety of factors that can affect water supply reliability. The factors that might result in supply reliability issues for the DWP are indicated with an "X" in Table 7.1.

Table 7.1 Factors Resulting in Inconsistency of Supply

Water Supply Sources	Specific Source Name	Legal	Environmental	Water Quality	Climatic	Additional Information
Groundwater	Groundwater	-	-	X	X	-

7.4.1 Water Quality

The water quality within the Basin is generally good. The eastern part of the Basin is characterized by elevated fluoride. Other problem constituents include manganese, uranium, and arsenic. Water quality issues have resulted in occasional blending projects, water treatment plants, and wells being shut down. However, water quality issues are not anticipated to disrupt groundwater supply (DWR, 2004).

7.4.2 Climate

Where reliable climate change forecasts are not available for the San Bernardino Mountains, climate change is likely to add uncertainties to supply planning.

7.5 SUPPLY AND DEMAND COMPARISON

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

Two aspects of supply reliability were considered. The first relates to real-time demand and is primarily a function of the adequacy of the supply. The second aspect is climate-related, and involves the availability of water during drought periods or if there is a long-term reduction in precipitation. This section compares water supply and demand for three scenarios: normal year, single-dry year, and multiple-dry years.

- **Normal Year**:
  A normal year is a year that most closely represents median precipitation levels and patterns. Water supply quantities for this condition are represented by historical average yields.
- **Single-Dry Year**:
  This is defined as a year with minimum useable supply. The supply for this condition is derived by the minimum historical annual yield.
- **Multiple-Dry Years**:
  This is defined as the three consecutive years with the minimum useable supply. Water systems are more vulnerable to droughts of long duration, which deplete water supply reserves. The supply for this condition is defined from the minimum, recorded historical three year supply.

7.5.1 Methodology

In the event of single and multiple dry years, reduced rainfall results in lower groundwater recharge. However, aquifers contain more water in storage than the perennial yield. Thus, water remains available. The DWR estimates total storage of the Basin at approximately 42,000 af. Provided annual pumping does not exceed safe yield, the groundwater basin will continue to contain sufficient water during multiple dry-year conditions.

The DWP's system has an instantaneous pumping capacity of roughly 4,300 gallons per minute (gpm) with approximately 500 gpm of this capacity is from slant wells. During droughts, water production from slant wells will decline, requiring vertical wells to make up lost production.

Due to the estimated 42,000 acre-feet of storage capacity in the Basin and proper groundwater management, there should be sufficient groundwater to meet future supply

needs.

7.5.2 Basis of Water Year Data

The assumptions that underlie the calculations of supply and demand are based on historical demand data for the DWP.

Table 7.2 Basis of Water Year Data

Water Year Type	Base Year(s)
Average Water Year	2010
Single-Dry Water Year	2001
Multiple-Dry Water Years	2000-2002

To determine the average demand year, the DWP's historical per capita water usage was evaluated. By normalizing water consumption with population and thus expressing consumption in gpcd, differences in demand due to growth were eliminated. The historical per capita consumption from the period 1995 to 2010 is shown in Figure 7.1. The average consumption during this period was 96 gpcd.

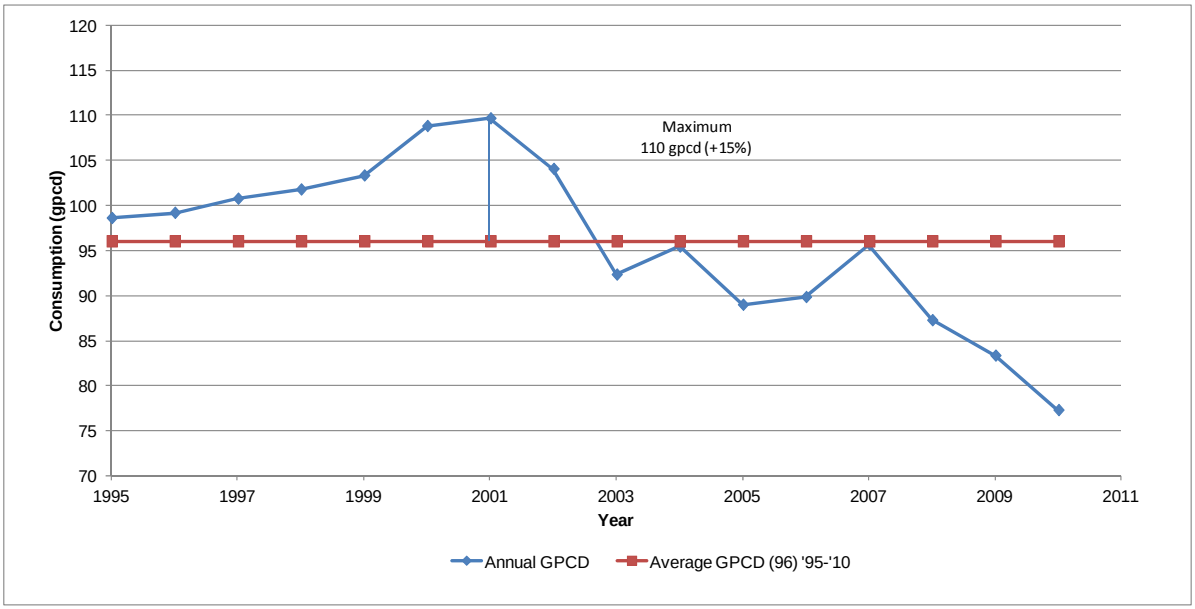

Figure 7.1 Historical Per Capita Consumption Variation

The years chosen to represent the following scenarios were determined by examining demand shifts. The 2001 demand was 15 percent greater than the average gpcd demand over the rest of the 16-year period. Per capita consumption in the multiple-dry year period of 2000 to 2002 was approximately 108 gpcd, 12 percent higher than the average usage. For conservative planning purposes, demand was therefore increased by 15 and 12 percent for the single-dry year and multiple-dry year, respectively.

The supply source breakdown for these historical conditions is presented in Table 7.3.

Table 7.3 Supply Reliability Source Breakdown – Historic Conditions

Water Supply Source	Average Year (2010)	Single Dry Year (2001)	Multiple Dry Years		
			2000	2001	2002
Groundwater	98%	98%	98%	98%	98%
Imported Water	2%	2%	2%	2%	2%

Notes:
Source: DWP production records.

Despite changing conditions, the demand from groundwater and imported water use has remained constant and is projected to do so in the future.

7.5.3 Average Year

The projected demand and supplies are compared in 5-year increments in Table 7.4, Table 7.5, and Table 7.6. First, the projected average year demand and future years are compared with 2010 demand. It is projected that DWP has sufficient supplies available to meet demand through year 2035 under average year conditions.

Table 7.4 Supply and Demand Comparison – Normal Year (AFY)

Water Sources	2010	2015	2020	2025	2030	2035
Supply						
Imported Water Supply	53	55	57	59	61	63
Groundwater Supply	2,152	2,228	2,307	2,389	2,474	2,562
Total Supply	**2,205**	**2,283**	**2,364**	**2,448**	**2,535**	**2,625**
Demands						
Imported Water	53	55	57	59	61	63
Groundwater	2,152	2,228	2,307	2,389	2,474	2,562
Total Demand	**2,205**	**2,283**	**2,364**	**2,448**	**2,535**	**2,625**
Difference Supply - Demand	**0**	**0**	**0**	**0**	**0**	**0**

Notes:
1) Supplies are assumed to be equal to demand, up to 3,100 afy (DWP's share of the operating safe yield of the groundwater basin).

As shown in Table 7.4, it is projected that DWP has sufficient supplies available to meet demand through year 2035 under average year conditions.

7.5.4 Single-Dry Year

As described in the previous section, the projected average year water demand was increased by 15 percent to estimate the water demand during a single-dry year.

Table 7.5 Supply and Demand Comparison – Single Dry Year (AFY)

Water Sources	2010	2015	2020	2025	2030	2035
Supply						
Imported Water Supply	61	63	65	68	70	73
Groundwater Supply	2,475	2,563	2,654	2,748	2,845	2,946
Total Supply	**2,536**	**2,626**	**2,719**	**2,815**	**2,915**	**3,019**
Demands						
Imported Water	61	63	65	68	70	73
Groundwater	2,475	2,563	2,654	2,748	2,845	2,946
Total Demand	**2,536**	**2,626**	**2,719**	**2,815**	**2,915**	**3,019**
Difference Supply - Demand	**0**	**0**	**0**	**0**	**0**	**0**

Notes:

1) Supplies are assumed to be equal to demand, up to 3,100 afy (DWP's share of the operating safe yield of the groundwater basin).

The DWP is projected to have sufficient supply available to meet water demand through 2035 for single dry year conditions.

7.5.5 Multiple-Dry Years

Projected average year water demand was increased by 12 percent to estimate the water demand during multiple dry years.

Table 7.6 Supply and Demand Comparison – Multiple-Dry Years (AFY)

Water Sources	2010	2015	2020	2025	2030	2035
Supply						
Imported Water Supply	59	61	64	66	68	71
Groundwater Supply	2,410	2,496	2,584	2,676	2,771	2,869
Total Supply	**2,470**	**2,557**	**2,648**	**2,742**	**2,839**	**2,940**
Demands						
Imported Water	59	61	64	66	68	71
Groundwater	2,410	2,496	2,584	2,676	2,771	2,869
Total Demand	**2,470**	**2,557**	**2,648**	**2,742**	**2,839**	**2,940**
Difference Supply - Demand	**0**	**0**	**0**	**0**	**0**	**0**

Notes:
1. Supplies are assumed to be equal to demand, up to 3,100 afy (DWP's share of the operating safe yield of the groundwater basin).

The DWP is projected to have sufficient supply available to meet water demand through year 2035 under multiple-dry year conditions.

7.6 TRANSFER AND EXCHANGE OPPORTUNITIES

The BBCCSD is the water supplier for a portion of the Bear Valley, providing water to unincorporated areas of Big Bear City and the eastern portion of the Valley. Water transfers are possible through two emergency supply interconnections between the BBCCSD and DWP systems. These interconnections are for emergencies that disrupt the DWP's or the BBCCSD's ability to serve their customers. The interconnections are intended to be used until either agency declares water exchanges are no longer necessary.

There are no set agreements between the BBCCSD and DWP for limits on the quantity of water that could be transferred. Each transfer would be evaluated on a case-by-case basis but in no way would be allowed to affect the transferring agency's ability to supply their customers' needs (CDM, 2005).

7.7 OPPORTUNITIES FOR DESALINATED WATER

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

10631 (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.

The UWMPA requires that the UWMP address the opportunities for development of desalinated water, including ocean water, brackish water, and groundwater.

7.7.1 DWP Desalination Opportunities

No opportunities exist for development of desalinated water by the DWP. Participation in a ocean water desalination plant would be cost prohibitive as the City is located approximately 90 miles inland and located at 6,750 feet above sea level. Due to its physical location and the fact that DWP only imports 2 percent of its water supply, participating in a regional water exchange programs is not practical.

Table 7.7 Desalination Opportunities for the DWP

Sources of Water	Opportunities for Desalinated Water
Ocean Water	None
Brackish Ocean Water	None
Brackish Groundwater	None
Other	None

Groundwater Desalination

The DWP has not identified any potentially cost-effective desalination opportunities.

Seawater Desalination

The DWP has not identified any potentially cost-effective desalination opportunities.

7.8 CLIMATE CHANGE IMPACTS ON SUPPLY RELIABILITY

Because the DWP is nearly 100 percent reliant on groundwater for its potable water supply, the effects of climate change are best summarized by considering the effects of the region as a whole. These effects will likely include:

- Reduction in snowpack, which is a significant source of water as it melts and feeds aquifers in the San Bernardino Mountains
- Increase in intensity and frequency of extreme weather events
- Effects on groundwater recharge
- General decline in ecosystem health and function
- Changes to demand levels and patterns

As scientific understanding of climate change continues to advance, the nature of these impacts and the impact on water supply availability and reliability will be thoroughly studied and addressed.

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Chapter 8

WATER SHORTAGE CONTINGENCY PLAN

The UWMPA requires that UWMPs include an urban water shortage contingency analysis that includes stages of action to be undertaken in the event of water supply shortages; a draft water shortage contingency resolution or ordinance; prohibitions, consumption reduction methods and penalties; an analysis of revenue and expenditure impacts and measures to overcome these impacts; actions to be taken during a catastrophic interruption; and a mechanism for measuring water use reduction.

8.1 STAGES OF ACTION

The UWMPA requires that UWMPs include an urban water shortage contingency analysis that addresses specified issues.

> *10632. The plan will provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *10632 (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.*

8.1.1 Water Shortage Stages and Reduction Objectives

The following sections describe the DWP's water shortage stages and the conservation measures employed during each stage, as outlined in Resolution No. DWP 2007-02 (see Appendix F). These stages are only enacted during a water shortage emergency.

Permanent Water Use Policies and Efficiency Requirements

Water use efficiency requirements are detailed in the DWP's rules and regulations. Violations are considered waste and an unauthorized use of water, which result in penalties as outlined in Resolution No. DWP 2008-05 (see Appendix F).

1. Customers are encouraged to use native and water-conserving plants for landscaping.

2. Customers are required to minimize the use of turf at all new and retrofitted commercial and residential landscapes.

3. Water conservation, emphasizing water use efficiency, is required for landscaping and irrigation.

4. The DWP shall require and promote development of water conservation plans for all customers whose water use exceeds reasonable guidelines developed the DWP.

5. The DWP shall require repair of all leaks, when detected.

6. All outdoor irrigation systems shall be shut off and winterized between November 1st and April 1st, annually.

7. The DWP will establish reasonable water use and irrigation standards for all residential and commercial customers in its service area

Conservation Stage I – (5 Percent Overall Reduction of Water Use, 15 Percent Outdoor Reduction of Water Use)

Conservation Stage I exists when the DWP Board of Commissioners reviews the recommendations of the Technical Review Team and determines that a drought, water supply shortage, or a threatened water shortage exists and reductions in customer allocations are necessary. In this case, an overall 5 percent reduction of water use will be required.

The following water conservation requirements apply during a declared Conservation Stage I, as outlined in Resolution 2007-02.

1. Hose washing of sidewalks, walkways, driveways, parking areas, patios, porches or verandas is prohibited.

2. Landscape irrigation will be permitted only every other day, with addresses ending in odd numbers watering on odd numbered calendar days and addresses ending in even numbers watering on even numbered calendar days.

3. DWP water may not be used for soil compaction or dust control.

4. Washing of vehicles, trailers, buses, or boats anywhere but at commercial car washes must be conducted with the use of a bucket and a hose equipped with a shut-off nozzle.

5. Use of water from fire hydrants, except for fire protection, is prohibited.

Conservation Stage II – (10 Percent Overall Reduction of Water Use, 30 Percent Outdoor Reduction of Water Use)

Conservation Stage II includes all prohibitions and regulations as outlined in Stage I , plus the following:

1. Outdoor irrigation will be permitted only on days authorized by the DWP Board of Commissioners.

2. No new turf will be permitted in any location.

Conservation Stage III – (25 Percent Overall Reduction of Water Use, 60 Percent Outdoor Reduction of Water Use)

Conservation Stage III includes all prohibitions and regulations as outlined in Stages I and II, plus the following:

1. Outdoor irrigation will be permitted only two days per week, and will be specified by the DWP.

2. Irrigation of turf will be prohibited.

3. No DWP water will be used for ponds, streams, or fountains with a capacity of greater than 50 gallons.

4. No new turf will be permitted at any location.

Conservation Stage IV – (45 Percent Overall Reduction of Water Use, 100 Percent Outdoor Reduction of Water Use)

Conservation Stage IV includes all prohibitions and regulations as outlined in Stages I, II, and III regulations, plus the following:

1. No outdoor water use will be permitted except commercial car washes that recycle water. This includes water for irrigation, water for ponds, streams, fountains, and swimming pools.

Administration of Water Shortage Emergency Program

The existence of Stage I, Stage II, Stage III, or Stage IV conservation conditions may be declared and adopted by the DWP in accordance with California State law.

8.2 WATER SHORTAGE CONTINGENCY ORDINANCE/ RESOLUTION

UWMPs are required to include an urban water shortage contingency analysis that includes a draft water shortage contingency resolution or ordinance.

> *10632. The plan will provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *10632 (h) A draft water shortage contingency resolution or ordinance.*

The DWP's Water Shortage Response Plan is outlined in Resolution 2007-03 (see Appendix F).

8.3 PROHIBITIONS, CONSUMPTION REDUCTION METHODS, AND PENALTIES

UWMPs must include an urban water shortage contingency analysis that addresses methods to reduce consumption.

> *10632. The plan will provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *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.*
>
> *10632 (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.*
>
> 10632 (f) Penalties or charges for excessive use, where applicable.

8.3.1 Mandatory Prohibitions on Water Wasting

The DWP has permanent prohibitions in place for wasteful practices, including restrictions on the following.

- Guidelines for landscaping and outdoor irrigation
- Obligation to fix leaks, breaks, or malfunctions
- Requirements for water efficient retrofits
- Hot water line insulation requirements
- Requirements for commercial establishments such as restaurants and hotels

8.3.2 Excessive Use Penalties

Violations of the DWP's water use rules and regulations may be subject to penalties established in Resolution No. DWP 2008-05.The DWP may not terminate service due to a customer's failure to comply with the DWP's rules and regulations unless the DWP first gives notice of the violation and the consequence of the violation. Every failure to comply notice will include all of the following information.

- The name and address of the customer whose account is in violation of the DWP's rules and regulations.
- The specific nature of the violation.
- The deadline by which the customer must comply with the DWP's rules and regulations.

- The consequences of failing to comply with the DWP's rules and regulations.
- The telephone number of a DWP representative who can provide additional information regarding the notice.

When a notice of violation has been sent to an owner of a property that has multiple tenants, the DWP will endeavor to provide notice to each unit whether residential or commercial.

Within fourteen calendar days of the date of the failure to comply notice, the customer must correct the violation or contact the DWP staff regarding correction of the violation. If the customer fails to correct the violation or contact the DWP staff regarding correction of the violation, the DWP will move forward with terminating service.

After contacting DWP staff, if DWP staff determines that the customer is unable to comply with the DWP's rules and regulations within the time period prescribed by the DWP but is willing to comply and has made reasonable progress towards compliance, the DWP may grant an extension for compliance, not exceeding twelve months. If, however, the customer has not made reasonable progress to comply with said rules and regulations, the DWP will proceed to terminate service unless the customer appeals that decision to the Board of Commissioners. The customer's failure to appeal, in the case where the customer is not making reasonable progress to comply with said rules and regulations, will result in the termination of service.

8.3.3 Review Process

A customer will have the right to a hearing before the Board of Commissioners, if the DWP receives a written request for such a hearing on or before five business days after the DWP staff renders a decision. The written request for a hearing will include a statement setting forth the reasons why the customer disagrees with the decision of DWP staff. Documentation that substantiates the applicant's position must be submitted with the request for a hearing.

Upon request for a hearing, the General Manager will contact the customer regarding the proposed date for the hearing. The hearing will be conducted at the next regularly scheduled Board meeting for which the hearing can be placed on the agenda.

If the Board does not render a decision at the hearing, the Board will render a written decision on or before five business days following the date of the hearing. The decision of the Board will be final.

Upon completion of the appeal process and a determination that the customer has failed to comply with the DWP's rules and regulations, the DWP may move forward with the termination of service.

8.4 REVENUE AND EXPENDITURE IMPACTS/MEASURES TO OVERCOME IMPACTS

UWMPs are required to include an urban water shortage contingency analysis that addresses the financial impacts from reduced water sales.

> *10632. The plan will provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *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.*
>
> *10632 (g) An analysis of the impacts of each of the proposed measures to overcome those revenue and expenditure impacts, such as the development of reserves and rate adjustments.*

When water shortage contingency actions are being implemented, the DWP will utilize its water rate to cover additional expenditures.

8.5 ACTIONS DURING A CATASTROPHIC INTERRUPTION

UWMPs must include an urban water shortage contingency analysis that addresses catastrophic interruptions of water supplies.

> *10632. The plan will provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *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.*

During declared shortages, or when shortage declarations appear imminent, emergency regulations can be enacted by the DWP Board of Commissioners or the General Manager. Declared emergencies will be addressed in three phases as outlined in Resolution DWP No. 2007-03.

8.5.1 Assessment Phase

The Assessment Phase is defined as beginning upon the declaration of an emergency at the inception of the event. Upon the declaration of an emergency DWP staff will assess the emergency and its potential effects on the DWP's ability to provide water for human consumption, sanitation, and fire protection. This assessment should be completed within 48 hours or less.

Use of water outdoors for other than emergency purposes will be prohibited. Use of water indoors for purposes other than human consumption, sanitation, and fire protection will be prohibited. All other water use will be minimized.

8.5.2 Emergency Phase

The Emergency Phase will begin and continue as long as emergency conditions persist. Use of water outdoors for other than emergency purposes will be prohibited. Use of water indoors for purposes other than human consumption, sanitation, and fire protection will be prohibited. All water use will be minimized.

8.5.3 Recovery Phase

The Recovery Phase will last until normal conditions return to the DWP service area. The use of water outdoors for other than emergency purposes will be prohibited, unless the General Manager determines that restricted outdoor water use is reasonable given the current state of the DWP's water system. When restricted outdoor use is permissible, the public will be provided with a specific list of approved outdoor water uses. All water use will be minimized.

8.6 REDUCTION MEASURING MECHANISM

UWMPs must include an urban water shortage contingency analysis that addresses a method to measure the reduction in demand.

> *10632. The plan will provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:*
>
> *10632 (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.*

The DWP's water system currently has water meters on all connections. These meters record the amount of water consumed at each location. DWP will use these meters in concert with the budgeted water allocations for each customer to monitor district-wide actual reductions in water use.

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APPENDIX A
REFERENCES

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APPENDIX B

PUBLIC REVIEW AND ADOPTION MATERIALS

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RESOLUTION NO. 2012-08

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE DEPARTMENT OF WATER & POWER OF THE CITY OF BIG BEAR LAKE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA ADOPTING THE 2010 URBAN WATER MANAGEMENT PLAN

WHEREAS, the Department of Water & Power (DWP), of the City of Big Bear Lake, was created by an amendment to the City Charter, and

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610, et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan ("Plan"), the primary objective of which is to plan for the conservation and efficient use of water, ensuring sufficient water supplies and providing a mechanism for response during drought conditions; and

WHEREAS, the Urban Water Management Planning Act was updated most recently by the California State Legislature in November 2009 through the Water Conservation Bill of 2009 in response to water supplies in California, and this update includes a requirement for urban water suppliers to reduce per capita water consumption twenty percent by 2020 and document baselines, targets and compliance in the 201 0 Plan and subsequent plans; and

WHEREAS, the Plan shall be periodically reviewed at least once every five years and submitted in December of years ending in five and zero; and

WHEREAS, the DWP reviewed the Draft Urban Water Management Plan, and conducted a public hearing at a regularly scheduled Board meeting on June 26, 2012, and

WHEREAS, the DWP Board of Commissioners voted to approve the Draft Urban Water Management Plan as amended by the comments received.

NOW, THEREFORE, BE IT RESOLVED that the Board of Commissioners does here by adopt the 2010 Urban Water Management Plan dated June 26, 2012.

PASSED, APPROVED AND ADOPTED this 26th day of June 2012.

June 26, 2012
Date

Stephen D. Foulkes, Chair
DWP Board of Commissioners

ATTEST:

Diego Chavez, Secretary to the Board
DWP Board of Commissioners

CERTIFICATION

STATE OF CALIFORNIA
COUNTY OF SAN BERNARDINO
CITY OF BIG BEAR LAKE

I, Diego Chavez, Secretary to the Board of Commissioners of the Department of Water & Power, of the City of Big Bear Lake, California, do hereby certify that the whole number of members of said Board is five; that the foregoing Resolution, being Resolution No. DWP 2012-08, was duly passed and adopted by said Board and attested to by the Secretary of said Board, all at a Regular Meeting of said Board, held on the 26th day of June, 2012, that same was so passed and adopted by the following vote:

AYES: Foulkes, Giamarino, Tarras, Smith
NOES:
ABSENT: Miller
ABSTAIN:

Diego Chavez, Secretary to the Board
DWP Board of Commissioners

SEAL

Today's Weather

Notice Of Public Hearing 2010 Urban Water Management Plan Pursuant

Notice of Public Hearing

2010 Urban Water

Management Plan

Pursuant to California Water Code (CWC) section 10642 and 10608, a public hearing will be held on the 2010 Urban Water Management Plan (2010 UWMP).

The City of Big Bear Lake Department of Water and Power (DWP) will conduct a public hearing on June 26, 2012, at 9:00 am in the Board Room located at 41972 Garstin Dr. Big Bear Lake, California to receive public comment relative to the proposed 2010 UWMP and the water conservation baseline and targets associated with the Water Conservation Act of 2009. The California Water Code requires all urban water suppliers within the state serving 3,000 or more connections to prepare an Urban Water Management Plan and update them every five years, with years ending with 0 and 5. This will be an update to the DWP's 2005 UWMP. The 2010 UWMP complies with recent amendments to the CWC.

A copy of the 2010 Final Draft UWMP is available, during normal business hours, at the DWP office. You can also access this document at the DWP website at **www.bbldwp.com**.

For questions concerning the document, please contact Amelia Ray at (909) 866-5050. Written comments are requested by the close of business on June 15, 2012.

Send written comments to: DWP, Attention: Amelia Ray, PO Box 1929, Big Bear Lake, CA 92315.

Publish: 6/6/12, 6/13/12

Location:

41972 Garstin Dr

Contact

Contact

Listing ID: efe195c5-b133-5f32-9b9d-f4ed62e6df79

C Notices

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90 Public Notices

call 877-RSVPADS or 877 778-7237, or visit this internet Web site www.rsvpforeclosures.com, using the file number assigned to this case T.S.# 77088. Information about postponements that are very short in duration or that occur close in time to the scheduled sale may not immediately be reflected in the telephone information or on the internet Web site. The best way to verify postponement information is to attend the scheduled sale."
RSVP# 288684
Publish: 05/23/12, 05/30/12, 06/06/12

Notice of Public Hearing
2010 Urban Water
Management Plan

Pursuant to California Water Code (CWC) section 10642 and 10608, a public hearing will be held on the 2010 Urban Water Management Plan (2010 UWMP).
The City of Big Bear Lake Department of Water and Power (DWP) will conduct a public hearing on June 26, 2012, at 9:00 am in the Board Room located at 41972 Garstin Dr. Big Bear Lake, California to receive public comment relative to the proposed 2010 UWMP and the water conservation baseline and targets associated with the Water Conservation Act of 2009. The California Water Code requires all urban water suppliers within the state serving 3,000 or more connections to prepare an Urban Water Management Plan and update them every five years, with years ending with 0 and 5. This will be an update to the DWP's 2005 UWMP. The 2010 UWMP complies with recent amendments to the CWC.
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For questions concerning the document, please contact Amelia Ray at (909) 866-5050. Written comments are requested by the close of business on June 15, 2012.
Send written comments to: DWP, Attention: Amelia Ray, PO Box 1929, Big Bear Lake, CA 92315.
Publish: 6/6/12, 6/13/12

NOTICE OF WAREHOUSE

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sort, by and through its management and/or owners, located at 39950 Seven Oaks Road, Angelus Oaks, California 92305, will sell by auction on **June 26, 2012 at 10:30 a.m.** at former **Space Nos. 39-1/2 and 40 of Seven Oaks Mountain Resort,** the following property on behalf of **Kent Carpenter and Robin Young Carpenter,** the purported owners thereof:
Skyline Homes travel trailer, Vehicle Identification Number 1SN-900R2XGA00709, Vehicle Number 7082-0709, Old License Plate Number 2FP3243, New License Plate Number 1LR4223 (exps. 1/10), along with any and all contents therein, which travel trailer is located on what was formerly known as Spaces 39-1/2 and 40 at Seven Oaks Mountain Resort, 39950 Seven Oaks Road, Angelus Oaks, California 92305

Terms of Sale: Cash or cash equivalent only. Seven Oaks Mountain Resort, by and through its management and/or owners, reserves the right to bid and hereby notifies all prospective bidders that (i) the amount of its lien is **$16,296.00 as of May 24, 2012,** (ii) this amount will continue to increase at the rate of $14.00 per day thereafter, and (iii) this amount will be increased by the costs of the sale, including publication costs. The property is being sold "as is" without any representations or warranties of any kind. Prospective bidders are responsible for determining whether taxes, liens, assessments, registration fees, or any other type of fees or penalties are due and owing to the State of California, the County of San Bernardino, and/or any other governmental entity in connection with the property being sold, and the successful bidder will be responsible for paying any such items after purchasing the property. The successful bidder must remove the property at his/her/its sole expense immediately after completion of the sale unless other arrangements are made, in writing, with the management and/or owners of Seven Oaks Mountain Resort. Sale is subject to cancellation.
Publish: 6/6, 6/13/2012

NOTICE TO
CREDITORS
OF BULK SALE
(UCC Sec. 6105)

Escrow No. 12-32976

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PUBLIC NOTICE
NOTICE OF LIEN SALE
NOTICE IS HEREBY GIVEN that the undersigned intends to sell the personal property described below to enforce a lien imposed on said property pursuant to Chapter 10, Sections 21700-21716 of the Business & Professions Code, Section 2328 of the UCC, Section 535 of the Penal Code and provisions of the Civil Code. The undersigned, **Big Bear Self Storage; 624 W. Country Club Blvd., Big Bear City, CA P.O. Box 326, FAWNSKIN, CA 92333,** will sell at public sale by competitive bidding to the highest bidder, at the above address at **12:00 PM on Tuesday the 12th day of June 2012** the abandoned miscellaneous good or personal property described below:

Tenant/Unit#/Size/Desc.
Brandy Daenell
Unit # B 21
Unit Size 5X10
Miscellaneous items.

Reyna Ybarra
Unit # B 11
Unit Size 10X15
Miscellaneous items.

Landlord reserves the right to bid at sale. Purchased goods are sold "as is" for cash only and must be removed at the time of sale. Sale is subject to cancellation in the event of settlement between landlord and obligated party.

Big Bear Self Storage,
624 Country Club Blvd., Big Bear City, CA 92314. (909) 585-2498.
Pub; 5/30/2012, 6/6/12

T.S. No. 11-6399-11 Loan No. 0017804436
NOTICE OF
TRUSTEE'S SALE
YOU ARE IN DEFAULT UNDER A DEED OF TRUST DATED 5/21/2004. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDING AGAINST YOU, YOU SHOULD CONTACT A LAWYER. A public auction sale to the highest bidder for cash, cashier's check drawn on a state or national bank, check drawn by a state or federal credit union, or a check drawn by a state or federal savings and loan association, or savings association, or savings bank specified in Section 5102 of the Financial Code and authorized to do business in this

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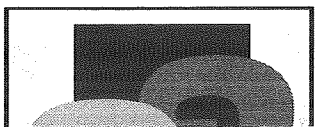
contacting the county recorder's office or a title insurance company, either of which may charge you a fee for this information. If you consult either of these resources, you should be aware that the same lender may hold more than one mortgage or deed of trust on the property. NOTICE TO PROPERTY OWNER: The sale date shown on this notice of sale may be postponed one or more times by the mortgagee, beneficiary, trustee, or a court, pursuant to Section 2924g of the California Civil Code. The law requires that information about trustee sale postponements be made available to you and to the public, as a courtesy to those not present at the sale. If you wish to learn whether your sale date has been postponed, and, if applicable, the rescheduled time and date for the sale of this property, you may call (800) 280-2832 or visit this Internet Web site www.auction.com, using the file number assigned to this case 11-6399-11. Information about postponements that are very short in duration or that occur close in time to the scheduled sale may not immediately be reflected in the telephone information or on the Internet Web site. The best way to verify postponement information is to attend the scheduled sale. Date: 5/22/2012 THE WOLF FIRM, A LAW CORPORATION 2955 Main Street, 2nd Floor Irvine, California 92614 Foreclosure Department (949) 720-9200 Sale Information Only: (800) 280-2832 Auction.com Frank Escalera, Team Lead
P951945
Publish: 5/30, 6/6, 06/13/2012

The 2012-13 Proposed Budget for the Bear Valley Unified School District will be available for inspection from June 13, 2012 to June 20, 2012 during regular business hours, at Bear Valley USD Office, 42271 Moonridge Road, Big Bear Lake, CA 92315.

The 2012-13 Proposed Budget Public Hearing for the Bear Valley Unified School District will be held on June 20, 2012 at 6:30 p.m. at Bear Valley USD, 42271 Moonridge Road, Big Bear Lake, CA 92315.
Publish: 6/6/12



APPENDIX C

URBAN WATER MANAGEMENT PLAN ACT

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Established: AB 797, Klehs, 1983
Amended: AB 2661, Klehs, 1990
AB 11X, Filante, 1991
AB 1869, Speier, 1991
AB 892, Frazee, 1993
SB 1017, McCorquodale, 1994
AB 2853, Cortese, 1994
AB 1845, Cortese, 1995
SB 1011, Polanco, 1995
AB 2552, Bates, 2000
SB 553, Kelley, 2000
SB 610, Costa, 2001
AB 901, Daucher, 2001
SB 672, Machado, 2001
SB 1348, Brulte, 2002
SB 1384, Costa, 2002
SB 1518, Torlakson, 2002
AB 105, Wiggins, 2004
SB 318, Alpert, 2004
SB 1087, Florez, 2005
SBX7 7, Steinberg, 2009

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

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

10610.2. (a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

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

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

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS
Article 1. General Provisions

10620.

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

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

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

(d)

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

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

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

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

10621.

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

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

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

Article 2. Contents of Plans

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

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

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

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

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

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the

past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

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

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

(1) An average water year.
(2) A single dry water year.
(3) Multiple dry water years.

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

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

(e)

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

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.

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

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

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.

(K) Conservation pricing.

(L) Water conservation coordinator.

(M) Water waste prohibition.

(N) Residential ultra-low-flush toilet replacement programs.

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

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

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

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

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

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

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

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

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

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

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the ‘‘Memorandum of Understanding Regarding Urban Water Conservation in California,’’ dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

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

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

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

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

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

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

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

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

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

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

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

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

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

(b) A description of the 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.

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

Article 2.5 Water Service Reliability

10635.

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled

pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

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

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

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

Articl 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

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

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

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

10644.

(a) An urban water supplier shall file with the department and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be filed with the department and any city or county within which the supplier provides water supplies within 30 days after adoption.

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

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

CHAPTER 4. MISCELLANEOUS PROVISIONS

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

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

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

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

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

supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

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

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

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

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

10657.

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

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

APPENDIX D

GROUNDWATER BASIN INFORMATION

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Bear Valley Groundwater Basin

- Groundwater Basin Number: 8-9
- County: San Bernardino
- Surface Area: 19,600 acres (30.6 square miles)

Basin Boundaries and Hydrology

This groundwater basin underlies Bear Valley and is bound by crystalline rocks of the San Bernardino Mountains in southern San Bernardino County. Big Bear Lake, which lies in the western portion of the valley, receives runoff from Grout Creek to the northwest, Van Dusen Canyon to the northeast, Sawmill Canyon to the southeast, Sand Canyon to the southeast, Knickerbocker and Metcalf Creek to the south and North Creek to the southwest. Baldwin Lake, typically dry, lies the northeast portion of the valley, and receives occasional runoff from Van Dusen Canyon to the northwest and Shay Creek to the south (Geoscience 2001). Average annual precipitation to the valley ranges from 23 to 29 inches.

Hydrogeologic Information

Water Bearing Formations

Groundwater in the Bear Valley Groundwater Basin is found primarily in the unconsolidated alluvial deposits. The water-bearing deposits in the valley have been separated into upper, middle, and lower aquifers (Geoscience 1999). The upper and middle aquifers are the primary water producers. In addition, wells completed in underlying bedrock produce as much as 300 gpm (Geoscience 1999).

Upper Aquifer. The upper aquifer is composed of Holocene alluvium, which typically consists of sand and gravel deposits that transmit water readily. This aquifer extends through the eastern part of the basin where it reaches more than 200 feet thick, but is thin and unsaturated in the western part of the basin (Geoscience 2001). Groundwater found in this aquifer is generally unconfined to semi-confined (Geoscience 1999).

Middle Aquifer. The middle aquifer is primarily composed of older alluvium and older fan deposits containing various amounts of sand, silt, gravel, and clay. This aquifer, which ranges from 150 to more than 800 feet thick, is found throughout the basin (Geoscience 2001). Groundwater found in older fan sediments are generally unconfined to semi-confined in this aquifer; whereas, groundwater in the older alluvial sediments is generally confined under fine sediments (Geoscience 1999).

Lower Aquifer. Data are scarce concerning the lower aquifer. The unit consists of gravel, coarse sand, pebbles, and sandy clay and is likely restricted to the eastern part of the basin (Geoscience 2001). One well near Baldwin Lake encountered these deposits about 120 feet thick.

Restrictive Structures

A groundwater divide exists between Big Bear Lake and Baldwin Lake in the vicinity of the Big Bear Airport (Geoscience 1999). Faults are mapped cutting Pleistocene alluvium, but it is not known if these are barriers to groundwater movement.

Recharge Areas

Recharge of this basin is likely from percolation of precipitation and runoff and underflow from fractured crystalline rocks.

Groundwater Level Trends

Groundwater levels within the basin generally correlate with annual fluctuation of precipitation, with peak water levels occurring during winter months and the highest peaks occurring during years with increased annual precipitation. At higher elevations within the basin, seasonal levels fluctuate more so than at lower elevations. Water levels in the basin declined as much as 45 feet between 1984 and 1991 because of reduced precipitation. Water levels returned to their 1983 levels by 1999 (Geoscience 1999). In 1992, groundwater levels dropped 30-feet in response to the Big Bear earthquake, but recovered by 1998 (Geoscience 1999).

Groundwater Storage

Groundwater Storage Capacity. The total storage capacity is estimated at 42,000 af (DWR 1975).

Groundwater in Storage. No information is available.

Groundwater Budget (Type A)

Average inflow of 6,240 af/yr includes percolation of water from precipitation and surface flow minus the affects of evapotranspiration and average outflow of 4,212 af/yr is chiefly from pumping (Geoscience 1999; 2001). Annual groundwater production from 1982 through 1998 ranged from 1,352 to 1,697 af with an average of 1,485 af/yr (GeoScience 1999). Pumping in 2000 was about 2,946 af (Big Bear City DWP 2002).

Groundwater Quality

Characterization. Groundwater within this basin is mainly calcium bicarbonate in character, except for water in the middle aquifer between Baldwin Lake and Big Bear Lake, which tends to have higher concentrations of sodium (Geoscience 2001). TDS content in the eastern portion of the basin ranges from 210 to 360 mg/L without any significant differences between the upper and middle aquifers (Geoscience 1999). In the western part of the basin, TDS concentrations range from 94 to 458 mg/L (Geoscience 2001). Water sampled from 31 public supply wells has an average TDS content of approximately 250 mg/L and a range from 112 to 384 mg/L.

Impairments. Water from wells in the eastern part of the basin have had elevated fluoride content, and one well that is screened in all aquifers has

fluoride concentration that has ranged from 6.3 to 9.0 mg/L (Geoscience 2001).

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	33	7
Radiological	37	0
Nitrates	32	0
Pesticides	20	0
VOCs and SVOCs	31	0
Inorganics – Secondary	33	5

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: to 1,000 gal/min	Average: 500 gal/min (DWR 1975)
	Total depths (ft)	
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
City of Big Bear DWP	Groundwater levels	57
City of Big Bear DWP	Miscellaneous water quality	57
Department of Health Services and cooperators	Title 22 water quality	52

Basin Management

Groundwater management:	City of Big Bear Department of Water and Power manages the basin under a master plan (Wilson 2002).
Water agencies	
Public	Big Bear City Community Services District, City of Big Bear Department of Water and Power
Private	

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Errata

Substantive changes made to the basin description will be noted here.

Reconnaissance Level Analysis of Alternative Water Sources for the DWP Final Report: March 30, 2010

Groundwater is the only source of supply currently available to the City of Big Bear Lake, Department of Water and Power (DWP). The best estimate of the safe yield of the groundwater basins currently utilized by the DWP is approximately 3,100 af/yr (Ref. 1). The DWP's projected demand will likely exceed this amount within the next 15 – 20 years. At build-out, the DWP is projected to require between 530 af/yr and 950 af/yr of additional water supply (or equivalent reductions in future demand per customer). The higher figure will be used for planning in order to provide for a reasonable contingency.

This report has been prepared by the Alternative Water Source Committee and the staff of the DWP. The purpose of this analysis is to review and evaluate a variety of alternative approaches for meeting the long term water supply needs of the DWP's customers. This analysis is based solely on currently available information, and there was no attempt to develop new information for any of the alternatives.

The alternatives considered were derived from a preliminary list developed in an attempt to cover the fullest possible range of alternatives. In many cases, the individual alternatives on the original list that were similar in nature have been combined in this analysis. For ease of review, the alternative numbers from the original list are included under each alternative considered below.

Each alternative was evaluated based on our best estimate of the following factors: 1) the amount of additional water provided; 2) the capital and O&M costs required for implementation; 3) the technical feasibility; and 4) the political feasibility. To the extent possible these factors were evaluated based on previous studies of water resources within the Big Bear Valley. Where applicable, studies of other areas have also been used. Where little or no information is available, a "best estimate" has been provided and the need for additional study noted. As a reconnaissance level analysis, no specific engineering studies were undertaken to refine the expected costs or effectiveness of each alternative. In some cases only relative costs could be estimated and were used to prioritize different alternatives.

For wells and other facilities where cost estimates were available, the cost per acre-foot was calculated assuming the capital costs of the project would be financed at 5% over 30 years. The resulting annualized capital costs were then added to the estimated annual O&M costs (without any adjustments for inflation) to determine the estimated annual cost of each alternative. The cost per year was then divided by the expected water produced per year to determine the expected cost per acre-foot. Well O&M costs were based on the current DWP average cost of water from wells of $300 per af/yr.

For pipelines, the capital cost was assumed to be $150 per foot. Because pipelines have a life expectancy of over three times the financing period, the above method would significantly overestimate the average cost per year over the full life of the pipeline. Consequently, for

pipelines the installation cost was assumed to be financed at 5% for 30 years and the 30 year total cost (installation plus financing) was then divided by the expected life of 100 years to get an average cost per year.

It is recommended that the Board of Commissioners utilize this analysis to select a sub-set of alternatives for further, more detailed analysis. To this end we have prioritized each alternative into three categories:

Priority 1 – definitely worth further study;
Priority 2 – probably worth at least some further study; or
Priority 3 – not worth pursuing at this time, but may become viable in the future.

No alternatives are recommended to be removed from consideration.

Alternative 1. Full utilization of the perennial yield of groundwater basins available to the DWP.

The DWP's most recent estimate of the perennial yield of the groundwater basins available to the DWP and the 5 year average (2005-09) groundwater production by subunit are shown in Table 1.

Table 1. Perennial Yields and Production by Subunit (acre-feet/year)

Subunit	Geoscience Estimate of Perennial Yield (Ref 1)	Estimated Pvt Well Production (Ref 28)	Assumed Available to the DWP (Yld - Wells)	5 year Average Groundwater Production by DWP (Ref 2)
Grout Creek	280	7	273	98.6
Mill Creek	100 – 175	3	97 – 172	12.0[(a)]
Village	250	3	247	182.0
Rathbone	1,100	135	965	935.3
Division w/ NS "F"	540	2	538	622.1
North Shore w/o NS "F"	240	5	235	18.7
Erwin	890	14	429[(b)]	592.3
West Baldwin	500-1,000	?	28 – 528[(c)]	0
TOTAL	3,900 – 4,475	169	2,812 – 3,351	2,460.9

[(a)] Only used during 2007 and 2008 due to water quality issues
[(b)] Assumes 447 af/yr (5yr avg production 2004-08) by BBCCSD (Ref. 30)
[(c)] Assumes 472 af/yr (5yr avg production 2004-08) by BBCCSD (Ref. 30)

The perennial yield estimates shown on Table 1 are based on a variety of different methods and data. For some subunits there is a long history of pumping data, whereas for other subunits there is almost no pumping data at all. While the accuracy of the perennial yield figures shown on Table 1 is unknown, it is clear that they simply represent our best estimate given the available information. As additional data becomes available, they may need to be revised.

A new study has recently been completed that attempts to estimate the average annual amount of water recharged into the valley's groundwater basins using a sophisticated computer model (Ref 29). The model divides the valley into square grids (2 acres each) and estimates the

amount of precipitation and groundwater recharge into each grid. The input for the precipitation model is the 2006 data from the CIMIS precipitation gauge near the golf course in Moonridge. Based on the data from this one point (and one year) it assigns a precipitation value to each grid using a 23 year averaging model and the difference in elevation between the grid point and the Moonridge gauge (Ref. 29, page 3-18 and 3-24). The output from this model indicates significantly higher values for annual recharge than the perennial yield values shown in Table 1 (Ref. 29, Table 3-11). While interesting and potentially valuable in the long term, the DWP has serious concerns about the computer model approach given that it is based on one year's data from one point in the valley. Until the model can be verified by actual precipitation data over a long period of time, we are reluctant to use it for planning purposes. We will, however, take it to be at least one indication that there may be somewhat more groundwater available than previously believed, and that drilling additional wells is a viable alternative for expanding the valley's domestic water supply. We certainly do not believe it provides a sufficient justification for abandoning any of the other alternatives discussed in this analysis.

The DWP continues to believe that one of the most reliable and direct means of establishing the yield of a groundwater basin is through long term pumping of the basin combined with consistent monitoring of groundwater levels as they respond to that pumping. In an attempt to refine the perennial yield estimates shown on Table 1, the DWP has begun a program to "stress" particular subunits on a consistent basis by deliberately exceeding the estimated yield of a particular subunit by roughly 10%. Over an extended period of time this will provide valuable new data to refine the yield estimates. Unfortunately, groundwater basins respond fairly slowly, and it will likely take many years (through both wet and dry periods) before significant revisions to the yield estimates will be possible.

The DWP does not currently have the facilities to fully utilize the perennial yield from all of the subunits shown. It is therefore necessary to evaluate each subunit to determine the ability of the DWP to access the full yield and the new facilities that will be needed.

Grout Creek Subunit

The Grout Creek Subunit is primarily composed of fractured granite with a low transmissivity[1]. For this reason traditional domestic wells (with a 50 foot sanitary seal) have limited production capacity in this subunit and depend on the number of fractures that are intercepted by the well and the volume of water in these fractures. A shallow (roughly 50 foot) layer of water bearing alluvium exists in the southeastern portion of this subunit. To utilize water from this shallow layer for domestic purposes, however, requires the installation of a small treatment plant. The DWP is currently working with the regulatory agencies to design an appropriate treatment process to allow this shallow groundwater to be utilized for domestic purposes. The DWP is also in the process of completing a new well in the fractured granite portion of this subunit (Cherokee Well) which is expected to produce 50 gpm and will increase the utilization of this groundwater subunit.

To meet the estimated build-out demand of the Fawnskin system of 204 af/yr (Ref. 28, Table 4-1) we assume will require approximately 2 additional wells into the fractured granite (assuming 50 gpm/well on an 80% duty cycle = 65 af/yr/well) or one additional alluvial well

[1] Transmissivity is the rate that groundwater moves within an aquifer.

and treatment system. The estimated cost of constructing 2 additional fractured granite wells ($750,000 per well) is $1.5 million. It is assumed that the cost of one alluvial well and treatment system yielding the same amount of water will be comparable to this figure. Using the assumptions described in the introduction this project would produce water for a total cost of $1,050 per acre-foot (130 af/yr of assumed new capacity).

The estimated build-out demand for the Grout Creek Subunit of 204 af/yr represents 73% of the estimated perennial yield (see Table 1). To utilize the excess yield (roughly 70 af/yr) in other parts of the DWP system would require the construction of an additional well and a pipeline from the eastern edge of Fawnskin to the corner of North Shore Drive and Stanfield Cutoff. The estimated cost of constructing 1 additional well ($750,000) and roughly 4 miles of pipeline at $150/foot is $3.9 million. Using the assumptions described in the introduction this project would produce water for a total cost of $1,880 per acre-foot (70 af/yr of assumed new capacity). It should be noted that this pipeline could also be used to connect wells in the various North Shore Subunits to the DWP system which would lower the cost per acre-foot for the pipeline.

Mill Creek Subunit

The alluvial aquifer in the Mill Creek Subunit is divided vertically into an upper portion with an estimated yield of 100 af/yr and a lower portion with an estimated yield of 75 af/yr. Currently there is one production well in the upper portion and it is estimated that 1 additional well pumping at 50 af/yr will be required to utilize the full yield of the upper portion of this subunit. However, water samples from the existing well have recently indicated levels of Uranium that exceed the Maximum Contaminant Level (MCL) for drinking water. Well head treatment will, therefore, be required before this water can be utilized by DWP customers.

There are currently no production wells in the lower portion of this subunit due to Arsenic levels that exceed the MCL for drinking water. Well-head treatment will be required before the lower portion of the subunit can be utilized by DWP customers.

The cost to fully utilize the Mill Creek Subunit therefore includes 2 additional wells (one in the upper and one in the lower portion) at $750,000/well and well-head treatment for three wells at $100,000/well for a total of $1.8 million capital investment. Using the assumptions described in the introduction plus $600/af for well-head treatment yields a total cost of $1,570 per acre-foot (175 af/yr of assumed yield).

Village Subunit

The DWP is currently pumping at a rate that is 74% of the full yield of this subunit (5 year average pumping at 182 af/yr vs. an estimated yield of 247 af/yr). The perennial yield of this subunit was, in fact, exceeded for several years resulting in a steady decline in water levels even during wet periods. Pumping within this subunit has been recently reduced and it appears the DWP has the capacity to fully utilize the perennial yield. Therefore, no additional wells or "stress tests" are considered in this subunit.

Rathbone Subunit

The ability of the DWP to fully utilize the perennial yield of the Rathbone Subunit has been limited in recent years due to the failure of 3 wells in the Lakeplant well field. The DWP has completed one replacement well (Lakeplant #5) and drilled a second replacement well

(Lakeplant #6) which will be completed in 2010. A third Lakeplant replacement well (Lakeplant #7) is planned for the future. An additional well was drilled towards the middle of this basin near Elm Street (Moonridge well) but it has not been equipped due to low production volume 40 gpm.

The DWP is currently pumping 97% of the estimated yield of the Rathbone Subunit (5 yr avg pumping is 935 af/yr vs. an estimated yield of 965 af/yr – see Table 1). It is believed that drilling and equipping the above described new wells will allow the DWP to fully utilize the perennial yield from this subunit and to "stress test" the Rathbone Subunit by pumping approximately 10%-20% above the estimated yield.

The cost to drill and equip 1 additional well in the Lakeplant well field ($750,000) and equip the Moonridge well ($350,000) would be approximately $1.1 million. Assuming a total production of 250 acre-feet/yr for the two wells and using the assumptions described in the introduction, results in a weighted average cost of $580 per acre-foot ($760/af for the Moonridge well and $540/af for the Lakeplant well #7)..

Division and North Shore "F" Subunit

Two wells (#1 and #4) in the Division well field have been removed from production in recent years due to age and Manganese contamination and one new well (McAllister) has been added. A well to replace Division wells #1 and #4 was drilled during 2008 (Division #8) and is scheduled to be operational in 2010.

Even without the proposed replacement well, the DWP is currently pumping roughly 116% of the estimated yield from this subunit (5 yr avg pumping is 622 af/yr vs. an estimated yield of 538 af/yr, see Table 1). To date, no systematic drop in water levels has been observed due to this "stress test" but several years of additional data will be required before a re-evaluation of the yield will be possible. It is worth noting that an average of 834 af/yr (155% of the estimated yield) was pumped from this basin from 1975 through 1990. This level of pumping did appear to result in a general decline in water levels and pumping was reduced to an average of 535 af/yr from 1990 through 2005. The current level of pumping is about 75% of the 1975-1990 pumping rate and will provide additional data to evaluate the yield in the future.

The cost to drill 1 additional well in the Division well field is assumed to be $750,000. Assuming a total production of 200 acre-feet/yr from this well and using the assumptions described in the introduction, results in a total cost of approximately $540 per acre-foot. However, if the yield from this subunit is in fact 538 af/yr this new well will provide operational flexibility to meet peak demands but it will not provide additional new water to the DWP system.

North Shore Subunit, Area "A"

North Shore Subunit "A" covers the area east of Fawnskin and includes the existing Moon Camp Subdivision and a proposed new residential subdivision. The estimated yield from this Subunit is 29 af/yr (Ref. 28, Table 4-2) and there are currently private wells which utilize approximately 5 af/yr (Ref. 28, Table 4-2). The proposed residential subdivision has drilled a well that appears capable of extracting the remaining estimated yield (24 af/yr) from Subunit "A". If this well is connected to the Fawnskin system the excess capacity could be available

to the rest of the Fawnskin system (or the rest of the DWP system if the pipeline considered in the Grout Creek Subunit section is constructed).

Assuming the cost to complete the new well is paid by the new residential subdivision, the only cost to utilize any excess yield from Subunit "A" would be the O&M cost which is assumed to be $300/af.

North Shore Subunit, Area "B"

North Shore Subunit "B" consists of mostly land owned by the US Forest Service (USFS). The estimated yield from this subunit is 71 af/yr (Ref. 28, Table 4-2). The yield from this subunit is currently being utilized by the USFS to provide water for the Serrano Campground, Meadows Edge picnic area, and the Discovery Center. Big Bear Shores RV Park, Lighthouse RV Park, and the Observatory also have wells in this subunit. The RV Park is currently utilizing an average of 19 af/yr (Ref. 2- 5 yr average 2005-09), but the other uses are not directly measured. The combined pumping for all uses is estimated to be roughly 3 times the RV Park usage or 51 af/yr. The estimated 20 af/yr excess yield could be accessed by the DWP by drilling an additional well and constructing a pipeline to the corner of North Shore Drive and Stanfield Cutoff. Any new wells in this subunit would have to be located on private land and groundwater studies may be needed to demonstrate that additional groundwater extraction would not adversely affect sensitive habitats.

The cost to drill and equip 1 well in Subunit "B" is assumed to be $750,000. Assuming a total production of 20 acre-feet/yr for this well and using the assumptions described in the introduction, results in a total cost of approximately $2,740 per acre-foot. This analysis assumes the proposed relocation of the zoo to the Discovery center will provide a pipeline of sufficient size to get the water from Subunit "B" into the DWP system, and no cost for a pipeline is included. This may not be the case and the DWP may incur some cost to increase the size of the pipeline to handle the extra flow. On the other hand, wells in this area will likely be shallow and the DWP may be able to utilize a smaller drill rig which could reduce the drilling cost for the well.

North Shore Subunit, Areas "C" and "D"

North Shore Subunits "C" and "D" extend from roughly Meadows Edge Picnic area to Stanfield Cutoff and is entirely USFS property. The combined estimated yield from these two subunits is 113 af/yr. The Forest Service is very unlikely to allow wells to be drilled on their property due to the possible adverse affect on the sensitive wet meadow habitat in Subunit "C". It is assumed that none of this yield will be available to the DWP.

North Shore Subunit, Area "E"

North Shore Subunit "E" extends from Stanfield Cutoff to just east of the Catholic Church. The estimated yield from this subunit is 27 af/yr (Ref. 28, Table 4-1). There are no known wells in this subunit.

The cost to drill and equip 1 well in Subunit "E" is assumed to be $750,000. Assuming a total production of 27 acre-feet/yr for this well and using the assumptions described in the introduction, results in a total cost of approximately $2,110 per acre-foot.

Erwin Subunit

The yield from the Erwin Subunit is shared between the BBCCSD and the DWP. The BBCCSD has the capacity to pump 500 af/yr from the Erwin subunit (Ref. 29, Table 7-1, wells 2 & 10 and the Greenspot Spring). The average amount actually produced from the Erwin Subunit by the BBCCSD is assumed to be approximately 447 af/yr. The DWP therefore has available approximately 429 af/yr of the yield from the Erwin Subunit.

The data in Table 1 indicate that the total pumping is approximately 118% of the estimated yield (1,053 af/yr vs. the estimated yield of 890 af/yr). To date, no systematic drop in water levels has been observed due to this "stress test", and it appears that the estimated perennial yield needs to be re-evaluated.

A deep test well completed in the central Sugarloaf area (Magnolia well) indicated the potential for significant additional pumping capacity. This well may or may not be part of the current Erwin Subunit yield estimate because it is located on the border between the Erwin and West Baldwin Subunits. Monitoring data on the Magnolia well have shown near constant water levels for the past three years, and a recent pump test indicated very little interference between the Magnolia well site and the existing Maple production well.

Based on the test well results we estimate that the pumping capacity of the Magnolia well will be in the range of 200-300 gpm and thus provide 250-350 af/yr assuming an 80% duty cycle. However, in order to determine which subunit the well is pumping from, it will be necessary to construct the well; operate it for a period of years; and monitor the groundwater levels within both the Erwin and West Baldwin Subunits.

The cost to drill and equip the Magnolia well is estimated to be $1 million due to the depth. Operating costs will also be higher due to the greater depth to water and are assumed to be $450 per acre-foot (50% higher than other wells). With these assumptions and those described in the introduction, we estimate the total cost for water from this well to be $710 per acre-foot (assuming 250 af/yr of production).

West Baldwin Subunit

The DWP currently has a small well in the West Baldwin Subunit (Sawmill well) that was drilled in 1956 and is not currently in use. As discussed above, the Magnolia well may also be part of the West Baldwin Subunit. Additional water resources are potentially available from this subunit due to the large uncertainty in the perennial yield estimate. Assuming the Magnolia well is actually in the West Baldwin Subunit and the high end of the perennial yield estimate is correct, the DWP would still need to drill an additional well in this subunit to utilize the 528 af/yr assumed to be available.

The capital and O&M costs for such a well are assumed to be similar to the Magnolia well, $1 million capital and $710 per acre-foot O&M.

Summary.

The DWP is currently pumping at or above the estimated yield in the Village, Division, and Erwin Subunits and is pumping 97% of the estimated yield from the Rathbone Subunit. "Stress tests" are either underway (Division and Erwin) or planned (Rathbone) to further evaluate the current yield estimates. The proposed Magnolia well may or may not be included

in the current yield estimate for the Erwin Subunit. Based on the current estimated yields the only subunits with additional capacity are the Grout Creek, Mill Creek, North Shore, and West Baldwin (assuming the high estimate) Subunits. However, the production records and water level monitoring data seem to indicate that the yield estimates for the Erwin and Division Subunits may need to be revised upward.

The costs for new wells and pipelines needed to fully utilize the estimated yield in each subunit are shown in Table 2. The operating costs for well water were generally taken to be $300/af. The O&M costs associated with well head treatment were assumed to be $600/af.

Table 2. Estimated Additional Production Capacity and Costs

Subunit	Estimated Additional Production Capacity (acre-feet/yr)	Capital Cost	Estimated Cost per acre-foot
Grout Creek	167	$1.5 - $5.4 million	$1,050 - $1,880
Mill Creek	175	$1.8 million	$1,570
Village	None		
Rathbone	250[(a)]	$1.1 million	$580
Division	200[(a)]	$750,000	$540
North Shore			
"A"	20	$0	$300
"B"	20	$750,000	$2,740
"C" and "D"	0	$0	
"E"	27	$750,000	$2,110
Erwin	250[(b)]	$1 million	$710
West Baldwin	250	$1 million	$710
TOTAL		$8.65 - $12.55 million	$300 - $2,740

[(a)] Production capacity will exceed the current estimate of the perennial yield of the subunit
[(b)] Production capacity may be part of the West Baldwin Subunit.

Alternative 1 is clearly technically feasible in the broad sense and the DWP is currently pursuing full utilization of all of the subunits except for Grout Creek, and the North Shore Subunits. New wells in some of the North Shore Subunits are dependent upon protecting sensitive habitat in the area. A portion of the yield from these subunits will likely not be available to the DWP.

Given the fact that this alternative is technically feasible and results in a relatively low cost to produce the water, it is considered a Priority 1 Alternative, and the DWP is already pursuing many of the ideas included under this alternative.

Alternative 1a. Enhanced replenishment of groundwater basins.

This alternative is labeled "1a" because it is actually an extension of Alternative 1 to include management of the perennial yield of the groundwater subunits available to the DWP.

It should be noted that any enhanced natural recharge project within the Big Bear Lake Watershed would also reduce the amount of surface inflow to Big Bear Lake. Subject to the

terms of the 1977 Judgment (Ref 10), Bear Valley Mutual Water Company (BV Mutual) controls most, if not all, of these surface water rights. However, BV Mutual's water rights were perfected prior to most of the development within the Big Bear Valley. As development has occurred runoff into the lake has actually increased (and groundwater recharge has decreased) due to the construction of roads, parking areas, buildings and other impervious surfaces. It is unclear whether or not the DWP would have a legal right to attempt to recover some of this lost recharge capacity by constructing recharge basins along various tributary streams. A review by legal counsel and discussions with BV Mutual and the BBMWD would be a necessary first step in consideration of any specific project to enhance the natural recharge of groundwater basins within the Big Bear Lake watershed.

Legal issues aside, the remainder of the section will attempt to evaluate the potential for enhanced "natural" recharge into the various groundwater basins available to the DWP. As with Alternative 1, the potential for enhanced "natural" recharge must be evaluated for each subunit separately.

Grout Creek Subunit.

The Grout Creek Subunit is primarily composed of fractured granite with a low transmissivity. For this reason, deep wells in this basin have limited production capacity and it is unlikely that enhanced "natural" recharge will be possible. Enhanced recharge into the shallow aquifer may be possible along Grout Creek. Since the current perennial yield estimate exceeds the projected long term demand for the Fawnskin area, increasing the recharge would only be beneficial if a pipeline were constructed to bring the water to other parts of the DWP system.

Mill Creek Subunit.

The recharge area for the Mill Creek Subunit is limited but includes Metcalf and Drive-in Creeks on each side of Metcalf Bay and North Creek flowing into Boulder Bay. It may be possible to increase "natural" recharge by constructing recharge basins on some or all of these creeks. Further engineering work would be needed to estimate the effectiveness, construction cost, and maintenance costs of such basins.

Village Subunit.

The only two streams in this subunit are Knickerbocker Creek and the intermittent stream flowing down Red Ant Canyon. Most of Knickerbocker Creek is a concrete lined flood control channel with no recharge potential. There may be a small possibility to increase "natural" recharge above the concrete portion in the vicinity of the old Lyn Lift ski area (later known as Snow Forest Ski Area). Further engineering work would be needed to estimate the effectiveness, construction cost, and maintenance costs.

Rathbone Subunit.

Rathbone Creek would appear to offer significant opportunities for enhanced "natural" recharge. The upper portion of the Rathbone Subunit (roughly above the confluence of Sand Canyon and Rathbone Creek) is believed to be the primary recharge area for the Rathbone subunit.

The DWP extensively studied the recharge characteristics of Sand Canyon in 1991 and concluded that there is a recharge potential of at least 750 acre-feet/year in this area (Ref 21, page III-4 based on the blending potential only). Bow Canyon and the streambed between

Sand Canyon and Bear Mountain Ski Area (east side of the first hole of the golf course) may also provide opportunities for additional "natural" recharge.

The Sand Canyon site, although not part of the GEOSCIENCE, 2001 study, was also given consideration for artificial recharge based on the results of test drilling conducted previously in this area (Ref 20, page 18). However, this site was removed from consideration by the BBARWA Study Team with concurrence from the Governing Board, prior to further testing due to perceived site access constraints and regulatory issues.

The BBARWA study was probably correct in assuming that the construction of large percolation basins within the existing Sand Canyon stream channel would most likely not be permitted due to flood control constraints. Therefore, removing the Sand Canyon site from consideration for the large scale BBARWA recharge project was probably appropriate. However, some potential clearly exists for enhancing the natural recharge in this area.

The 1991 DWP study assumes the construction of a series of small berms 4 feet in height along the Sand Canyon stream bed above Teton Drive with a total area of about 2.5 acres (Ref 21, Figure IV-8, and page IV-18). Presumably these berms would wash out during major flood events so as to not impede flood flows. Interference with flood flows was, however, not specifically addressed in the report.

An alternative approach would be to simply attempt to slow down the flow of water within the stream channel. The channel would be widened to the extent possible to create a meandering stream with small natural ponds to slow the water flow and allow maximum percolation but not interfere with large flood flows. A trail-way/park could also be included to further enhance the natural character of the stream channel.

The Assessors Parcel Maps (APN's) indicate that the Sand Canyon stream channel consists of three parcels (APN 310-301-19 (5.8 ac), APN 310-672-35 (3.7 ac), and APN 310-392-20 [approx. 3 ac]) totaling approximately 12 acres. The 1991 DWP report (Ref 21, Table III-5) indicates that the long term percolation rate for the Sand Canyon stream channel is between 1.5 feet and 4.5 feet of water per day, but recommends using the minimum figure to be conservative. Assuming the meandering stream channel could be constructed to be roughly 1/3 of the total area (4 acres), the potential volume of water that could be recharged into this area is approximately 6 af/day. At this percolation rate, the Sand Canyon streambed could absorb significantly more than the 750 acre-feet of water per year assumed in the 1991 DWP study (note: the 750 af/yr figure from Ref 21, page III-4 is based on the amount of blending water available and not on the recharge capacity of the Sand Canyon area).

The 1991 DWP report estimated that under existing conditions the natural stream channel allows roughly 33% of the runoff to percolate into the ground and that this results in an average of about 400 af/yr of natural recharge into the Rathbone Subunit (Ref 21, Table III-1). How much the proposed modifications to the streambed might increase the amount of recharge is difficult to estimate, but an increased recharge of 100 to 200 af/yr (25% to 50% increase) might be achievable. Further study would be needed to develop a better estimate of the amount of increased natural recharge and ensure that the design could be approved by the appropriate flood control agency.

The cost to construct a meandering stream (with or without a trail-way/park) within the Sand Canyon streambed is very difficult to estimate without a preliminary design and grading plan. To get a very rough estimate of costs we will assume the need to grade 10,000 cubic yards of material at a cost of $15 per cubic yard for a total capital cost of around $150,000. Assuming maintenance costs of $30,000 per year (20% of capital) and using our standard financial assumptions (including $300/af to pump the water out of the ground using existing wells) results in a water cost of $500-$700 per acre-foot not including the cost of replacing the lost runoff to the lake should this be required. The BBMWD is currently selling water out of the lake to the ski areas for snowmaking for about $300/af under the assumption that 50% of this water returns to the lake. Assuming none of the water used for enhanced "natural" recharge would return to the lake, we will assume the cost of replacement water, should it be required, would be approximately $600/af. This would increase the cost for this alternative to $1,100-$1,300/af.

Since natural runoff occurs over a relatively short period of time each year, it appears that significant recharge potential exists in the Sand Canyon area above and beyond that which can be achieved using natural runoff. Additional sources of water for recharge into this basin could be lake water and/or purified wastewater. These possibilities will be evaluated under Alternatives 5a and 6a.

Division and North Shore "F" Subunits.

Recharge areas for the Division well field are not well defined and there are no significant streams which could be utilized for enhanced "natural" recharge. It is therefore assumed that there are no opportunities for increased "natural" recharge in the Division Subunit.

Erwin Subunit.

Extensive studies were undertaken by BBARWA in the past to evaluate the recharge potential of the Erwin Subunit (Ref 20). This study concluded that, for planning purposes, the long term recharge rate for the upper portion of the Erwin Subunit was approximately 1.5 feet/day (Ref 20, page 3). Assuming a recharge area of approximately 5 acres yields a recharge rate of 7.5 af/day. The BBARWA study concluded that during dry climatic periods, up to 1,000 ac/yr of water can be artificially recharged at the Green Spot site (Ref 26, page 5).

The possibilities to enhance natural recharge appear to be limited in the upper Erwin Subunit due to the lack of significant stream flow in the area. No data were found to even estimate the natural stream flow in this area, consequently no realistic estimate of the enhanced natural recharge can be made. However it is believed that during above normal precipitation years, there may be significant flow available for recharge. Actual stream flow measurements should be undertaken to determine the potential available flow. Utilizing the recharge capacity of the upper Erwin Subunit for lake water or purified wastewater will be evaluated separately under Alternatives 5a and 6.

Summary.

The costs and possible increased yield from each subunit is shown in Table 3.

Table 3. Estimated Additional Yield and Costs

Subunit	Estimated Additional Yield (acre-feet/yr)	Capital Cost	Annual O&M Costs	Estimated Costs/af
Grout Creek	None			
Mill Creek	??			
Village	??			
Rathbone	100-200[(a)]	$150,000	$30,000	$500-$1,300
Division	None			
North Shore	None			
Erwin	??[(b)]			
West Baldwin	??			
TOTAL				

[(a)] 750 af/yr with an additional water source.
[(b)] 1,000 af/yr with an additional water source.

The full extent of possible increases in the perennial yield by basin management and /or enhanced natural recharge will require further analysis (both engineering and legal) and perhaps years of data collection. Given the low capital cost, however, this is still considered a Priority 1 Alternative.

Alternative 2. Purchase "excess" water from the BBCCSD.

The BBCCSD has recently released its Water Master Plan (Ref 29) which evaluates their expected future water needs and available supply. The BBCCSD Water Master Plan concluded that "natural recharge to the east portion of the Big Bear Valley groundwater basin appears to be adequate to meet the demands projected for the BBCCSD service area." (Ref 29, page ES-3). The plan estimates that the adjusted "mean (average) total recharge to groundwater within the Big Bear Valley basin is at least 16,531 ac-ft/yr and could exceed 21,534 ac-ft/yr" (Ref 29, page 3-27). The BBCCSD Water Master Plan does not foresee the need to drill additional wells during the planning period (20 years to 2030).

The above estimated recharge is roughly 4 to 5 times the current production requirements of the DWP and CSD combined (3,877 ac-ft in 2007) and indicates that significant groundwater supplies may be currently untapped within the Big Bear Valley. The report does not, however, indicate that the BBCCSD has excess pumping capacity available that would allow them to sell water to the DWP on a long term basis.

While, as discussed in the introduction, we have some concerns regarding the validity of the computer model used to generate the recharge estimates, drilling additional wells to fully exploit whatever groundwater is available is a Priority 1 project (Alternative 1). Based on the new CSD Water Master Plan, it appears that it may be desirable to expand Alternative 1 to include drilling additional wells outside the current DWP service area. Depending on the location of these new wells, the most cost effective way to bring the water into the DWP system might be through a wheeling agreement with the BBCCSD whereby the DWP pumps into the CSD system and takes delivery at the existing inter-connection between the two

systems at Division Drive. Assuming any new wells drilled by the DWP would be low in fluoride; this alternative becomes nearly identical to the joint blending project discussed below (Alternative 2a).

The capital cost of this alternative would be relatively low and would simply involve improving the inter-connection between the two systems at Division Drive. The O&M costs would depend on the negotiated wheeling price from the BBCCSD. Further discussions with the BBCCSD are needed to explore this alternative.

Given the low capital costs, this is considered a Priority 1 Alternative.

Alternative 2a. Blend High Fluoride water from the BBCCSD with water from the Erwin or upper West Baldwin Subunits.

The BBCCSD currently has wells with fluoride levels that exceed the allowed concentration (MCL) of 2 mg/l. To utilize some of this water the BBCCSD has for some time been blending their different sources of water to reduce the average fluoride concentration to acceptable levels. The BBCCSD has also obtained a special exemption from the State Department of Health Services which allows them to deliver water with a fluoride concentration of 3 mg/l (1 mg/l above the MCL). The BBCCSD has recently constructed an additional pipeline that will further enhance their blending capability. However, even with the new pipeline, additional water supplies could be developed if new sources of blending water were available.

The water quality tests for the DWP's proposed Magnolia well indicate that no detectable fluoride is present in the groundwater at this location. Transferring some or all of the water from this well to the BBCCSD's blending tank on Paradise Road and blending it with water at 2 times the MCL from the BBCCSD high fluoride wells effectively doubles the amount of water available for use. The DWP's share of this blended water could then be put into the BBCCSD system and extracted by the DWP at the Division inter-connection between the two systems.

The costs associated with this alternative are difficult to estimate as most of the facilities are either in place or included in other alternatives. A detailed engineering analysis would be necessary to determine if the existing pipelines and pumping facilities within the two water systems are adequate to handle the increased flows from this type of operation. O&M costs would include normal well costs for the magnolia well, the cost to boost the water from the DWP's lowest pressure zone to the higher pressure zones, and any costs associated with the joint blending operation.

On the assumption that most of the capital facilities required for this alternative are already in place, this is considered a Priority 1 Alternative.

Alternative 3. Import groundwater from Holcomb Valley.

The DWP does not currently have any wells outside the Big Bear Valley drainage basin. This alternative would involve drilling wells on either private property or federal land in the Holcomb Valley and importing this water to the Big Bear Valley. To our knowledge no

hydrogeologic studies have been conducted in the Holcomb Valley area. Consequently, it is impossible to estimate how much water might be available under this alternative.

The cost of this alternative is also difficult to estimate in that the number of wells is unknown and the length of pipeline required is also unknown.

Regardless whether the wells were drilled on private or public land, the pipeline to transport the water to the DWP system would require a permit from the USFS. The USFS would likely deny a pipeline permit unless it was clearly shown that the pumping would not adversely affect the habitat values in the Holcomb Valley. There will likely also be issues regarding water rights due to an inter-basin transfer and whether or not this area was included in the recent groundwater adjudication of the Mojave River area.

Before this alternative could be seriously considered an analysis of the legal issues and the availability of groundwater in the Holcomb Valley would be required.

Given the complete lack of information and likely opposition by the USFS this is considered a Priority 3 Alternative.

Alternative 4. Attempt to adjudicate one or more groundwater subunits to limit pumping from private wells.

If a groundwater basin is in a state of overdraft, California law provides a process for allocating the available yield among all of the parties with groundwater rights within the basin. Once the allocation has been made, a watermaster is typically appointed by the court to oversee the continued use of the basin and annually verify that the parties are complying with the terms of the judgment. The adjudication process is extremely expensive and must involve all parties with groundwater rights in the basin.

Using the DWP's perennial yield estimates (Table 1) the Village, Division, and Erwin Subunits are currently being pumped at or above their estimated yields, and the Rathbone Subunit is being pumped very near its estimated yield. Using the results from the recent BBCCSD Water Master Plan, only the Division Subunit is being pumped above its estimated recharge rate. It does not appear that there is unequivocal evidence that any of valley's groundwater basins are currently in an overdraft condition. The DWP specifically reduced pumping in the Village Subunit to eliminate an apparent overdraft condition. Whether or not it would be possible to undertake an adjudication in anticipation of an overdraft condition is not known and would require legal analysis.

The amount of water that might be saved is impossible to estimate at this time because the actual number of private wells and production per well is unknown. In addition, many private wells are for landscaping purposes and are therefore only sealed in the top 25 feet (DWP wells must be sealed in the top 50 feet). Some fraction of the water produced by private wells is, therefore, likely coming from perched groundwater that is not available to the DWP and not part of the current estimate of the perennial yield. Another issue relates to the right to drill a well. Southern California Water Company (the previous owner/operator of the DWP system) did not normally require the dedication of the groundwater rights as a condition of service. Consequently many more parcels within the DWP service area have the right to drill a well

than have actually drilled them. An adjudication process might actually reduce the percentage of the perennial yield available to the DWP if a significant number of property owners were able to protect their right to drill a well through the adjudication process. A thorough legal evaluation would be required before this alternative could be seriously considered.

Given the uncertainty of its legality and effectiveness, this is considered a Priority 3 Alternative.

Alternative 5. Conjunctive Use of Lake Water and Groundwater.

Historically, Big Bear Lake and the groundwater basins surrounding the lake have been managed independently of each other. Conjunctive use involves managing these two resources in a coordinated manner attempting to maximize the benefits of each.

Before consideration of a conjunctive use program, it must first be noted that any use of lake water must be approved by the BBMWD and must also be consistent with the terms of the 1977 Judgment. The Judgment protects the water rights of BV Mutual and guarantees them an average of 6,500 acre-feet of water each year (Ref 10). It has been reported that BV Mutual has indicated that they would bring legal action against the BBMWD should they attempt to sell water out of Big Bear Lake for domestic purposes. While the precise legal basis for this claim is unknown, it should be noted that the BBMWD is currently selling water out of the lake for snowmaking purposes. It is estimated by the BBMWD that approximately 50% of the water used for snowmaking during the winter returns to the lake during the spring runoff. The other 50% either percolates into the ground or evaporates into the air and does not return to the lake. The BBMWD has sold water for snowmaking for many years and BV Mutual has never taken legal action. It is not clear why BV Mutual would oppose other uses of lake water when they are guaranteed their full 6,500 af/yr under the Judgment.

It should be noted, that using water out of the lake as part of a conjunctive use program is consistent with the intent of the "physical solution" contained in the 1977 Judgment. It is important to remember that the BBMWD originally sought to condemn BV Mutual's water rights. The physical solution contained in the 1977 Judgment that settled that condemnation action not only protects BV Mutual's water rights, but also allows the BBMWD to 1) utilize any excess storage capacity in the lake, and 2) utilize some of Mutual's water by providing BV Mutual with water from another source up to an average of 6,500 acre-feet per year (which is considered to be the full yield of the lake – Ref 10, pages 7 and 8). Discussions with the BBMWD and BV Mutual and a more extensive legal analysis would be required before this alternative can be considered a viable alternative.

Legal issues aside, the concept of conjunctive use is relatively simple. When the lake level is high, lake water is used for domestic purposes and the groundwater wells are rested and aquifers are allowed to recharge. When lake levels are low, no water is taken from the lake and all of the domestic demand is supplied from groundwater. In between these two extremes, domestic demands are met using a combination of groundwater and lake water. The amount of water coming from each source is based on trying to maximize the use of the groundwater storage capacity and at the same time maximize the recreational values of the lake. This type of program allows for greater utilization of the full storage capacity of the groundwater basins and therefore results in a greater perennial yield. It also reduces the surface area of the lake

when lake levels are high which results in reduced evaporative losses. Conjunctive use, therefore, results in a more efficient use of both the groundwater basins and the storage capacity of the lake. It does, however, result is a somewhat lower lake level particularly during high lake level conditions. The exact impact on lake levels can not be estimated at this time because we do not have access to the BBMWD lake simulation model.

The capital costs involved in a conjunctive use program depend on the method used to incorporate lake water into the DWP's domestic water system. The least cost would be the construction of groundwater recharge facilities which will be considered here (Alternative 5). A more expensive alternative would be to construct a lake water filtration plant which will be considered as a separate alternative (Alternative 5a).

Based on the earlier analysis under alternative 1a, the only subunits available to the DWP with significant recharge capacity appear to be the Rathbone and Erwin Subunits.

Rathbone Subunit

As described under Alternative 1a, there appears to be significant underground storage capacity beneath the Sand Canyon stream channel. Alternative 5 would utilize this capacity by pumping lake water through the Bear Mountain snow making pipeline from China Gardens to an appropriate point along the golf course. A new pipeline and a booster pump would have to be constructed to get the water from this point up Sand Canyon to the selected point of recharge, a distance of approximately 6,000 feet. For this analysis it was assumed that water would be discharged above Teton Drive to allow sufficient distance between recharge and extraction. Assuming a cost of $150 per foot for the pipeline and $250,000 for a booster pump, yields a total cost of $1.2 million. O&M costs are assumed to be $30,000 per year to maintain the recharge facilities in Sand Canyon, $600/af for water from the lake (twice the price currently paid by the ski areas to account for return flow), $100/af in pumping costs, and another $300/af to extract the water using existing wells. Using the assumptions described in the introduction and assuming a recharge rate of 750 af/yr (Ref 21, page IV-18) yields a total cost of $1,090/af.

Erwin Subunit

The analysis of Alternative 1a indicated that excess recharge capacity also exists in the Erwin Subunit. To recharge the upper portion of the Erwin Subunit using water from Big Bear Lake would require a roughly 5-6 mile pipeline and would involve exporting water out of the Big Bear Lake Watershed. Such an export may be opposed by BV Mutual or the San Bernardino Valley Municipal Water District (SBVMWD). However, the basin compensation requirements of the 1977 Judgment should account for and mitigate the effects of such an export on the down stream water interests. Further legal analysis and discussions with the BBMWD, BV Mutual, and others would be required before this can be considered a viable alternative.

Using the data developed by BBARWA (Ref 20 – see Alternative 1a), a 5 acre recharge area in the upper Erwin Subunit should be capable of recharging approximately 1,500 af/yr assuming a 200 day/yr operation. During wet cycles this amount of recharge may not be available. For purposes of this analysis we will assume, on average, only this amount (750 af/yr) can be recharged each year.

The BBARWA study concluded that the cost to purchase and develop the recharge site was $3.6 million, with annual O&M costs of $534,000 (Ref 20, page 7-6 and Ref 3). A 5 mile pipeline ($150/foot) and booster pump ($250,000) would add roughly $4.25 million to the capital cost. Using the financing assumptions described in the introduction and assuming a 100 year life for the recharge site and that lake water could be purchased for $600/af plus another $100/af in pumping costs and $300/af to pump the water out of the ground using existing wells yields a total cost of $1,930 per acre-foot for this alternative (assuming only 750 af/yr can be safely recharged).

While a conjunctive use program appears to be feasible, in order to determine the appropriate operating criteria for such a program it will be necessary to utilize the existing groundwater models in conjunction with the BBMWD's existing lake simulation model.

There is little or no information on the recharge potential of the other groundwater subunits available to the DWP, consequently no additional estimates can be made at this time.

Given the relatively low cost, but uncertain legal and political constraints, conjunctive use through groundwater recharge is considered a Priority 2 alternative.

Alternative 5a. Coordinated use of groundwater and lake water using a water filtration plant.

A more direct method of using lake water in a conjunctive or coordinated use program would be to construct a lake water filtration plant. A 5 mgd lake water filtration plant was considered in a 1981 water resources report (Ref 11). Since 1981, the Consumer Price Index has approximately doubled but a 5 mgd plant is most likely larger than needed. To get a rough idea of the costs related to this alternative, the prices from the 1981 report were doubled and then multiplied by 2/3's to estimate the costs for a 3.3 mgd water filtration plant in 2008. Using the same financing terms assumed for the other alternatives and assuming the filtration plant would only operate 50% of the time for an average of 1,000 acre-feet per year, the unit cost of this alternative would be $1,290/acre-foot (including $600/af to purchase water from the lake). It should be noted that the transmission system costs shown in the 1981 report seem extremely high. The report indicated that it was assumed that lake water would be made available to Southern California Water Co. (now DWP) at China Gardens and to the BBCCSD at Division Drive. Most of the transmission costs may be associated with the assumed BBCCSD connection.

Table 4. Rough Estimates of Water Filtration Costs

Item	Cost
Intake System	$500,000
Treatment Plant	$3,700,000
Transmission System	$4,300,000
Booster Pumps	$500,000
TOTAL Capital Cost	$9,000,000
TOTAL Capital w/o Trans. System	$4,700,000
Average O&M Costs (w/water purchase costs)	$900,000
Unit Cost/af	$1,290

The implementation of a conjunctive use program would require the approval of the BBMWD and the concurrence of BV Mutual and the Big Bear Watermaster (see the discussion in the second paragraph under Alternative 1a) that such a program was consistent with the 1977 Judgment.

Significant additional engineering analysis would be required to fully evaluate this alternative as the validity of 27 year old cost figures is clearly questionable. In addition, in order to determine the appropriate operating criteria for a conjunctive use program it will be necessary to link the existing groundwater models to the BBMWD's existing lake simulation model.

Given the high capital cost and uncertain legal and political feasibility this is considered a Priority 3 Alternative.

Alternative 6. Recharge the Erwin Subunit using purified wastewater.

This alternative was studied by BBARWA in 2005 and this analysis will be primarily based on those studies. However, in 2007 a nearly identical, although substantially larger, recharge project was constructed by the Orange County Water District. Since actual costs are more reliable than pre-design estimates, the actual construction and O&M costs related to the OCWD project, adjusted to reflect economies of scale, will also be presented and discussed.

Alternative 6 involves treating 500 af/yr of wastewater to drinking water standards, blending it with 500 af/yr of groundwater and then recharging it into the Erwin Lake groundwater basin. It is anticipated that the 50/50 blending requirement may be reduced in the future to allow larger amounts of wastewater to be recharged (i.e. 600 af/yr wastewater and 400 af/yr of groundwater). OCWD currently recharges their purified wastewater without any external blending requirement (ie. existing groundwater is considered adequate to achieve a 50/50 blend).

The BBARWA analysis did not get to the point of a final design, but the wastewater treatment process considered includes the same advanced water purification methods being employed by OCWD (Ref 5). After secondary treatment the water would receive Microfiltration (MF) followed by Reverse Osmosis (RO) and then disinfection by Ultraviolet light and an Advanced Oxidation Process (AOP). This series of processes effectively removes pharmaceuticals and personal care products (PPCP's) (Ref 4). In the end the water is so pure (essentially distilled water) that selected minerals must be added back into the water before it can be recharged into the groundwater basins.

The water purification system constructed by OCWD can not be directly applied to the Big Bear Valley. The significantly smaller size of the plant, colder climate, and lack of an ocean brine disposal pipeline will require some modifications to be realistic for our purposes. The smaller size (1 MGD vs 70 MGD) will mean the loss of some economies of scale. However, to a large extent the components of the treatment system are modular allowing smaller plant sizes to have similar costs. The colder winter climate in the Big Bear Valley will require that most facilities be contained within heated buildings. All of the components in the OCWD plant were constructed inside buildings; consequently the only additional cost will be to heat the buildings during the winter months. Brine disposal during the initial startup phase of the project when treatment flows are small may involve nothing more than injecting the brine into

the export line to Lucerne Valley. As treatment flows increase a separate brine evaporation system would need to be constructed. In addition to the actual water purification system this alternative requires a pipeline from the BBARWA plant to the recharge area as well as purchase and construction of the recharge site itself. Additional wells may also be needed to take full advantage of the recharged water.

The cost analysis contained in the BBARWA final report (Ref 6) assumed processing 1,000 af/yr. The initial 50/50 blending requirement would mean that only 500 af/yr would actually be processed through the plant. This would suggest that a modular design would be required such that a smaller plant be initially constructed that could be expanded when additional water is needed and/or the blending requirement was reduced.

Table 3. DWP Estimated Cost Summary

Facility	Size	Capital Cost	Annual O&M Cost
Treatment and Brine Handling	500 af/yr	$15,780,000[(a)]	$482,000[(b)]
Greenspot Recharge Site	1,000 af/yr	$3,600,000	$534,000
Pipeline and pumping	12-16 inch	$5,166,000	$61,000
Property Acquisition		$2,099,000	$21,000[(c)]
Purchase blending water	500 af/yr to start		$250,000[(d)]
Legal Services		$1,000,000	
Environmental		$1,500,000	
Total		$29,145,000	$1,348,000

[(a)] Adjusted to be 2/3 of the costs shown in Ref 6.
[(b)] Adjusted to be ½ of the costs shown in Ref 6.
[(c)] Property taxes were not included in BBARWA costs, but would be paid if the DWP owns the property.
[(d)] Assumes a purchase cost of $500/af.

The cost per acre-foot given in the BBARWA final report is $4,970 (Ref 7, page 7-10). Using the financing assumptions described in the introduction and the costs from Table 3 (and treating the recharge facility construction costs and property acquisition costs similar to pipeline costs, ie. 100 year lifetime) and assuming 1,000 af/yr of total water, yields a cost per acre-foot of approximately $3,000. As pointed out by BBARWA in response to an earlier draft of this analysis (Ref 32), assigning a 100 year life to property acquisition, pipelines, and pond construction underestimates the actual cost during the financing period (30 years). Removing this assumption results in a per acre-foot cost of $3,540. This high cost is partially because of the need to purchase and develop the entire recharge site even though only half of the recharged water is "new". We have also included the cost of purchasing 500 af/yr of well water to provide the blending required at the start of the project. There may, in fact, not be a need for an additional source of blend water as natural recharge in the Erwin Subunit may be sufficient to meet Department of Health Services (DOHS) blending requirements. The high costs are also partially due to the desire on the part of BBARWA to include sufficient

contingencies to guarantee that actual costs would be less than or equal to the pre-design estimates.

The annualized capital and O&M costs of the OCWD plant (including water treatment, conveyance to the spreading basins, and required monitoring and reporting) were estimated to be $527 /af in 1997 (Ref 8, page 4-10). The most recent actual costs (less grants and contributions from other agencies) were $515 per acre-foot (Ref 9), or slightly less than the 1997 estimates. When the total actual capital costs are considered without taking into account the grants and contributions from OCSD and MWD, the most recent actual cost is $799 per acre-foot (Calculated from Ref 9).

BBARWA originally had federal commitments for grants to help finance the capital construction in the amount of $15 million (40% of the expected cost). Therefore, taking all of the grant money out of the above calculation is perhaps overly conservative as some grant money will likely be available.

Based on the actual cost data from the OCWD facility it appears that a similar project in Big Bear should cost between $800 and $1,000 per acre-foot. The BBARWA estimate is roughly a factor of 5 higher than this estimate. Before this alternative can be realistically evaluated it will be necessary to reconcile these two extremely different cost estimates.

It appears that Alternative 6 is technically feasible based on the success of the OCWD Groundwater Replenishment (GWR) program. However, there is a great deal of public concern regarding this alternative within the Big Bear Valley, and there is an extremely wide variation in the projected costs. Until these issues can be more thoroughly addressed, this alternative will be considered a Priority 2 Alternative.

Alternative 6a. Recharge the Rathbone Subunit (Sand Canyon) using purified wastewater.

This alternative was not specifically included on the Original List, but is clearly an extension of the concept of recharging purified wastewater into a groundwater basin; consequently we have labeled it Alternative 6a.

This alternative was specifically described in a 1991 DWP report which concluded that up to 750 af/yr of purified wastewater could be recharged in Sand Canyon and meets the Department of Health Services (DOHS) requirements for underground retention time and distance between recharge and extraction (Ref 21, page IV-21 and Figure IV-7). Costs, however, were not addressed in the 1991 DWP report.

Unfortunately, this alternative suffers from the same uncertainty in treatment costs described under Alternative 6 and that discussion will not be repeated here. There are, however, two significant differences between the assumptions in Alternative 6 and this alternative: 1) blending water will not be required as 758 af/yr of natural recharge is presumed to be available (Ref 21, page III-4); and 2) a "skimming" water purification plant is assumed to be constructed on the China Gardens site to treat half the flow (approximately 500 af/yr) from the City of Big Bear Lake (see Alternative 8 for further details). These assumptions should significantly reduce the cost associated with this alternative.

Alternative 6a appears to be technically feasible and would likely be less costly than Alternative 6. However, like Alternative 6, the uncertainty in the cost of treatment makes this a Priority 2 alternative until this issue can be resolved.

Alternative 7. Snowmaking with reclaimed wastewater.

The BBMWD currently has contracts with the ski areas for 1,100 acre-feet/year of lake water for snowmaking. Alternative 7 would involve replacing all or a portion of this water with reclaimed wastewater. Replacing a portion of the snowmaking water with reclaimed wastewater would allow an equal amount of lake water to be used for domestic purposes without any impact on lake levels.

The cost of this alternative will depend on the level of wastewater treatment required for snowmaking. If full removal of pharmaceuticals is required, then the water purification costs would be similar to Alternative 6 and the total cost of this alternative would be roughly the combination of Alternatives 5 and 6. Clearly, either directly recharging the purified wastewater (Alternative 6) or implementing conjunctive use (Alternative 5) would be more cost effective than building and operating two treatment plants. If however, the level of treatment can be significantly reduced and pharmaceutical removal is not necessary, this alternative might become cost competitive if the reductions in lake levels associated with Alternative 5 or 5a are considered unacceptable.

Since Big Bear Lake is considered a domestic supply by the regulatory agencies (for Redlands currently and Big Bear Valley potentially), significant reductions in the level of wastewater treatment for snow making purposes will likely not be allowed. The costs of wastewater purification and lake water filtration were estimated in Alternatives 5a and 6. Adding these values together (excluding the cost of purchasing lake water) yields a cost of $1,500 to $5,700 per acre-foot.

Given the expected high cost relative to direct groundwater recharge or conjunctive use, this is considered a Priority 3 Alternative.

Alternative 8. Golf course irrigation with reclaimed water.

Bear Mountain Golf Course currently uses approximately 120 af/yr of groundwater to irrigate the golf course each summer. By replacing this water with treated wastewater the DWP could increase it's pumping from the Rathbone Subunit without exceeding the estimated perennial yield.

Since the quantity is relatively small, a modular wastewater treatment plant could be constructed at the China Gardens site to "skim" and treat 120 af/yr of wastewater and deliver it to the golf course via the existing Bear Mountain snowmaking pipeline. Solids, brine (if generated), and other by-products from the treatment process would be re-injected into the existing wastewater transmission line and pumped to the BBARWA plant.

Under normal circumstances wastewater used for golf course irrigation requires significantly less treatment and there is no need for pharmaceutical removal. However, given the relatively small size of the Rathbone Subunit and public concern regarding possible contamination from

pharmaceuticals, it may be necessary to purify the wastewater to drinking water standards regardless of the use.

No information is currently available on the probable cost of a minimal wastewater treatment system. Consequently, no cost analysis can be performed at this time. However, given the fact that the pipeline is in place and if the treatment requirements could be significantly reduced, the cost of this alternative could be relatively low. If full water purification is required, the costs of this alternative should be comparable to Alternative 6a.

If full water purification is required, the "skimming" wastewater purification plant could also be operated in the winter months to provide approximately 10% of the snowmaking water. This could be used to offset any reductions in lake inflow due to enhanced recharge (Alternative 1a) or allow for lake water to be used for artificial recharge of the groundwater basins during the summer (Alternative 5a). If golf course irrigation were successful, possible additional uses for reclaimed wastewater would include park and school turf irrigation.

Like Alternatives 6 and 6a, the uncertainty in the cost of treatment makes this a Priority 2 Alternative until this issue can be resolved.

Alternative 9. Direct discharge of treated wastewater to Bear Creek.

The concept is to deliver 1,000 to 2,000 af/yr of treated wastewater via a pipeline below Bear Valley dam to meet a portion of the downstream water demands. This alternative would reduce the BBMWD's dependence on their contract with SBVWMD to deliver in-lieu water to BV Mutual. One thousand to 1,500 af/yr of lake water would then be removed from the lake for domestic purposes. The presumed advantage of this alternative would be a reduced level of wastewater treatment. The City of Redlands currently recharges approximately 6,700 af/yr of secondarily treated wastewater into the Bunker Hill (Santa Ana River) groundwater basin (Ref 31). If a similar level of treatment were sufficient for this alternative, the only cost would be a pipeline from the BBARWA treatment plant to the Dam. If, however, full water purification, including pharmaceutical removal, is required, this alternative would not be cost competitive with groundwater recharge (Alternative 6 or 6a) as two treatment plants would be required in addition to the construction of the pipeline to the dam.

The driving distance from the BBARWA treatment plant to the dam is 11.3 miles. At $150/foot a pipeline of this distance would cost roughly $9 million. Assuming no additional treatment costs and pumping costs of $100/af, the financing assumptions from the introduction result in a total cost of $280/af for this alternative. The total costs for this alternative could therefore range from $280/af to $5,210 depending on the level of treatment required.

By using this alternative to replace the minimum stream flow releases currently required from Big Bear Dam, a similar amount of water from the lake could be used for domestic purposes with no impact on the lake level. This alternative could therefore significantly reduce the cost of the other alternatives that involve the use of lake water (Alternative 1a, 5, 5a, or 6) and is therefore considered a Priority 2 Alternative.

Alternative 10. Direct discharge of treated wastewater to Big Bear Lake.
This alternative is similar to Alternative 9 only the treated wastewater would be discharged into Stanfield Marsh rather than below the dam. This has the advantage of providing improved habitat conditions in Stanfield Marsh during periods of lower lake levels and would allow some reductions in the need for in-lieu water. It also eliminates the need to construct a pipeline to the dam. Unfortunately, discharging wastewater to BBL will require advanced wastewater treatment for at least nutrient removal and possibly to drinking water standards. No cost estimates were available to further evaluate this alternative.

Given the expected higher cost and public opposition to this alternative, this is considered a Priority 3 Alternative.

Alternative 11. Partial diversion of Van Dusen and/or Sawmill Creeks to Big Bear Lake.
There is currently no means to control flooding around Baldwin Lake during periods of high precipitation. For many years Van Dusen Creek has been diverted to flow totally into Baldwin Lake by an earthen dam across the portion of the drainage channel that flows west into Big Bear Lake. BV Mutual partially diverted the first 10 cfs from Sawmill Creek into Big Bear Lake many years ago. All flows over 10 cfs were diverted to Baldwin Lake. The flows from both creeks are needed to recharge the groundwater basins from which the BBCCSD pumps a significant portion of their water supply. This alternative involves the construction of diversion structures to divert "excess" water flow (ie. flows above what is needed to recharge the Baldwin Subunits) from Van Dusen and/or Sawmill Creeks to BBL for domestic use by both DWP and BBCCSD and use reclaimed wastewater to maintain and/or enhance the wildlife habitat values in Baldwin Lake.

A 1985 BBCCSD report evaluated the potential for capturing "excess" flows from Van Dusen Canyon (Caribou Creek) and (possibly Sawmill Creek and surface water from Shay Meadows as well) before they enter Baldwin Lake (Ref 27, page 2-24). This "excess" water was proposed to be recharged either on BBCCSD property (7.5 acres near Paradise) or via a pump back system along the stream channel. Should this project ever be implemented by the BBCCSD, there would be no "excess" water available for this alternative.

The 1985 BBCCSD report estimated that the average flow from Van Dusen Canyon (Caribou Creek) into Baldwin Lake was 700 af/yr (Ref 27, Table 2-H, 1964-1983 data). If this water were diverted to Big Bear Lake, it could be used to offset the impact on lake levels from any of the other alternatives that involve the use of lake water or surface water tributary to Big Bear Lake.

Since Caribou Creek represents approximately 40% of the inflow into Baldwin Lake, it is very likely that some form of habitat restoration would be needed in Baldwin Lake to mitigate the impact of reduced inflows. This might be accomplished using high fluoride water or treated wastewater from the nearby BBARWA treatment plant. In a letter commenting on an earlier draft of this analysis, the BBARWA Water Committee was unable to concur with an assumption that treated wastewater could be used to mitigate reduced flows to Baldwin Lake.

Without preliminary plans, the cost of this alternative is very difficult to estimate. The primary costs would be the construction of a diversion structure on Van Dusen Canyon to

control the flow in each direction, improvements to the stream channel from the diversion structure to Big Bear Lake, and the cost of mitigating the reduced inflows to Baldwin Lake. If secondary effluent could be used for habitat restoration, the cost of the habitat restoration would be minimal. Higher levels of treatment could significantly increase the costs. Assuming a capital cost of $500,000 and annual O&M costs of $50,000 (10%), and using the same financial assumptions used on the other alternatives, the cost of water would be roughly $100/af.

Besides providing additional water to Big Bear Lake, this alternative would also provide a significant improvement in the valley's ability to control flooding around Baldwin Lake. This benefit alone may be sufficient to justify further consideration of this alternative.

Given the possibly very low costs, potential flood control benefits, but low probability of increased water supply for the DWP this is considered a Priority 2 Alternative.

Alternative 12. Curtail further development, increase minimum lot size requirements, or otherwise modify the General Plans of the City of Big Bear Lake and/or the County of San Bernardino to reduce the number of potential new services within the DWP service area.

The total amount of water needed to meet the needs of the DWP's customers is directly proportional to the number of customers. While not a "supplemental water source", any reduction in the number of potential customers will reduce the amount of supplemental water that may be required.

Within this alternative the only option available directly to the DWP would be a connection ban. Less drastic options are available to the City and County through adjustment of their minimum lot size requirements and the density of development contained in their respective general plans. An analysis by the City planning staff (Ref 12) indicates that changing the minimum lot size to 0.5 acre or 1.0 acre would reduce the number of developable lots within the City by 716 units and 783 units respectively. This same analysis showed 1,832 current vacant lots within the City and a potential of 3,288 dwelling units on these lots. If the City chose to limit development to one dwelling per lot, it would reduce the ultimate number of customers to the DWP by 1,456.

Should the City and/or the County decide to modify their general plans and/or their minimum lot size requirements and thereby reduce the maximum number of potential customers within the DWP service area, the DWP will proportionally reduce the maximum projected water demand. Since these are planning issues beyond the scope of the DWP, no further analysis will be undertaken regarding these options at this time.

In the event no supplemental water supply is developed and demands within the DWP service area exceed the available supply, the DWP would have no choice but to impose a connection ban. Given the current estimates of the perennial yields and the current figures on vacant lots, at least half of the existing vacant lots would not be allowed to connect to the DWP system under this scenario. If such a connection ban were made permanent, those lot owners denied building permits may be entitled to compensation. Assuming 1,800 parcels (about half the

existing) and $50,000 per parcel, a very rough estimate of the cost of this compensation would be $90 million plus legal costs.

Given that the DWP portion of this alternative (ie. a connection ban) is an extreme and potentially expensive measure, this is considered a Priority 3 Alternative.

Alternative 13. Eliminate outdoor watering, require Xeriscape landscaping, or require the use of "gray" water for landscaping.

Watering of landscaped areas is a major use of water during the summer months. Reducing this water use by encouraging Xeriscape techniques and efficient irrigation methods has been a major component of the DWP's water conservation program. Pushing this program to the extreme would involve prohibiting all outdoor watering except at schools and public parks. It is estimated that this would reduce average usage by approximately 20% or roughly 600 af/yr.

A less extreme alternative would be to require Xeriscape landscaping and prohibit all turf (i.e. remove existing turf) except at schools and public parks. It is estimated that this would reduce average usage by approximately 15% or roughly 450 af/yr.

Another variant of this alternative would be to require all landscaping be watered using "gray" water (ie. water from non-toilet sources within the house). The net effect of this alternative on average water usage would be the same as prohibiting outdoor watering (20% or roughly 600 af/yr). A possible negative side effect would be an increase in personal care products (soap, shampoo, etc.) entering the groundwater.

Under Water Code section 350 the DWP can declare a Water Shortage Emergency and can probably impose the above described restrictions on water use. If this authority were successfully challenged, the DWP would have to seek special legislation to get the authority to impose these restrictions.

It is very likely that a significant portion of the community would react negatively to the imposition of most if not all of these restrictions. Since the DWP can only regulate the use of water delivered through its' facilities, the implementation of this alternative would likely result in many property owners drilling their own wells. Should this occur it would at least partially defeat the purpose of the restrictions.

Given the low cost but likely community opposition and increase in private wells, this is considered a Priority 3 Alternative.

Alternative 14. Import state project water.

The possible importation of state project water has been evaluated at least twice (Ref 11 and 13). The most recent analysis (Ref 13) concluded that "to obtain a long term water supply for the Big Bear Valley, Big Bear would probably have to purchase water from a farmer in Central California (the farmer would then either let his farm land go fallow or switch to a less water intensive crop)." The 2003 letter report (Ref 13) estimates that the cost of purchasing a long-term water supply is $200 to $500 per acre-foot. However, given the most recent cut backs in

deliveries (not considered in Ref 13), it will likely be very difficult to negotiate such a purchase.

Assuming a long-term contract could be purchased, it would be necessary to negotiate an agreement to wheel the water to Lake Silverwood and then through the Mojave Water Agency's Morongo Basin Pipeline to Camp Rock Road. From this turnout it would be necessary to construct a pipeline and pumping stations to transport the water to the Big Bear Valley. Ref 13 estimates that the capital cost to construct the necessary facilities to import 2,500 acre-feet per year would be between $18.1 and $26 million dollars with annual O&M costs of between $3.25 and $4.5 million (2003 dollars). Using the same interest rate and term used in the other alternatives (6.7%, 20 years), results in water costs of between $2,000 and $2,500 per acre-foot.

The 1981 report (Ref 11) examined several alternative routes including two from CLAWA and one from MWA. In 1981 dollars the capital costs were $5 to 5.2 million for the CLAWA alternatives and $11.1 million for the MWA alternative. Using the same factor of 2 assumed for Alternative 5 to adjust 1981 dollars to 2008 dollars gives capital costs of around $10 million for the CLAWA alternative and $22 million for the MWA alternative. It should be noted the CLAWA alternative assumes buying treated water at no extra cost and minimal pumping due to the small change in elevation. If the cost of a treatment plant is included, the capital costs for the CLAWA alternative increases to $15.4 million in 2008 dollars.

Given the very large capital costs, cutbacks in the State Water Project deliveries and the very small probability of obtaining a State Water Contract this is considered a Priority 3 Alternative.

Alternative 15. Cloud seeding.

In 2004 the BBMWD proposed a cloud seeding project designed to increase precipitation within the valley by 5% - 15% (Ref 14). During the review process significant local opposition developed and the adequacy of the environmental documentation (Negative Declaration) was questioned. The proposal was eventually dropped when the Santa Ana Regional Water Quality Control Board (SARWQCB) threatened to withdraw grant funds for Total Maximum Daily Load (TMDL) related studies if the project proceeded (Ref 15). The primary concern of the SARWQCB related to the need for completion of hydrological watershed models before beginning any program to increase runoff. The cloud seeding project was officially postponed for one year to allow the watershed models to be completed and the preparation of an EIR. Precipitation in 2005 was well above average, and it appears that no further work was done on the project.

During the hearing process on the 2004 project several opponents presented documentation questioning the efficacy of cloud seeding. Dr. William R. Cotton a professor at Colorado State University was quoted as saying -- "We have seen that with few exceptions, the scientific evidence is not conclusive that cloud seeding is causing the desired results. Cloud seeding may increase precipitation, but it is very modest. It's not going to be a drought breaker" (Ref 18). However, a 2007 article by Dr. Cotton on cloud seeding states -- "Although the amounts of precipitation increase are under debate, a 10 percent increase is conservatively estimated" (Ref 19).

Given the highly variable nature of weather events it is obviously very difficult to determine the direct effect of cloud seeding. Furthermore the wide variation in precipitation from East to West within the Big Bear Valley further complicates any analysis of the effects of cloud seeding. Most of the studies showing the effectiveness of cloud seeding appear to have been done on much larger watersheds. It is, therefore, difficult to estimate how precisely the weather modification contractor would be able to target the Big Bear Valley Watershed, and therefore how effective the program would actually be at increasing precipitation locally.

Another issue of concern was the effect of Silver Iodide on the environment. The BBMWD environmental consultant concluded that Silver Iodide is very stable and would not have a significant effect (Ref 16) whereas the project opponents submitted documents indicating possible long term toxic effects. It is not clear from the documents presented which is correct. If this project were going to be revived, it is clear that a full EIR would have to be prepared to evaluate the environmental effects.

Assuming a cloud seeding program could achieve a 10% increase in precipitation throughout the watershed (the mid-point in the BBMWD estimate and the conservative estimate by Dr. Cotton) it seems reasonable to assume the perennial yield of the groundwater basins would also be increased by 10% for a net increase of approximately 300 acre-feet per year. The proposed cost (in 2004 dollars) was roughly $167,000 (Ref 17) per year or $560 per acre-foot. If the BBMWD was still interested in cost sharing this program, the cost per acre-foot might be significantly reduced.

Given the currently available information and the large variation in precipitation throughout the valley, it is difficult to determine how effective a small cloud seeding program might actually be. If only a 2%- 3% increase were achieved within the Bear Valley Watershed, the benefit to the perennial yield would be reduced to between 60 and 90 acre-feet per year and the cost would increase to between $1,860 and $2,780 per acre-foot.

Given the high degree of uncertainty in the effectiveness (and therefore cost) of a cloud seeding program and the significant amount of public opposition to the possible adverse environmental effects, this alternative is considered a Priority 3 Alternative.

Alternative 16. Combine all or part of the DWP water system with the BBCCSD.

This alternative was presented at the joint City Council/DWP meeting but it is not clear how it would create a source of supplemental water for the DWP. The possible transfer of water between the BBCCSD and the DWP is considered under Alternatives 2 and 2a.

Summary and Conclusions

Based on this reconnaissance level analysis Alternatives 1, 1a, 2, and 2a are considered Priority 1 Alternatives. Alternatives 5, 6, 6a, 8, 9, and 11 are considered Priority 2 Alternatives and the remainder are Priority 3. It is believed that some combination of these alternatives will be able to provide a secure long term water supply for DWP customers including a reasonable

Table 4. Summary of Alternatives

Alternative	Water Provided (acre-feet)	Cost per acre-foot ($/af)	Technical Feasibility	Political Feasibility	Priority Level
1. Maximize Groundwater	N/A	$300 - $2,740	Excellent	Excellent	1
1a. Enhanced Groundwater Recharge	100-200	$480 - $1,260	Excellent	Good	1
2. Purchase Excess Water from BBCCSD	0-1,000	Unknown	Excellent	Good	1
2a. Blend low fluoride DWP water with high fluoride BBCCSD water	250-350	Unknown	Excellent	Good	1
3. Import from Holcomb Valley	Unknown	Unknown	Good	Poor	3
4. Groundwater Adjudication	Unknown	Unknown	Poor	Poor	3
5. Conjunctive Use with Lake Water (groundwater recharge)	750-1,500	$1,090-$1,450	Excellent	Fair	2
5a. Coordinated Use with Lake Water (filtration plant)	1,000	$1,290	Excellent	Fair	3
6. Recharge Erwin Lake using Purified Wastewater	1,000	$800 - $4,970	Excellent	Fair	2
6a. Recharge Sand Canyon using Purified Wastewater	750	$800 - $3,000	Excellent	Fair	2
7. Snowmaking with Purified Wastewater	1,000	$1,500-$5,700	Good	Fair	3
8. Golf Course Irrigation with Reclaimed Wastewater	120	$800 - $3,000	Excellent	Fair	2
9. Discharge Purified Wastewater to Bear Creek	1,000 – 2,000	$280 - $5,250	Excellent	Good	2
10. Discharge of Purified Wastewater to Big Bear Lake	1,000 – 2,000	$1,500-$5,700	Excellent	Fair	3
11. Partial Diversion of Van Dusen and/or Sawill Creeks	700	$100	Good	Good	2
12. Limit Development	Varies w/ Option	Varies w/ Option	Varies w/ Option	Varies w/ Option	3
13. More Extensive Limits on Outdoor Watering	450 – 600	Unknown but likely small	Good to Excellent	Poor	3
14. Import State Project Water	1,000	$2,000 - $2,500	Poor	Fair	3
15. Cloud Seeding	50-300	$550	Fair	Fair	3
16. Combine DWP with BBCCSD	Unknown	Unknown	Unknown	Poor	3

contingency beyond the projected demand at build-out. Alternative 1 may provide the majority of the needed water, but this would require a roughly 30% increase in the perennial yield estimates for the Division and Erwin Subunits and the high estimate for the West Baldwin Subunit. This may be overly optimistic. Clearly, aggressive conservation and more effective

and coordinated use of our surface water and wastewater must also be part of the DWP's long term water management plans.

In most cases the cost estimates developed are extremely rough and are intended for comparison purposes only. They must not be taken too literally. It was the intent of this document to provide a framework for the DWP to evaluate the alternatives using whatever information was available. As we move forward, more precise cost estimates must be developed. It should also be noted that the BBARWA Water Committee does not concur with the cost estimates for the use of purified wastewater and recommends a range of $6,628/af to $9,021/af for these costs (not including the cost of blend water or the cost of extraction - Ref. 32). While we agree that BBARWA put forth a considerable effort earlier this decade to evaluate wastewater reclamation, we believe there is a legitimate issue regarding the wide disparity between CH2MHIll's pre-design cost estimates and OCWD's actual costs. We can not simply accept CH2MHILL's estimates as totally accurate and reject OCWD's actual costs as completely non-applicable. We continue to believe that our conclusion is appropriate – namely that the two extremely different cost estimates must be reconciled before a realistic conclusion can be reached.

It should also be noted that no alternatives have been dropped from the list. However, the DWP has limited resources and must efficiently focus those resources on the most promising alternatives. To this end, it is recommended that the DWP continue to evaluate only the Priority 1 and 2 Alternatives and postpone any further work on the Priority 3 Alternatives.

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29. Water Master Plan, Big Bear City Community Services District, Daniel B. Stevens & Associates, January 2010.
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31. www.ci.redlands.ca.us/utilities/waste_water.htm
32. Letter dated February 25, 2009 from BBARWA Governing Board to Bill La Haye.
33. Letter dated February 12, 2009 from Michael K. Mayer, BBCCSD General Manager to Bill La Haye

APPENDIX E

2010 WATER QUALITY REPORT

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2011 Annual Consumer Confidence Report

Big Bear Lake / Moonridge Water System

This report is a summary of the quality of water provided to our customers.

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2011

Este informe contiene informacion muy importante sobre su agua potable. Traduzcalo o hable con alguien que lo entienda bien.

Drinking water sources

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases radioactive material, and can pick up substances resulting from the presence of animals or from human activity. As a result all drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Our sources

The City of Big Bear Lake Department of Water produces all its water from local ground water sources. There are 35 wells, 17 boosters, and 9 reservoirs with a total storage capacity of 6.5 million gallons in the Big Bear Lake/Moonridge system. We also have 2 permanent back up generators, 4 portable generators, and 2 portable booster pumps. In 2011 there were 501.66 million gallons of water produced out of the Big Bear Lake/Moonridge system.

Water System Information

Throughout the year we have conducted many tests for multiple types of water contaminants. In order to ensure that tap water is safe to drink, the USEPA and the California Department of Public Health prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

The City of Big Bear Lake Department of Water is located at 41972 Garstin Dr. and is open Monday through Friday from 8:00 a.m. until 4:30 p.m. Our Board of Directors meets on the fourth Tuesday of every month at 9:00 a.m. at our Garstin office. The public is welcome to participate in these meetings. Our phone number is (909) 866-5050. For questions regarding your water quality, ask for Jason Hall, or contact The Environmental Protection Agency's Safe Drinking Water Hotline, (800) 426-4791.

Contaminants that may be present in source water before we treat it include:

- ***Microbial contaminants,*** such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- ***Inorganic contaminants,*** such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ***Pesticides and herbicides,*** that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- ***Organic chemical contaminants,*** including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- ***Radioactive contaminants,*** that can be naturally-occurring or be the result of oil and gas production and mining activities.

Water Quality Data for 2011

The following tables list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The state requires us to monitor for certain contaminants less than once per year because the consentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, is more than one year old.

The following terms and abbreviations are used in tables 1, 2, 3 and 4:

- ***Public Health Goal (PHG):*** The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
- ***Maximum Contaminant Level Goal (MCLG):*** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the Environmental Protection Agency (USEPA).
- ***Maximum Contaminant Level (MCL).*** The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.
- ***Regulatory Action Level (AL):*** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
- ***Nephelometric Turbidity Units (NTU).*** This is a measure of suspended material in water.
- ***N/A:*** not applicable
- ***N/S:*** no standard
- ***ND:*** not detectable at testing limit.
- ***ppm:*** parts per million or milligrams per liter
- ***ppb:*** parts per billion or micrograms per liter
- ***pCi/L:*** picocuries per liter (a measure of radiation)

Some people may become more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particulary at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Table 1: Primary Regulated Contaminants

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Microbiological (sampled Weekly)							
Total Coliform Bacteria	2011	# positive	0	3/month	0	0	Naturally present in the environment
Clarity (sampled every 3 years)							
Turbidity	2011	NTU	N/A	5	1.1	ND - 16	Soil runoff
Inorganic Chemicals (sampled every 3 years, except Nitrates which are every year)							
Aluminum	2011	ppb	600	1000	0	ND	Erosion of natural deposits
Arsenic	2011	ppb	4	10	0.5	ND - 7.5	Erosion of natural deposits
Barium	2011	ppb	2000	1000	26	ND - 260	Erosion of natural deposits
Fluoride	2011	ppm	1	2	0.3	ND - 1.2	Erosion of natural deposits
Nitrate (as NO3)	2011	ppm	45	45	3.8	ND - 9.9	Erosion of natural deposits
Radioactivity (sampled every 4 years)							
Gross Alpha Activity	2011	pCi/L	0	15	0.3	ND - 3.5	Erosion of natural deposits
Uranium	2011	pCi/L	0.43	20	0	ND	Erosion of natural deposits
Additional Constituents (sampled every 3 years)							
PH	2011	units	N/S	N/S	7.7	7.3 - 8.2	N/A
Hardness (CaCO3)	2011	ppm	N/S	N/S	257	86 - 370	N/A
Calcium	2011	ppm	N/S	N/S	52	18 - 78	N/A
Magnesium	2011	ppm	N/S	N/S	25.3	9.1 - 42	N/A
Sodium	2011	ppm	N/S	N/S	14.9	4.4 - 23	N/A
Potassium	2011	ppm	N/S	N/S	2.4	1.1 - 4.4	N/A
Bicarbonate	2011	ppm	N/S	N/S	286	150 - 400	N/A
Total Alkalinity	2011	ppm	N/S	N/S	235	120 - 330	N/A

Table 2: Secondary Standards

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Secondary Standards (sampled every 3 years)							
Odor-Threshold	2011	units	N/S	3	1	1 - 1	Naturally-occurring organic materials
Chloride	2011	ppm	N/S	500	9	2.5 - 24	Runoff/leaching from natural deposits
Sulfate	2011	ppm	N/S	500	22.7	1.4 - 44	Runoff/leaching from natural deposits
Total Dissolved Solids	2011	ppm	N/S	1000	306	160 - 400	Runoff/leaching from natural deposits
Iron	2011	ppb	N/S	300	126	ND - 1900	leaching from natural deposits
Manganese	2011	ppb	N/S	50	24.5	ND - 340	leaching from natural deposits

Secondary Standards are for contaminants that can affect the taste, odor, or appearance of the drinking water. There are no PHGs, MCLGs, or mandatory standard health effects language for these constituents because secondary MCLs are set on the basis of aesthetics.

Table 3: Lead and Copper

Regulated Contaminants	*No. of samples collected*	*Unit*	*Goal (PHG or MCLG)*	*State AL*	*Detected Level (90th percentile)*	*No. of sites exceeding AL*	*Major Sources*
Lead and Copper (sampled every 3 years, last sampled in 2011)							
*Lead	20	ppm	0.002	0.015	0	0	Internal corrosion of household water plumbing systems
Copper	20	ppm	0.17	1.3	0.16	0	Internal corrosion of household water plumbing systems

*Lead: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Big Bear Lake Department of Water is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at http://www.epa.gov/safewater/lead.

Table 4: Unregulated Contaminants

Unregulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Unregulated Inorganic Chemicals (sampled every 3 years)							
Vanadium	2011	ppb	N/S	50	2.5	ND - 11	Erosion of natural deposits

The City of Big Bear Lake Department of Water sampled over 80 regulated and unregulated chemicals, both organic and inorganic. Unless noted, the other results were non-detectable.

A source water assessment was conducted of the domestic water wells for the City of Big Bear Lake Department of Water "Big Bear Lake / Moonridge system" in December 2001. A copy of the complete assessment may be viewed at the Water Department's office at 41972 Garstin Drive in Big Bear Lake or at the CDHS San Bernardino District office, 464 West 4th Street, Suite 437, San Bernardino, CA 92401. You may also request a summary of the assessment be sent to you by contacting Jason Hall, Production Supervisor, City of Big Bear Lake Department of Water, P.O. Box 1929, Big Bear Lake, CA 92315, or call (909) 866-5050.

Water Efficiency Makes A World of Difference

2011 Annual Consumer Confidence Report

Big Bear Shores RV Park
Water System

This report is a summary of the quality of water provided to our customers.

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2011

Este informe contiene informacion muy importante sobre su agua potable.
Traduzcalo o hable con alguien que lo entienda bien.

Drinking water sources

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases radioactive material, and can pick up substances resulting from the presence of animals or from human activity. As a result all drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Our sources

The City of Big Bear Lake Department of Water produces all its water from local ground water sources. There are 2 wells, 3 boosters, and 1 reservoir with a total storage capacity of 125,000 gallons in the Big Bear Shores RV Park system. We also have 4 portable generators, and 2 portable booster pumps. In 2011 there were 5.81 million gallons of water produced out of the Big Bear Shores RV Park system.

Water System Information

Throughout the year we have conducted many tests for multiple types of water contaminants. In order to ensure that tap water is safe to drink, the USEPA and the California Department of Public Health prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

The City of Big Bear Lake Department of Water is located at 41972 Garstin Dr. and is open Monday through Friday from 8:00 a.m. until 4:30 p.m. Our Board of Directors meets on the fourth Tuesday of every month at 9:00 a.m. at our Garstin office. The public is welcome to participate in these meetings. Our phone number is (909) 866-5050. For questions regarding your water quality, ask for Jason Hall, or contact The Environmental Protection Agency's Safe Drinking Water Hotline, (800) 426-4791.

Contaminants that may be present in source water before we treat it include:

- ***Microbial contaminants,*** such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- ***Inorganic contaminants,*** such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ***Pesticides and herbicides,*** that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- ***Organic chemical contaminants,*** including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- ***Radioactive contaminants,*** that can be naturally-occurring or be the result of oil and gas production and mining activities.

Water Quality Data for 2011

The following tables list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The state requires us to monitor for certain contaminants less than once per year because the consentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, is more than one year old.

The following terms and abbreviations are used in tables 1, 2, and 3:

- ***Public Health Goal (PHG):*** The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
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- ***Regulatory Action Level (AL):*** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
- ***Nephelometric Turbidity Units (NTU).*** This is a measure of suspended material in water.
- ***N/A:*** not applicable
- ***N/S:*** no standard
- ***ND:*** not detectable at testing limit.
- ***ppm:*** parts per million or milligrams per liter
- ***ppb:*** parts per billion or micrograms per liter
- ***pCi/L:*** picocuries per liter (a measure of radiation)

Some people may become more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particulary at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Table 1: Primary Regulated Contaminants

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Microbiological (sampled monthly)							
Total Coliform Bacteria	2011	# positive	0	2/month	0	0	Naturally present in the environment
Clarity (sampled every 3 years)							
Turbidity	2011	NTU	N/A	5	0.05	ND - 0.1	Soil runoff
Inorganic Chemicals (sampled every 3 years, except Nitrates which are every year)							
*Arsenic	2011	ppb	4	10	17	ND - 34	Erosion of natural deposits
Fluoride	2011	ppm	1	2	0.56	.13 - 1.0	Erosion of natural deposits
Nitrate (as NO3)	2011	ppm	1	2	1.35	ND - 2.7	Erosion of natural deposits
Radioactivity (sampled every 4 years)							
Gross Alpha Activity	2011	pCi/L	0	15	0	ND	Erosion of natural deposits
Uranium	2011	pCi/L	0.43	20	0	ND	Erosion of natural deposits
Additional Constituents (sampled every 3 years)							
PH	2011	units	N/S	N/S	8.45	7.9 - 9.0	N/A
Hardness (CaCO3)	2011	ppm	N/S	N/S	139.5	39 - 240	N/A
Calcium	2011	ppm	N/S	N/S	21.6	2.2 - 41	N/A
Magnesium	2011	ppm	N/S	N/S	15.8	1.6 - 30	N/A
Sodium	2011	ppm	N/S	N/S	47	10 - 84	N/A
Potassium	2011	ppm	N/S	N/S	1.4	1.3 - 1.6	N/A
Bicarbonate	2011	ppm	N/S	N/S	240	170 - 290	N/A
Carbonate	2011	ppm	N/S	N/S	10.9	1.8 - 20	N/A
Total Alkalinity	2011	ppm	N/S	N/S	210	180 - 240	N/A

**Arsenic:* Some people who drink water containing arsenic in excess of the MCL over many years may experience skin damage or circulatory system problems, and may have an increased risk of getting cancer.

Table 2: Secondary Standards

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Secondary Standards (sampled every 3 years)							
Odor-Threshold	2011	units	N/S	3	1	1 - 1	Naturally-occurring organic materials
Chloride	2011	ppm	N/S	500	3.1	1.8 - 4.4	Runoff/leaching from natural deposits
Sulfate	2011	ppm	N/S	500	8.6	5.3 - 12	Runoff/leaching from natural deposits
Total Dissolved Solids	2011	ppm	N/S	1000	255	250 - 260	Runoff/leaching from natural deposits
Zinc	2011	ppb	N/S	1000	50	ND - 100	leaching from natural deposits

Secondary Standards are for contaminants that can affect the taste, odor, or appearance of the drinking water. There are no PHGs, MCLGs, or mandatory standard health effects language for these constituents because secondary MCLs are set on the basis of aesthetics.

Table 3: Unregulated Contaminants

Unregulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Unregulated Inorganic Chemicals (sampled every 3 years)							
Boron	2011	ppb	N/S	1000	100	ND - 200	Erosion of natural deposits
Vanadium	2011	ppb	N/S	50	7.5	ND - 15	Erosion of natural deposits

The City of Big Bear Lake Department of Water sampled over 80 regulated and unregulated chemicals, both organic and inorganic. Unless noted, the other results were non-detectable.

A source water assessment was conducted of the domestic water wells for the City of Big Bear Lake Department of Water "Big Bear Shores RV Park system" in December 2001. A copy of the complete assessment may be viewed at the Water Department's office at 41972 Garstin Drive in Big Bear Lake or at the CDHS San Bernardino District office, 464 West 4th Street, Suite 437, San Bernardino, CA 92401. You may also request a summary of the assessment be sent to you by contacting Jason Hall, Production Supervisor, City of Big Bear Lake Department of Water, P.O. Box 1929, Big Bear Lake, CA 92315, or call (909) 866-5050.

Water Efficiency Makes A World of Difference

2011 Annual Consumer Confidence Report

Fawnskin
Water System

This report is a summary of the quality of water provided to our customers.

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2011

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Drinking water sources

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Our sources

The City of Big Bear Lake Department of Water produces all its water from local ground water sources. There are 5 wells, 2 boosters, and 3 reservoirs with a total storage capacity of 1.36 million gallons in the Fawnskin system. We also have 4 portable generators, and 2 portable booster pumps. In 2011 there were 25.67 million gallons of water produced out of the Fawnskin system.

Water System Information

Throughout the year we have conducted many tests for multiple types of water contaminants. In order to ensure that tap water is safe to drink, the USEPA and the California Department of Public Health prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

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- ***Inorganic contaminants,*** such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ***Pesticides and herbicides,*** that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- ***Organic chemical contaminants,*** including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- ***Radioactive contaminants,*** that can be naturally-occurring or be the result of oil and gas production and mining activities.

Water Quality Data for 2011

The following tables list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The state requires us to monitor for certain contaminants less than once per year because the consentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, is more than one year old.

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- ***Nephelometric Turbidity Units (NTU).*** This is a measure of suspended material in water.
- ***N/A:*** not applicable
- ***N/S:*** no standard
- ***ND:*** not detectable at testing limit.
- ***ppm:*** parts per million or milligrams per liter
- ***ppb:*** parts per billion or micrograms per liter
- ***pCi/L:*** picocuries per liter (a measure of radiation)

Some people may become more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particulary at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Table 1: Primary Regulated Contaminants

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Microbiological (sampled bi-monthly)							
Total Coliform Bacteria	2011	# positive	0	2/month	0	0	Naturally present in the environment
Clarity (sampled every 3 years)							
Turbidity	2011	NTU	N/A	5	0.05	ND - .1	Soil runoff
Inorganic Chemicals (sampled every 3 years, except Nitrates which are every year)							
Arsenic	2011	ppb	4	10	2.1	ND - 8.5	Erosion of natural deposits
Fluoride	2011	ppm	1	2	0.3	ND - 1.1	Erosion of natural deposits
Nitrate (as NO3)	2011	ppm	45	45	0.6	ND - 2.7	Erosion of natural deposits
Radioactivity (sampled every 4 years)							
Gross Alpha Activity	2011	pCi/L	0	15	1.3	ND - 5.4	Erosion of natural deposits
Uranium	2011	pCi/L	0.43	20	1.8	ND - 7.5	Erosion of natural deposits
Additional Constituents (sampled every 3 years)							
PH	2011	units	N/S	N/S	7.65	6.3 - 9.7	N/A
Hardness (CaCO3)	2011	ppm	N/S	N/S	120	10 - 230	N/A
Calcium	2011	ppm	N/S	N/S	36.4	1.6 - 69	N/A
Magnesium	2011	ppm	N/S	N/S	7.7	ND - 9.4	N/A
Sodium	2011	ppm	N/S	N/S	23.4	11 - 57	N/A
Potassium	2011	ppm	N/S	N/S	1.5	ND - 2.3	N/A
Bicarbonate	2011	ppm	N/S	N/S	164.2	57 - 280	N/A
Carbonate	2011	ppm	N/S	N/S	11.2	ND - 45	N/A
Total Alkalinity	2011	ppm	N/S	N/S	152.5	120 - 230	N/A

Table 2: Secondary Standards

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Secondary Standards (sampled every 3 years)							
Odor-Threshold	2011	units	N/S	3	1	1 - 1	Naturally-occurring organic materials
Chloride	2011	ppm	N/S	500	7	2.9 - 16	Runoff/leaching from natural deposits
Sulfate	2011	ppm	N/S	500	5.7	2.1 - 8.1	Runoff/leaching from natural deposits
Total Dissolved Solids	2011	ppm	N/S	1000	192	160 - 260	Runoff/leaching from natural deposits

Secondary Standards are for contaminants that can affect the taste, odor, or appearance of the drinking water. There are no PHGs, MCLGs, or mandatory standard health effects language for these constituents because secondary MCLs are set on the basis of aesthetics.

Table 3: Lead and Copper

Regulated Contaminants	*No. of samples collected*	*Unit*	*Goal (PHG or MCLG)*	*State AL*	*Detected Level (90th percentile)*	*No. of sites exceeding AL*	*Major Sources*
Lead and Copper (sampled every 3 years, last sampled in 2011)							
*Lead	10	ppm	0.002	0.015	0	0	Internal corrosion of household water plumbing systems
Copper	10	ppm	0.17	1.3	1.3	0	Internal corrosion of household water plumbing systems

*Lead: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Big Bear Lake Department of Water is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at http://www.epa.gov/safewater/lead.

Table 4: Unregulated Contaminants

Unregulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Unregulated Inorganic Chemicals (sampled every 3 years)							
Vanadium	2011	ppb	N/S	50	1.8	ND - 7.2	Erosion of natural deposits

The City of Big Bear Lake Department of Water sampled over 80 regulated and unregulated chemicals, both organic and inorganic. Unless noted, the other results were non-detectable.

A source water assessment was conducted of the domestic water wells for the City of Big Bear Lake Department of Water, "Fawnskin system" in December 2001. A copy of the complete assessment may be viewed at the Water Department's office at 41972 Garstin Drive in Big Bear Lake or at the CDHS San Bernardino District office, 464 West 4th Street, Suite 437, San Bernardino, Ca 92401. You may also request a summary of the assessment be sent to you by contacting Jason Hall, Production Supervisor, City of Big Bear Lake Department of Water, P.O. Box 1929, Big Bear Lake, Ca 92315, or call (909) 866-5050.

Water Efficiency Makes A World of Difference

2011 Annual Consumer Confidence Report

Lake William
Water System

This report is a summary of the quality of water provided to our customers.

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2011

Este informe contiene informacion muy importante sobre su agua potable.
Traduzcalo o hable con alguien que lo entienda bien.

Drinking water sources

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground , it dissolves naturally-occurring minerals and, in some cases radioactive material, and can pick up substances resulting from the presence of animals or from human activity. As a result all drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Our sources

The City of Big Bear Lake, Department of Water produces all its water from local ground water sources. There are 3 wells, and 1 reservoir with a total storage capacity of 160,000 gallons in the Lake William system. We also have 4 portable generators, and 2 portable booster pumps. In 2011 there were 5.82 million gallons of water produced out of the Lake William system.

Water System Information

Throughout the year we have conducted many tests for multiple types of water contaminants. In order to ensure that tap water is safe to drink, the USEPA and the California Department of Public Health prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

The City of Big Bear Lake, Department of Water is located at 41972 Garstin Dr. and is open Monday through Friday from 8:00 a.m. until 4:30 p.m. Our Board of Directors meet on the fourth Tuesday of every month at 9:00 a.m. at our Garstin office. The public is welcome to participate in these meetings. Our phone number is (909) 866-5050. For questions regarding your water quality, ask for Jason Hall, or contact The Environmental Protection Agency's Safe Drinking Water Hotline, (800) 426-4791.

Contaminants that may be present in source water before we treat it include:

- ***Microbial contaminants,*** such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- ***Inorganic contaminants,*** such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ***Pesticides and herbicides,*** that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- ***Organic chemical contaminants,*** including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- ***Radioactive contaminants,*** that can be naturally-occurring or be the result of oil and gas production and mining activities.

Water Quality Data for 2011

The following tables list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The state requires us to monitor for certain contaminants less than once per year because the consentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, is more than one year old.

The following terms and abbreviations are used in tables 1, 2, 3 and 4:

- ***Public Health Goal (PHG):*** The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
- ***Maximum Contaminant Level Goal (MCLG):*** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the Environmental Protection Agency (USEPA).
- ***Maximum Contaminant Level (MCL).*** The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.
- ***Regulatory Action Level (AL):*** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
- ***Nephelometric Turbidity Units (NTU).*** This is a measure of suspended material in water.
- ***N/A:*** not applicable
- ***N/S:*** no standard
- ***ND:*** not detectable at testing limit.
- ***ppm:*** parts per million or milligrams per liter
- ***ppb:*** parts per billion or micrograms per liter
- ***pCi/L:*** picocuries per liter (a measure of radiation)

Some people may become more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particulary at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Table 1: Primary Regulated Contaminants

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Microbiological (sampled monthly)							
Total Coliform Bacteria	2011	# positive	0	2/month	0	0	Naturally present in the environment
Clarity (sampled every 3 years)							
Turbidity	2011	NTU	N/A	5	0.2	.1 - .4	Soil runoff
Inorganic Chemicals (sampled every 3 years, except Nitrates which are every year)							
Fluoride	2011	ppm	1	2	1.22	1.0 - 2.5	Erosion of natural deposits
Nitrate (as NO3)	2011	ppm	45	45	17.6	2.0 - 37	Erosion of natural deposits
Radioactivity (sampled every 4 years)							
Gross Alpha Activity	2011	pCi/L	0	15	5.7	4.6 - 7.5	Erosion of natural deposits
Uranium	2011	pCi/L	0.43	20	7.3	5.4 - 10.0	Erosion of natural deposits
Additional Constituents (sampled every 3 years)							
PH	2011	units	N/S	N/S	7.6	7.5 - 7.8	N/A
Hardness (CaCO3)	2011	ppm	N/S	N/S	136	120 - 170	N/A
Calcium	2011	ppm	N/S	N/S	39.6	34 - 48	N/A
Magnesium	2011	ppm	N/S	N/S	11.3	8 - 14	N/A
Sodium	2011	ppm	N/S	N/S	24.6	19 - 31	N/A
Potassium	2011	ppm	N/S	N/S	3.1	2.1 - 5.2	N/A
Bicarbonate	2011	ppm	N/S	N/S	156	150 - 160	N/A
Total Alkalinity	2011	ppm	N/S	N/S	126	120 - 130	N/A

Table 2: Secondary Standards

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Secondary Standards (sampled every 3 years)							
Odor-Threshold	2011	units	N/S	3	1	1 - 1	Naturally-occurring organic materials
Chloride	2011	ppm	N/S	500	19.3	17 - 22	Runoff/leaching from natural deposits
Sulfate	2011	ppm	N/S	500	15.6	14 - 16	Runoff/leaching from natural deposits
Total Dissolved Solids	2011	ppm	N/S	1000	236.6	200 - 280	Runoff/leaching from natural deposits

Secondary Standards are for contaminants that can affect the taste, odor, or appearance of the drinking water. There are no PHGs, MCLGs, or mandatory standard health effects language for these constituents because secondary MCLs are set on the basis of aesthetics.

Table 3: Lead and Copper

Regulated Contaminants	*No. of samples collected*	*Unit*	*Goal (PHG or MCLG)*	*State AL*	*Detected Level (90th percentile)*	*No. of sites exceeding AL*	*Major Sources*
Lead and Copper (sampled yearly, Last sampled in 2011)							
*Lead	10	ppm	0.002	0.015	ND	0	Internal corrosion of household water plumbing systems
*Copper	10	ppm	0.17	1.3	1.3	2	Internal corrosion of household water plumbing systems

*Lead: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Big Bear Lake Department of Water is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at http://www.epa.gov/safewater/lead.

*Copper: Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time may experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years may suffer liver or kidney damage. People with Wilsons Disease should contact their personal doctor.

Table 4: Unregulated Contaminants

Unregulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Unregulated Inorganic Chemicals (sampled every 3 years)							
(There were no Unregulated Inorganic Contaminants Detected in 2011 when last sampled)							

The City of Big Bear Lake Department of Water sampled over 80 regulated and unregulated chemicals, both organic and inorganic. Unless noted, the other results were non-detectable.

A source water assessment was conducted of the domestic water wells for the City of Big Bear Lake Department of Water, "Lake William system" in December 2001. A copy of the complete assessment may be viewed at the Water Department's office at 41972 Garstin Drive in Big Bear Lake or at the DHS San Bernardino District office, 464 West 4th Street, Suite 437, San Bernardino, Ca 92401. You may also request a summary of the assessment be sent to you by contacting Jason Hall, Production Supervisor, City of Big Bear Lake Department of Water, P.O. Box 1929, Big Bear Lake, Ca 92315, or call (909) 866-5050.

Water Efficiency Makes A World of Difference

2011 Annual Consumer Confidence Report

Sugarloaf / Erwin Lake Water System

This report is a summary of the quality of water provided to our customers.

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2011

Este informe contiene informacion muy importante sobre su agua potable.
Traduzcalo o hable con alguien que lo entienda bien.

Drinking water sources

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases radioactive material, and can pick up substances resulting from the presence of animals or from human activity. As a result all drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Our sources

The City of Big Bear Lake Department of Water produces all its water from local ground water sources. There are 6 wells, 9 boosters, and 1 reservoir with a total storage capacity of 500,000 gallons in the Sugarloaf/Erwin Lake system. We also have 4 portable generators, and 2 portable booster pumps. In 2011 there were 163.58 million gallons of water produced out of the Sugarloaf/Erwin Lake system.

Water System Information

Throughout the year we have conducted many tests for multiple types of water contaminants. In order to ensure that tap water is safe to drink, the USEPA and the California Department of Public Health prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

The City of Big Bear Lake Department of Water is located at 41972 Garstin Dr. and is open Monday through Friday from 8:00 a.m. until 4:30 p.m. Our Board of Directors meet on the fourth Tuesday of every month at 9:00 a.m. at our Garstin office. The public is welcome to participate in these meetings. Our phone number is (909) 866-5050. For questions regarding your water quality, ask for Jason Hall, or contact The Environmental Protection Agency's Safe Drinking Water Hotline, (800) 426-4791.

Contaminants that may be present in source water before we treat it include:

- ***Microbial contaminants,*** such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- ***Inorganic contaminants,*** such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ***Pesticides and herbicides,*** that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- ***Organic chemical contaminants,*** including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- ***Radioactive contaminants,*** that can be naturally-occurring or be the result of oil and gas production and mining activities.

Water Quality Data for 2011

The following tables list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The state requires us to monitor for certain contaminants less than once per year because the consentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, is more than one year old.

The following terms and abbreviations are used in tables 1, 2, 3 and 4:

- ***Public Health Goal (PHG):*** The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
- ***Maximum Contaminant Level Goal (MCLG):*** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the Environmental Protection Agency (USEPA).
- ***Maximum Contaminant Level (MCL).*** The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.
- ***Regulatory Action Level (AL):*** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
- ***Nephelometric Turbidity Units (NTU).*** This is a measure of suspended material in water.
- ***N/A:*** not applicable
- ***N/S:*** no standard
- ***ND:*** not detectable at testing limit.
- ***ppm:*** parts per million or milligrams per liter
- ***ppb:*** parts per billion or micrograms per liter
- ***pCi/L:*** picocuries per liter (a measure of radiation)

Some people may become more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particulary at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Table 1: Primary Regulated Contaminants

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Microbiological (sampled Weekly)							
*Total Coliform Bacteria	2011	# positive	0	2/month	0	0	Naturally present in the environment
Clarity (sampled every 3 years)							
Turbidity	2011	NTU	N/A	5	0.1	ND - 0.1	Soil runoff
Inorganic Chemicals (sampled every 3 years, except Nitrates which are every year)							
Fluoride	2011	ppm	1	2	0.15	.11 - .18	Erosion of natural deposits
Nitrate (as NO3)	2011	ppm	45	45	2.9	ND - 6.1	Erosion of natural deposits
Radioactivity (sampled every 4 years)							
Gross Alpha Activity	2011	pCi/L	0	15	0	ND	Erosion of natural deposits
Uranium	2011	pCi/L	0.43	20	0	ND	Erosion of natural deposits
Additional Constituents (sampled every 3 years)							
PH	2011	units	N/S	N/S	7.6	7.4 - 7.9	N/A
Hardness (CaCO3)	2011	ppm	N/S	N/S	186	160 - 220	N/A
Calcium	2011	ppm	N/S	N/S	40.8	36 - 49	N/A
Magnesium	2011	ppm	N/S	N/S	19.4	18 - 23	N/A
Sodium	2011	ppm	N/S	N/S	10.3	8.6 - 12	N/A
Potassium	2011	ppm	N/S	N/S	1.7	1.6 - 2.0	N/A
Bicarbonate	2011	ppm	N/S	N/S	214	190 - 250	N/A
Total Alkalinity	2011	ppm	N/S	N/S	176	150 - 210	N/A

Table 2: Secondary Standards

Regulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Secondary Standards (sampled every 3 years)							
Odor-Threshold	2011	units	N/S	3	1	1 - 1	Naturally-occurring organic materials
Chloride	2011	ppm	N/S	500	5.2	2.4 - 6.4	Runoff/leaching from natural deposits
Sulfate	2011	ppm	N/S	500	12.8	9.4 - 17	Runoff/leaching from natural deposits
Total Dissolved Solids	2011	ppm	N/S	1000	232	210 - 260	Runoff/leaching from natural deposits

Secondary Standards are for contaminants that can affect the taste, odor, or appearance of the drinking water. There are no PHGs, MCLGs, or mandatory standard health effects language for these constituents because secondary MCLs are set on the basis of aesthetics.

Table 3: Lead and Copper

Regulated Contaminants	*No. of samples collected*	*Unit*	*Goal (PHG or MCLG)*	*State AL*	*Detected Level (90th percentile)*	*No. of sites exceeding AL*	*Major Sources*
Lead and Copper (sampled every 3 years, last sampled in 2011)							
*Lead	20	ppm	0.002	0.015	0	0	Internal corrosion of household water plumbing systems
Copper	20	ppm	0.17	1.3	0.6	1	Internal corrosion of household water plumbing systems

*Lead: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Big Bear Lake Department of Water is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at http://www.epa.gov/safewater/lead.

Table 4: Unregulated Contaminants

Unregulated Contaminants	*Last Sampled*	*Unit*	*Goal (PHG or MCLG)*	*State MCL*	*Detected Level (Average)*	*Detected Level (Range)*	*Major Sources*
Unregulated Inorganic Chemicals (sampled every 3 years)							
(There were no Unregulated Inorganic Contaminants Detected in 2011 when last sampled)							

The City of Big Bear Lake Department of Water sampled over 80 regulated and unregulated chemicals, both organic and inorganic. Unless noted, the other results were non-detectable.

A source water assessment was conducted of the domestic water wells for the City of Big Bear Lake Department of Water, "Sugarloaf/Erwin Lake system" in December 2001. A copy of the complete assessment may be viewed at the Water Department's office at 41972 Garstin Drive in Big Bear Lake or at the CDHS San Bernardino District office, 464 West 4th Street, Suite 437, San Bernardino, Ca 92401. You may also request a summary of the assessment be sent to you by contacting Jason Hall, Production Supervisor, City of Big Bear Lake Department of Water, P.O. Box 1929, Big Bear Lake, Ca 92315, or call (909) 866-5050.

Water Efficiency Makes A World of Difference

APPENDIX F

ORDINANCES AND RESOLUTIONS

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RESOLUTION NO. DWP 2005-02

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE DEPARTMENT OF WATER & POWER OF THE CITY OF BIG BEAR LAKE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA APPROVING REVISED LANDSCAPING REGULATIONS WITHIN THE BIG BEAR VALLEY

WHEREAS, the Board of Commissioners adopted Resolution No. DWP 2004-08 approving specific guidelines for the planning and installation of appropriate water-conserving landscapes within the Department of Water & Power's service area in the Big Bear Valley; and

WHEREAS, a revised version of said guidelines has been proposed for adoption by the City Council of the City of Big Bear Lake in the form of an ordinance for inclusion into the Municipal Code of the City of Big Bear Lake; and

WHEREAS, the Board of Commissioners wishes to approve the proposed Landscaping Regulations in the form set forth in the draft ordinance attached hereto, to be applied throughout that portion of the Department's service area which is located within the Big Bear Valley, regardless of whether said area is also located within the boundaries of the City of Big Bear Lake;

NOW, THEREFORE, BE IT RESOLVED that the Board of Commissioners of the Department of Water & Power of the City of Big Bear Lake does hereby approve and adopt the Landscaping Regulations set forth in the proposed ordinance attached hereto to be applied as a condition of water service from the Department of Water & Power throughout that portion of the Department's service area which is located within the Big Bear Valley, regardless of whether said area is also located within the corporate boundaries of the City of Big Bear Lake.

BE IT FURTHER RESOLVED that said Landscaping Regulations shall become effective concurrently with the effective date of the ordinance attached hereto and shall supersede all other guidelines and regulations previously adopted by this Board of Commissioners and inconsistent therewith.

PASSED, APPROVED, and ADOPTED this 22nd day of February, 2005.

AYES:	Conley, Speyers, Willey
NOES:	None
ABSENT:	Herrick, Etter

Feb 22, 2005
DATE

Susan D. Conley
Susan Conley, Treasurer
DWP Board of Commissioners

ATTEST:
Robyn Bratton
ROBYN BRATTON
Secretary to the Board of Commissioners

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO)
CITY OF BIG BEAR LAKE)

I, Robyn Bratton, Secretary to the Board of Commissioners of the Department of Water & Power of the City of Big Bear Lake, California, do hereby certify that the whole number of members of said Board is five; that the foregoing Resolution, being Resolution No. DWP 2005-02, was duly passed and adopted by the said Board and attested to by the Secretary of said Board, all at a Regular Meeting of the said Board held on the 22nd day of February, 2005, that the same was so passed and adopted by the following vote:

AYES:	Conley, Speyers, Willey
NOES:	None
ABSENT:	Herrick, Etter

Robyn Bratton
Secretary to the Board

(SEAL)

ORDINANCE NO. 2005-348

AN ORDINANCE OF THE CITY OF BIG BEAR LAKE, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AMENDING CHAPTER 15.66 OF ARTICLE XV OF THE BIG BEAR LAKE MUNICIPAL CODE DEALING WITH THE REGULATION OF LANDSCAPING

WHEREAS, the Department of Water and Power of the City of Big Bear Lake (the "Department") has undertaken to supply existing customers with water including, most importantly, water for human consumption, sanitation, and fire protection; and

WHEREAS, the total water supply available to the Department Service Area is dependent upon local rainfall and snow melt percolation into local ground water sources, which are limited; and

WHEREAS, recent periods of insufficient natural ground water recharge in the Big Bear Valley make it necessary for the Department to implement water conservation measures; and

WHEREAS, water usage and demand by Department customers has substantially increased over the past ten years, especially as a result of landscaping; and

WHEREAS, the estimate of perennial yield of the aquifers, water usage by customers, and anticipated growth of the community indicate that water demand may exceed supply within the next ten years; and

WHEREAS, the City Council of the City of Big Bear Lake ("City") desires to maintain the Department's water resources for human consumption, sanitation, and fire protection and reduce wasteful and inefficient consumption of water; and

WHEREAS, the City Council of the City of Big Bear Lake finds inefficient landscaping practices disproportionately drains the water resources of the Department; and

WHEREAS, the City Council of the City of Big Bear Lake finds that Chapter 15.66 must be amended to adequately address inefficient landscaping practices; and

WHEREAS, pursuant to Article XI, Section 7 of the California Constitution, the City is authorized to make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with the general laws of the State.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF BIG BEAR LAKE DOES ORDAIN AS FOLLOWS:

SECTION 1. Chapter 15.66 of Article XV of the City of Big Bear Lake Municipal Code is hereby amended in its entirety to read as follows:

Chapter 15.66

LANDSCAPING REGULATIONS

Sections:

Section 15.66.010 Purpose. The purpose of this chapter is to set forth and require all new, retrofitted, or modified landscaping to adhere to landscaping practices guided by the latest low water use technology that emphasizes water-use efficiency to maximize the benefit of existing water supplies for the citizens of, visitors to, and the economic well-being of the Big Bear Valley. These measures will significantly reduce wasteful and inefficient consumption of water, and thus make these water resources available for human consumption, sanitation, and fire protection.

Section 15.66.020 Application; Exception. The provisions of this chapter shall apply to all customers of the Department, including customers who may also take ground water from private wells not owned or operated by the Department. Some or all of the guidelines and prohibitions contained in this chapter may not apply to specific, publicly owned properties such as schools and parks, which will be evaluated on a case-by-case basis.

Section 15.66.030 Goals and Objectives. Due to the increasing demand for water by Department customers for landscaping, and the finite nature of the Big Bear Valley's water resources, the general welfare of the community is best served by using the available water supply efficiently for maximum beneficial uses. Wasteful, inefficient, and unreasonable uses of water must be prevented.

Therefore, the Department hereby declares and establishes the following goals and objectives pertaining to the use of water provided by Department for landscaping.

A. Goals.

1. Efficient use and distribution of water used for landscaping and irrigation.
2. Conservation of limited water resources.
3. Use of appropriate planning to eliminate all wasteful and inefficient uses of water from all landscape plans during the planning stage.
4. Provide reasonable and appropriate size and water-use limitations for all landscape features.

B. Objectives.

1. To conserve the available water supply.
2. To achieve an overall, per capita reduction in water use.
3. To eliminate inefficient irrigation.
4. To reduce the volume of water waste.
5. To ensure an adequate supply of water to meet the reasonable needs of all users of Department water.
6. To increase the use and installation of water-conserving plants, landscapes, mountainscapes, and Xeriscapes.
7. To require all new developments and encourage existing developments to install low water-use landscape elements and erosion control devices.

Section 15.66.040 Definitions. The following words and phrases, whenever used in this chapter, shall be construed as defined in this section, unless otherwise specified within individual sections of this chapter.

"Aquifer" means a permeable geologic unit that can transmit significant quantities of water under ordinary hydraulic gradients.

"Board" means the Department's Board of Commissioners.

"CCF" means 100 cubic feet which equals 748 gallons.

"Customer" (City and County) means all persons, residences, businesses, and entities who receive and/or use water provided by the Department within the City or County.

"Department" means the City of Big Bear Lake Department of Water and Power.

"Drought" means a series of years where precipitation is below average.

"Emitter" means any irrigation nozzle that is used to distribute water to landscape vegetation.

"Environmental sensing device" means any device that uses or recognizes weather or soil moisture to modify irrigation schedules. Typical examples of an environmental sensing device include evapotranspiration irrigation controllers, soil moisture sensors, and rainfall shut-off devices.

"Erosion" means the process of moving soil by any agent of weather, typically the result of rainfall runoff.

"Erosion control" means anything that inhibits erosion.

"Essential water use" means water necessary for human consumption, sanitation, and fire protection. All other use of water, not specifically required to meet these needs, shall be considered nonessential.

"Existing developments" means any development for which certificates of occupancy have been granted.

"Finite" means limited in quantity.

"Fire protection" means water needed to protect humans and their property from an active fire.

"Ground water" means any water derived from springs or wells.

"Hardscape" means a landscape feature that contains no vegetation. Examples of a Hardscape include walkways, decks, graveled areas, and areas covered with mulches.

"His" is a collective term independent of gender and may refer to male or female.

"Human consumption" means water directly consumed by humans and their pets or livestock.

"Inefficient" means using water in a quantity in excess of the amount required, as determined by the Department, to accomplish a given task.

"Inefficient irrigation" means the process of providing more water to landscape plants or elements than is required for healthy, normal growth and appearance.

"Irrigation" means the process of providing supplemental water supplied by the Department to landscape plants and elements.

"Landscape" means the entire parcel less the building footprint, driveways, non-irrigated portions of parking lots, hardscapes, and other non-porous areas.

"Landscape element" means any and all unique features of a landscape.

"Landscaping" means the process of adding or subtracting vegetation or non-vegetative materials or their support structures (e.g. irrigation systems, walkways, retaining walls) to a landscape.

"Maximize the benefit" means to obtain the greatest feasible benefit.

"Mountainscape" means any low water-use landscape that is compatible with the climate of the Big Bear Valley.

"New developments" means developments that are under construction or will be constructed in the near future, and for which certificates of occupancy have not been granted.

"Percolation" means movement of water, by the forces of gravity, through soils and bedrock to a point of greater depth than its previous location.

"Perennial yield" means the maximum quantity of water available on an annual basis for the foreseeable future. This quantity depends on the amount of water economically, legally, and politically available to the organization(s) managing the ground water basin.

"Rain shut-off sensor" means any mechanism that detects precipitation and transmits the information to an irrigation controller.

"Recharge" means the process of adding water to an aquifer.

"Retrofit" means any change to any existing element.

"Sanitation" means cleanliness or the disposal of unhealthful waste.

"Turf" means a surface layer of earth containing grass with its roots.

"Wasteful" means using water in a quantity in excess of the amount needed to accomplish a given task.

"Water conservation plan" means a plan developed for any property that provides recommendations for conserving water based on how the home or business occupying the property used water in the past.

"Water conservation" means practices or activities which result in the use of water efficiently and in quantities considered less than average.

"Water features" means any landscape feature that utilizes standing or moving water as a main component. Standard examples are ponds, streams, and fountains.

"Water loss" means the loss of water caused by evaporation.

"Water resources" means the retrievable and usable supply of water.

"Water usage" means the act of using water provided by the Department's water system.

"Water-use efficiency" means the use of water in a way that minimizes waste (i.e. use beyond which is needed to accomplish a task).

"Winterize" means turning off water service and draining the on-site pipes or plumbing to prevent damage to the system during the winter months due to freezing.

"Xeriscape" means a landscape that requires relatively little water to install and maintain. Qualifying landscapes include those that range from highly vegetated to completely lacking in vegetation.

Section 15.66.050 Water-Use Policies and Requirements.

A. Customers shall be encouraged to use native and water-conserving plants for landscaping.

B. Customers shall be required to minimize the use of turf at all new and retrofitted commercial and residential landscapes.

C. Water conservation, emphasizing water use efficiency, will be required as set forth herein.

D. The Department shall require and promote development of water conservation plans for all customers whose water use exceeds reasonable guidelines developed by the Department.

E. The Department shall require repair of all leaks, once they are detected.

F. All outdoor irrigation systems shall be shut off and winterized between November 1st and April 1st annually.

G. The Department will establish reasonable water use and irrigation standards for all residential and commercial customers in its service area.

Section 15.66.060 Nonessential water use. Nonessential water use means water use in violation of Big Bear Lake Municipal Code section 17.11.040. The list of prohibited acts contained in section 17.11.040 is not exhaustive and may include other actions not listed therein.

Section 15.66.070 Turf installation.

A. Turf installations shall not exceed 500 square feet in size for each property.

B. All new and retrofitted landscapes with turf must be irrigated using a sprinkler system with an automatic irrigation controller, that incorporates evapotranspiration and rain shut-off features and has the capability to accommodate all time and date irrigation restrictions employed by the Department.

C. Prior to installing turf, the soil must be prepared to a minimum depth of six (6) inches by adding topsoil and soil conditioners to enhance the water retention capability of the soil.

D. The design of the turf area must be developed to allow efficient irrigation and prevent overspray and runoff.

E. A master valve must be installed on all new or retrofitted landscapes containing turf.

Section 15.66.080 Water Feature Installation.

A. Water feature installations shall not exceed an aggregate of 500 square feet of total surface area of customer's property.

B. When a water feature moves water, such a water feature must utilize a recirculating pump.

Section 15.66.090 Landscape Plans and Permits.

A. New Installations. Landscape plans must be submitted for review and permitting by a Department representative whenever the proposed landscape exceeds 1,000 square feet or when any turf is proposed to be installed. The landscape plan review and approval process will have no impact in granting a certificate of occupancy.

B. Retrofitting or Altering Existing Landscape. Landscape plans must be submitted for review and permitting by a Department representative whenever the combination of existing landscape and the proposed additional or retrofitted landscape exceeds 1,000 square feet.

C. Plan Review and Permitting. All landscape plans must be submitted to the Department for review and approval at least ten (10) days prior to the start of installation. A landscaping permit will be issued upon approval of the landscape plan.

Section 15.66.100 New Landscape Regulations.

A. Turf installations shall not exceed 500 square feet in size for each property.

B. Landscape plants must be grouped by similar irrigation requirements, and irrigation systems must be set up to irrigate individual water-use zones in accordance with their individual needs.

C. All slope and soil conditions, that may cause excessive runoff, must be identified and clearly resolved during the planning and installation process.

D. Landscape elements must be appropriately maintained to maximize water-use efficiency.

1. All sprinkler, emitter, pipe and pond leaks must be repaired timely, and all irrigation systems must be tested and inspected before regular use each spring.

2. All irrigation systems must be shut off and winterized between November 1st and April 1st annually.

Section 15.66.110 Regulations for Retrofitting Landscapes.

A. On landscapes that do not contain existing turf, new turf must be installed in accordance with section 15.66.070.

B If total turf area of a landscape exceeds 500 square feet, a property owner or customer is prohibited from expanding his turf area. If total turf area of a landscape is less than 500 square feet, a property owner or customer may expand his turf area provided that the total turf area does not exceed 500 square feet.

C. If a landscape contains more than 700 square feet of turf, turf may be rearranged as long as the net area of turf is reduced by at least twenty-five percent (25%).

D. Existing irrigation systems may be used as long as they can be employed to maximize irrigation efficiency on the retrofitted landscape. If existing irrigation systems cannot maximize irrigation efficiency, a new irrigation system must be installed.

E. Landscape plants must be grouped by similar irrigation requirements, and irrigation systems must be set up to irrigate individual water-use zones in accordance with their individual needs.

F. All slope and soil problems that may cause excessive runoff must be identified and clearly resolved during the planning and retrofitting process.

G. Landscape elements must be appropriately maintained to maximize water-use efficiency.

1. All sprinkler, emitter, pipe and pond leaks must be repaired timely, and all irrigation systems must be tested and inspected before regular use each spring.

2. All irrigation systems must be shut off and winterized between November 1st and April 1st annually.

15.66.120 Regulations for Planning and Installation of Irrigation Systems

A. Automatic irrigation control systems, that have the ability to accommodate all time and date irrigation restrictions employed by the Department, are required on all landscapes greater than 1,000 square feet in size.

B. Sprinklers will only be allowed on turf and other groundcovers. All other landscape plantings must be irrigated with efficient, low water-use devices, such as, drip systems or bubblers.

C. Sprinklers shall not be used on planter strips less than ten (10) feet wide, unless it can be demonstrated to the satisfaction of the Department that irrigation equipment will provide efficient irrigation and prevent overspray.

D. All irrigation controllers must be equipped with rain shut-off sensors.

E. A master valve must be installed on all new or retrofitted landscapes containing turf.

15.66.130 Guidelines for Controlling Erosion

A. All landscape plans for new and retrofitted landscapes must identify potential erosion problems.

B. Preventing erosion.

1. All slopes and areas of bare soil must be evaluated for their erosion potential.

2. All areas that are susceptible to erosion must be addressed with an erosion prevention plan as required by the Department.

3. Areas that contain running water from adjoining properties during rain showers or snow melt must be prepared to minimize erosion caused by this type of runoff utilizing dry stream beds, erosion resistant vegetation, or other methods required by the Department.

15.66.140 Instructions for Submitting Landscape Plans. Landscape plans shall be submitted with the permit application required by this chapter and shall contain the following information:

A. If a new or retrofitted landscape exceeds 3,000 square feet, the property owner or customer shall submit the following to the Department:

1. Appropriate addresses and contact information for the property owner and landscape contractor.

2. The proposed landscape design.

3. The existing landscape design, if the landscape is being retrofitted.

4. Identification of low, medium, and high water-use vegetation zones.

5. Plant lists associated with each water-use vegetation zone.

6. The proposed irrigation system design, including the location, type, size and description of landscaping to be installed (including all trees, shrubs, groundcover and turf /grass areas).

7. The existing irrigation system design, if the landscape is being retrofitted, including the location, type, approximate size, and description of landscaping (including all trees, shrubs, groundcover and turf /grass areas).

8. Identification of areas with slope or soil problems that need special irrigation features to effectively irrigate these areas.

9. A detailed description of solutions to irrigation problems identified in section 15.66.150(a)(8).

10. Identification and description of erosion control features.

11. Proposed irrigation schedules for all landscape features.

12. A list of environmental sensing devices associated with irrigation controllers, such as, evapotranspiration controllers, soil moisture sensors, and rainfall shut-off devices.

13. A detailed description of all water features.

14. An estimate of water use per month (in ccfs) for all landscape features, including water loss associated with water features.

15. A maintenance schedule for all landscape features.

16. A north arrow and scale.

17. Clearly legible and identifiable property lines and their dimensions.

18. The date of submittal of the plans and any revision dates.

19. A written narrative highlighting water-conserving features of the proposed landscape and its adherence to Xeriscape principles.

B. If the new or retrofitted landscape is less than 3,000 square feet and greater than 1,000 square feet, the property owner or customer shall submit the following to the Department:

1. Appropriate addresses and contact information for the property owner or customer and landscape contractor.

2. The proposed landscape design including the location, type, approximate size, and description of landscaping (including all trees, shrubs, groundcover and turf /grass areas).

3. If a landscape is being retrofitted, a written summary of the proposed changes and a list of the water-conserving features of the new landscape is required.

4. An estimate of water use per month (in ccfs) for all landscape features, including water loss associated with water features.

5. All landscape plans shall clearly show xeriscape principles are being implemented.

15.66.150 Failure to Comply. The penalties for failure to comply with any provisions of this chapter shall be as follows:

A. First violation. The Department will contact the customer by certified mail explaining the violation, the need for the regulation that was violated, a list of penalties associated with continued violation, and request voluntary compliance.

B. Second violation. The Department will contact the customer by certified mail explaining the violation, the need for the regulation that was violated, inform the customer of his previous violations, provide a list of penalties associated with continued violation, and add a surcharge to the customer's water bill which is twice the customer's charge for water usage for the billing cycle during which the violation occurred. If the customer does not cure the violation within 10 days of the date of the notification letter from the Department, the Department will deem the failure to cure as a new violation.

C. Third violation. The Department will contact the customer by certified mail explaining the violation, the need for the regulation that was violated, inform the customer of his previous violations, provide a list of penalties associated with continued violation, add a surcharge to the customer's water bill which is triple the customer's charge for water usage for the billing cycle during which the violation occurred, and notify the Board. If the customer does not cure the violation within 10 days of the date of the notification letter from the Department, the Department will deem the failure to cure as a new violation.

D. Fourth violation. The Department will contact the customer by certified mail explaining the violation, the need for the regulation that was violated, inform the customer of his previous violations, provide a list of penalties associated with continued violation, install a flow restrictor in the customer's water service, add

a surcharge to the customer's bill which is quadruple the customer's charge for water usage for the billing cycle during which the violation occurred, together with all associated expenses dealing with the flow restrictor, and notify the Board. If the customer does not cure the violation within 10 days of the date of the notification letter from the Department, the Department will deem the failure to cure as a new violation.

E. Fifth violation. The Department will contact the violator by certified mail explaining the violation, the need for the regulation that was violated, inform the customer of his previous violations, and, upon approval of the Board, discontinue water service to the customer until the customer delivers a notarized written agreement to abide by all water use regulations established by Department and such other requirements as the Board may determine to be appropriate under the circumstances.

15.66.160 Removal of the Flow Restrictor. The water restrictor will be removed, or water service will be restored, whichever the case may be, upon a hearing as provided in Section 15.66.180 where the customer demonstrates to the satisfaction of the General Manager that the cause of the violation has been corrected and all fees and surcharges have been paid.

15.66.170 Appeal Process. A customer shall have the right to a hearing before the General Manager if the Department receives a written request for such a hearing on or before twenty-one (21) days after the date the notice is mailed to the customer.

The written request for a hearing shall include a statement setting forth reasons why the customer believes that a violation of this chapter has not occurred, along with any documentation that may substantiate the customer's position.

The customer's written request for a hearing shall include payment of the surcharge. Said payment shall be held on deposit with the Department. If, following the hearing, it is determined the surcharge will not be imposed, the Department will refund said deposit.

Upon receipt of a request for a hearing, the General Manager shall contact the customer regarding proposed dates for the hearing. The hearing shall be conducted at the Department's offices. The date of the hearing shall be set at a time that is mutually convenient to both parties, but in any event, shall be held no later than fifteen (15) days from the date of customer's request.

The hearing shall be informal and shall not require adherence to any particular procedure. The General Manager shall render a written decision on or before five (5) days following the date of the hearing.

The customer shall only have a right to appeal alleged violations of the procedures of this chapter by the General Manager or his staff to the Board if the Board receives a written request for such an appeal hearing on or before fifteen (15) days after the date of the General Manager's decision. For all other matters or issues, the decision of the General Manager is a final decision of the Department, and the applicant shall have no right of appeal.

The hearing before the Board shall be held at a regular Board meeting within thirty (30) days of the Department receiving the written request for a hearing. The decision of the Board shall be final.

15.66.180 Permit Fees. No fee shall be charged for the filing of an application or landscape plan under this chapter.

15.66.190 Deposit of Penalty Monies. All monies collected by the Department, pursuant to any of the surcharge provisions of this chapter, shall be deposited in the Water Revenue Fund as reimbursement for the Department's costs and expenses of administering and enforcing this chapter and its general Water Conservation Program.

15.66.200 Severability. If any provision of these Regulations is found to be illegal, unconstitutional, or unenforceable for any reason whatsoever, that provision shall be severed from the remaining provisions, which shall remain in full force and effect.

SECTION 2. This Ordinance shall take effect and shall be published in accordance with applicable law.

PASSED, APPROVED AND ADOPTED this 14th day of March, 2005.

AYES:	Conklin, Dally, Harris, Jahn, Mulvihill
NOES:	None
ABSENT:	None
ABSTAIN:	None

March 14, 2005
Date

Darrell Mulvihill
Darrell Mulvihill, Mayor

ATTEST:

Katherene E. Jefferies
Katherine E. Jefferies
City Clerk

REVIEWED AND APPROVED:

Stephen P. Deitsch
Best Best & Krieger LLP
City Attorney

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO) ss
CITY OF BIG BEAR LAKE)

I, Katherine E. Jefferies, City Clerk of the City of Big Bear Lake do hereby certify that the whole number of members of the City Council of said City is five; that the foregoing ordinance, being Ordinance No. 2005-348 is a full, true and correct original of Ordinance No. 2005-348 of the said City of Big Bear Lake, California, entitled:

AN ORDINANCE OF THE CITY OF BIG BEAR LAKE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AMENDING CHAPTER 15.66 OF ARTICLE XV OF THE BIG BEAR LAKE MUNICIPAL CODE DEALING WITH THE REGULATION OF LANDSCAPING

was duly passed and adopted by the said City Council, approved and signed by the Mayor of said City, and attested by the City Clerk of said City, all at a regular meeting of the said Council on the 14th day of March 2005, and that the same was so passed and adopted by the following vote:

AYES:	Conklin, Dally, Harris, Jahn, Mulvihill
NOES:	None
ABSENT:	None
ABSTAIN:	None

I do hereby further certify that pursuant to the provisions of Section 36933 of the Government Code of the State of California, that the foregoing Ordinance No. 2005-348 was duly and regularly published according to law and the order of the City Council and circulated within said City.

Katherine E. Jefferies

Katherine E. Jefferies, CMC
City Clerk

RESOLUTION NO. DWP 2008-05

A REVISED RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE DEPARTMENT OF WATER AND POWER OF THE CITY OF BIG BEAR LAKE, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, ADOPTING FAILURE TO COMPLY PROCEDURES FOR VIOLATIONS OF ITS RULES AND REGULATIONS

WHEREAS, the Department of Water and Power (Department) has instituted a number of rules and regulations which are necessary for the preservation of the Department's existing water supply, and

WHEREAS, the Department desires to impose a uniform set of failure to comply procedures for the purposes of ensuring compliance with these rules and regulations, and

WHEREAS, the Department feels that the termination of service is the most appropriate manner to deal with any failures of compliance, and

WHEREAS, the Department's Board of Commissioners wishes to adopt a new resolution to replace Resolution No. 2006-13, incorporating the desired revisions and restating those provisions which are not revised.

NOW, THEREFORE, BE IT RESOLVED that the Board of Commissioners of the Department of Water and Power, City of Big Bear Lake, does hereby adopt this Resolution as follows:

Section 1. Notice of Violation.

The Department may not terminate service (the shutoff and locking of a customer's meter) due to a customer's failure to comply with the Department's rules and regulations unless the Department first gives notice of the violation and the impending consequence of the violation. Every failure to comply notice shall include all of the following information: (i) the name and address of the customer whose account is in violation of the Department's rules and regulations, (ii) the specific nature of the violation, (iii) the deadline by which the customer must comply with the Department's rules and regulations, (iv) the consequences of failing to comply with the Department's rules and regulations; and (v) the telephone number of a Department representative who can provide additional information regarding the notice. When a notice of violation has been sent to an owner of a property that has multi-tenants, the Department shall endeavor to provide notice to each unit whether residential or commercial.

Section 2. Correction of Violation; Procedures and Enforcement.

A. Within fourteen (14) calendar days of the date of the failure to comply notice, the customer must correct the violation or contact the Department staff regarding correction of the

violation. If the customer fails to correct the violation or contact the Department staff regarding correction of the violation, the Department shall move forward with terminating service as set forth in Section 4 herein.

B. After contacting Department staff, if Department staff determines that the customer is unable to comply with the Department's rules and regulations within the time period prescribed by the Department but is willing to comply and has made reasonable progress towards compliance, then the Department may grant an extension for compliance, not exceeding twelve (12) months. If, however, the customer has not made reasonable progress to comply with said rules and regulations, the Department will proceed to terminate service unless, the customer appeals that decision to the Board of Commissioners in accordance with Section 3 herein. The customer's failure to appeal, in the case where the customer is not making reasonable progress to comply with said rules and regulations, shall result in the termination of service as set forth in Section 4 herein.

Section 3. Appeal Process.

A. A customer shall have the right to a hearing before the Board of Commissioners, if the Department receives a written request for such a hearing on or before five (5) business days after the Department staff renders a decision under this Resolution that the customer finds objectionable. The written request for a hearing shall include a statement setting forth the reasons why the customer disagrees with the decision of Department staff. Documentation that substantiates the applicant's position must be submitted with the request for a hearing.

B. Upon request for a hearing, the General Manager shall contact the customer regarding the proposed date for the hearing. The hearing shall be conducted at the next regularly scheduled Board meeting for which the hearing can be placed on the agenda.

C. If the Board does not render a decision at the hearing, the Board shall render a written decision on or before five (5) business days following the date of the hearing. The decision of the Board shall be final.

D. Upon completion of the appeal process, and a determination that the customer has failed to comply with the Department's rules and regulations, the Department may move forward with the termination of service as set forth in Section 4 herein.

Section 4. Termination of Service.

A. Subject to the notice requirements of Subsection "B" herein, the Department will terminate service for failure to comply with the Department's rules and regulations.

B. The Department shall make a reasonable attempt to contact an adult person residing at the address where the violation occurred either by telephone or personal contact, at least twenty-four (24) hours prior to the termination of service, except that, whenever telephone or personal contact cannot be accomplished, the Department shall give, by mail, in person, or by

posting in a conspicuous location at the premises, a notice regarding the termination of service, at least forty-eight (48) hours in advance.

C. The Department shall only terminate service at the property where the violation occurred, and not at another property in which the customer has an interest.

D. If the customer later corrects the violation or is granted an extension by the Department, the customer may qualify for reinstatement of service, as applicable.

E. The customer shall be billed for the reasonable cost of terminating and reinstating service as a result of the customer's violation of the Department's rules and regulations. The Department shall not reinstate regular service until such costs are paid in full to the Department.

Section 5. Termination of Service Prohibited.

The Department shall not terminate service in any of the following situations:

A. During a pending Department investigation of a customer dispute or complaint.

B. When the customer has been granted an extension for compliance with the Department's rules and regulations.

C. When a public health or building officer certifies that the termination of service would result in a significant threat to the health or safety of the residential occupants or the public.

D. Upon certification of a licensed physician that to do so will be life threatening to the residential customer and the customer is financially unable to comply with the Department's rules and regulations within the time period prescribed by the Department and is willing to comply with said rules and regulations provided the Department grants an extension for compliance, not exceeding twelve (12) months.

Section 6. Severability.

If any provision of this resolution is found to be illegal, unconstitutional, or unenforceable for any reason whatsoever, that provision shall be severed from the remaining provisions of this Resolution, which shall remain in full force and effect.

Section 7. Repeal of Resolution No. 2006-13

This Resolution shall replace Resolution No. 2006-13, which is hereby repealed.

PASSED, APPROVED, AND ADOPTED this 27th day of May 2008.

AYES: **Foulkes, Willey, Tarras**

NOES: None
ABSTAIN: None
ABSENT: Miller, Giamarino

DATE: 5/27/08

Stephen D. Foulkes, Chair
DWP Board of Commissioners

ATTEST:

Robyn Bratton
Secretary to the Board

Resolution No. DWP 2008-05
Failure to Comply
May 27, 2008

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO)
CITY OF BIG BEAR LAKE)

I, Robyn Bratton, Secretary to the Board of Commissioners of the Department of Water & Power of the City of Big Bear Lake, California, does hereby certify that the whole number of members of said Board is five; that the foregoing Resolution, being Resolution No. DWP 2008-05, was duly passed and adopted by the said Board and attested to by the Secretary of said Board, all at a Regular meeting of the said Board held on the 27th day of May 2008.

AYES: Foulkes, Willey, Tarras
NOES: None
ABSTAIN: None
ABSENT: Miller, Giamarino

Robyn Bratton
Secretary to the Board

(SEAL)

RESOLUTION NO. DWP 2007-03

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE DEPARTMENT OF WATER & POWER OF THE CITY OF BIG BEAR LAKE, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA ADOPTION OF REGULATIONS FOR NON-WATER SHORTAGE EMERGENCIES IN THE DEPARTMENT OF WATER AND POWER'S SERVICE AREA

RESCINDING AND SUPERSEDING ARTICLE NER OF RESOLUTION NO. DWP 2006-11, ADOPTED JULY 25, 2006

WHEREAS, the Department of Water & Power, City of Big Bear Lake ("DWP") has the duty to supply existing customers with water; including, most importantly, water for Human Consumption, Sanitation, and Fire Protection, and

WHEREAS, the water resources of the DWP, which consist entirely of ground water, are limited, and

WHEREAS, emergencies, other than water shortage emergencies, occasionally occur within the Big Bear Valley, which may affect the DWP's ability to serve its customers, and

WHEREAS, on July 25, 2006, the DWP Board adopted Resolution No. DWP 2006-11 amending general water use guidelines, rules, and regulations for Non-Water Shortage Emergencies and Water Shortage Emergencies, which were established in previous DWP Resolutions, and

WHEREAS, the DWP Board of Commissioners desires to update its guidelines, rules, and regulations for Non-Water Shortage Emergencies for the purposes of better conserving water resources during such emergencies.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the DWP, City of Big Bear Lake, as follows:

Article NER of Resolution No. DWP 2006-11 is hereby rescinded and replaced by Resolution No. DWP 2007-03.

ARTICLE NER: NON-WATER SHORTAGE EMERGENCIES

Section NER 1. Definitions.

The following words and phrases, whenever used in this article, shall be construed as defined in this section, unless otherwise specified within individual sections of this article.

DWP Water System. The DWP Water System is composed of five independent systems, four within the Big Bear Valley (Erwin Lake, Fawnskin, Moonridge/Big Bear Lake, and Lake William) and one in Rimforest.

Fire Protection. Water needed to protect humans and their property from an active fire.

Human Consumption. Water directly consumed by humans, their pets, and livestock.

Non-water Shortage Emergencies. Any emergency that has the potential to adversely affect the DWP's water system, water supply, or water service, which is caused by emergencies other than water shortage emergencies.

Sanitation. Cleanliness or the disposal of unhealthful waste.

Section NER 2. Emergency Resolution.

A. Non-water Shortage Emergencies (such as wildfires, earthquakes, and emergencies other than water shortage emergencies) can be declared and emergency regulations can be enacted by the Board or the General Manager as specified in Section NER 2.B.

B. Emergencies can be declared and emergency regulations can be adopted by a majority vote of the DWP Board unless such a vote cannot be obtained or emergency conditions require immediate action. Under these conditions, the General Manager of the DWP, or his authorized representative, shall be authorized to declare Non-water Shortage Emergencies and implement all appropriate measures deemed necessary under the circumstances.

Section NER 3. Purpose.

The purpose of this article is to provide rules and regulations for the DWP and its customers to follow when emergencies, other than water shortage emergencies, are declared.

Section NER 4. Application.

This article applies to all emergencies that have a potential to cause a disruption in water service to all or part of the DWP service area, with the exception of water shortage emergencies. Water shortage emergencies will be specifically addressed in the Water Shortage Emergency Resolution No. DWP 2007-02, or any amendments thereto. All regulations within this Resolution apply to all DWP customers. In situations where a property is serviced by both a DWP service and a private well, no DWP water may be used for activities that are prohibited by any rules or regulations set forth in this Resolution. The DWP Water System is composed of five separate water systems. Each water system within the DWP service area will be evaluated independently, and the need for emergency conditions to be declared will be determined on a case-by-case basis.

Section NER 5. Policy.

A. When an emergency is declared as set forth herein, water service may be interrupted without notice. The DWP shall not have any responsibility for any damage arising out of such interruption of service.

B. All inappropriate uses of water discovered during the emergency conditions covered by this Resolution will result in the immediate lock off of the water service at the DWP meter. Inappropriate water use, during these emergency conditions, include any use other than water necessary for Human Consumption, Sanitation, and Fire Protection. All outdoor water use will be suspended until further notice. Interruptions of service may occur while the DWP is assessing whether a customer is utilizing DWP water in violation of this resolution.

C. All decisions associated with this Resolution will be determined by the Board of Commissioners, when possible, the General Manager, or his authorized representative. All declared emergencies will be dealt with in the following three phases:

    1. The Assessment Phase

    2. The Emergency Phase

    3. The Recovery Phase

D. The Assessment Phase shall commence upon the declaration of an emergency at the inception of an event (e.g. an earthquake) or when an event is imminent (e.g. wildfire). Upon the declaration of an emergency, the following procedures shall be followed:

1. DWP staff will assess the emergency and its potential effects on the DWP's ability to provide water for Human Consumption, Sanitation, and Fire Protection. This assessment should be completed within forty-eight (48) hours or less from the declaration of the emergency. Under exceptional circumstances or changing conditions, the assessment may require additional time to complete. Nonetheless, assessment of the situation shall be completed as quickly and efficiently as possible under the prevailing conditions.

2. Use of water outdoors for other than emergency purposes shall be prohibited.

3. Use of water indoors for purposes other than Human Consumption, Sanitation, and Fire Protection shall be prohibited.

4. All water use shall be minimized.

E. Upon completion of the Assessment Phase, the Emergency Phase shall begin and continue as long as emergency conditions persist. For the duration of the Emergency Phase, the following procedures shall be followed:

1. Use of water outdoors for other than emergency purposes is prohibited.

2. Use of water indoors for purposes other than Human Consumption, Sanitation, and Fire Protection is prohibited.

3. All water use shall be minimized.

F. When emergency conditions end, the Board, when possible, the General Manager, or his representative shall declare an end to the Emergency Phase, which will signal the beginning of the Recovery Phase. The Recovery Phase shall last until normal conditions return to the DWP service area. For the duration of the Recovery Phase, the following procedures shall be followed:

1. Use of water outdoors for other than emergency purposes shall be prohibited, unless the General Manager determines that restricted outdoor water use is reasonable given the current state of the DWP's water supply and system. When restricted outdoor use is permissible, the public will be provided with a specific list of approved outdoor water uses.

2. Use of water indoors for purposes other than Human Consumption, Sanitation, and Fire Protection shall be prohibited. When indoor water use in excess of these essential uses is permissible, the public will be provided with a specific list of approved indoor water uses.

3. All water use shall be minimized.

G. When recovery is complete, water use guidelines shall return to the regulations that were in effect immediately prior to the declaration of the emergency, unless otherwise specified.

For ease of reference, a summary of the actions associated with the three phases described in this article is set forth in the following table:

Table NER 1. Summary of the guidelines associated with Non-water Shortage Emergencies.

Assessment Phase	Emergency Phase	Recovery Phase
The first 48 hours after the recognition of the emergency. DWP staff evaluates the current problem and its effect on the water system.	The duration of emergency conditions.	The length of time needed to return to normal conditions.
No outside water use other than Fire Protection.	No outside water use other than Fire Protection.	No outside water use other than Fire Protection, unless specific direction is provided to the community by the General Manager.
Indoor water use for Human Consumption, Sanitation, and Fire Protection only.	Indoor water use for Human Consumption, Sanitation, and Fire Protection only.	Indoor water use for Human Consumption, Sanitation, and Fire Protection only, unless specific direction is provided to the community by the General Manager.
Encourage minimal water use.	Encourage minimal water use.	Encourage minimal water use.

Section NER 6. Failure to Comply.

Violations of this resolution or any policies adopted pursuant to this Resolution that require immediate attention will result in an immediate lock off of water services. Violations of this Resolution that do not require immediate attention may result in either the installation of a flow restrictor or the termination of service in the manner set forth in the failure to comply provisions of Resolution No. DWP 2006-13 as now written or as amended from time to time.

Resolution No. DWP 2007-03

PASSED, APPROVED, AND ADOPTED THIS 27th day of February 2007.

AYES: Conley, Willey, Speyers, Miller
NOES: None
ABSTAIN: None
ABSENT: One Vacant Seat

2/27/07
Date

Barbara Willey, Chairman
DWP Board of Commissioners

ATTEST:

Robyn Bratton
Secretary to the Board

Resolution No. DWP 2007-03

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO)
CITY OF BIG BEAR LAKE)

I, Robyn Bratton, Secretary to the Board of Commissioners of the Department of Water & Power of the City of Big Bear Lake, California, do hereby certify that the whole number of members of said Board is five; that the foregoing Resolution, being Resolution No. DWP 2007-03, was duly passed and adopted by said Board, and attested to by the Secretary of said Board, all at a Regular meeting of said Board, held on the 27th day of February 2007, that the same was so passed and adopted by the following vote:

AYES: Conley, Willey, Speyers, Miller
NOES: None
ABSTAIN: None
ABSENT: One Vacant Seat

Robyn Bratton
Secretary to the Board

(SEAL)

RESOLUTION NO. DWP 2007-02

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE DEPARTMENT OF WATER & POWER OF THE CITY OF BIG BEAR LAKE, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA ADOPTION OF REGULATIONS FOR WATER SHORTAGE EMERGENCIES IN THE BIG BEAR VALLEY

RESCINDING AND SUPERSEDING ARTICLES WCR AND WSER OF RESOLUTION NO. DWP 2006-11, ADOPTED JULY 25, 2006

WHEREAS, the Department of Water and Power, City of Big Bear Lake ("DWP") has the duty to supply existing Customers with water; including, most importantly, water for human consumption, sanitation, and fire protection, and

WHEREAS, the water resources of the DWP, which consist entirely of ground water, are limited, and

WHEREAS, the ground water basins within the DWP's service area are only recharged from rain and snow and the resulting percolation, and

WHEREAS, Big Bear Valley exists in a climate where periodic droughts will continue to occur and aquifer recharge can be minimal for several consecutive years, and

WHEREAS, the estimate of perennial yield of the aquifers, water usage by customers, and anticipated growth of the community indicate that water demand may exceed supply in the foreseeable future; and

WHEREAS, the DWP has the power and the authority to adopt and enforce water conservation measures within its service area pursuant to Water Code sections 350 et seq. and 375 et seq.; and

WHEREAS, on December 17, 2002, the Board of Commissioners adopted Resolution No. DWP 2002-07 which declared the existence of a water shortage emergency in accordance with Water Code sections 350 et seq., and directed the DWP staff to develop specific recommendations for restrictions on the delivery and consumption of water within the DWP's service area in order to address the water shortage in the DWP's service area; and

WHEREAS, on July 25, 2006, the DWP Board of Commissioners adopted Resolution No. DWP 2006-11 amending guidelines, rules and regulations for Non-water Shortage Emergencies and water shortage emergencies, which were established in previous DWP Resolutions, and

WHEREAS, on account of the continued pressures on the DWP's water supply and the uncertainty surrounding ground water Recharge, a water shortage emergency, within the meaning of Water Code section 350, continues to exist; and

WHEREAS, the DWP Board of Commissioners desires to update its guidelines, rules, and regulations governing water usage during water shortage emergencies by rescinding Resolution No. 2006-11, and adopting a resolution that better serves to address this current water shortage emergency.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the DWP, City of Big Bear Lake, as follows:

Section 3 of Resolution No. DWP 2003-05 and Articles WCR and WSER of Resolution No. DWP 2006-11 are hereby rescinded, and Article WSER of Resolution No. DWP 2006-11 is replaced by Resolution No. DWP 2007-02.

Section WSER 1. Purpose.

The purpose of this Resolution is to provide rules and regulations governing water usage in order to minimize the effect of a shortage of water supplies on DWP Customers during the water shortage emergency. This Resolution is adopted pursuant to Water Code sections 350 et seq., which authorizes the adoption of regulations and restrictions on the delivery and consumption of water during water shortage emergencies.

Section WSER 2. Application.

The provisions of this Resolution shall apply to all persons, customers, and property served by the DWP, wherever situated, and for all types of water being provided by the District. In situations where a property is serviced by both the DWP and a private well, no DWP water may be used for activities that are prohibited by any regulation set forth in this Resolution.

Section WSER 3. Administration.

A. The General Manager, of the DWP, or his designated representatives, shall be responsible for enforcement of the provisions of the resolution.

B. The General Manager, or his designated representatives, shall likewise be authorized to grant administrative relief from any provision of this resolution as they deem appropriate under the circumstances.

Section WSER 4. TECHNICAL REVIEW TEAM ("TRT").

The Technical Review Team shall review and evaluate the status, condition, and availability of the DWP's ground water supplies and recommend and advise the Board of Commissioners, concerning water levels in service area wells, the system's ability to produce and distribute water to its customers, Conservation Stages, and other water conservation matters, including but not limited to the number of new service connections allowed annually. The TRT shall be comprised of, at a minimum, five individuals derived from the Board of Commissioners and the DWP management staff.

The TRT shall have an additional member who is either a hydrogeologist or engineering consultant. Additional individuals may be added to the TRT when any circumstance arises that requires specialized or additional expertise.

Section WSER 5. Policy.

The Board of Commissioners, upon reviewing the recommendations of the TRT, shall determine the Conservation Stages, and other water conservation matters, including but not limited to the number of new service connections allowed annually that are appropriate for all or portions of the DWP Water System. In some instances, the Board of Commissioners may act without consulting the TRT. Evaluation of the appropriate Conservation Stage, the number of new service connections, and designated landscape irrigation days will include, but not be limited to the following considerations:

1. Current ground water levels.
2. Recent trends in the ground water levels.
3. The previous winter's precipitation.
4. The previous year's water demand.
5. Current and anticipated demand for water by DWP Customers.
6. Current and anticipated production capacity of the DWP water sources.
7. Damage to one or more of the DWP's water systems.
8. Anticipated ability to optimize use of above-ground water storage.
9. Predicted weather patterns.

Section WSER 6. Definitions.

The following words and phrases, whenever used in this article, shall be construed as defined in this section, unless otherwise specified within individual sections of this article.

Conservation Stage. The level of mandatory water conservation presently required from Customers as determined by the Board of Commissioners in accordance with the provisions of this Resolution.

Customer. Any person, persons, association, corporation, government agency, or other entity supplied with water service from DWP.

DWP Water System. The DWP Water System is composed of five independent systems, four within the Big Bear Valley (Erwin Lake, Fawnskin, Moonridge/Big Bear Lake, and Lake William) and one in Rimforest.

Landscape. All portions of a property that are not covered by the foundations of buildings or other structures.

Non-water Shortage Emergencies. Any emergency that has the potential to adversely affect the DWP's water system, water supply or water service, which is not directly related to actual or potential water shortages covered by this resolution.

Recharge. The process of adding water to an aquifer.

Turf. Lawn or grass, in all its forms, whether grown from seed or transplanted.

New Turf. Lawn or grass, in all its forms, whether grown from seed or transplanted that has never been irrigated using DWP water.

Water shortage emergency. Any water shortage within the meaning of Water Code sections 350 et seq.

Section WSER 7. Essential Water Use

During water shortage emergencies, water use may be restricted to essential water uses only. The term "essential water use" is defined to mean water necessary for human consumption, sanitation, and fire protection. All other uses of water that are not specifically required to meet these needs shall be considered non-essential.

Section WSER 8. Mandatory Water Conservation Stages.

No Customer shall make, cause, use, or permit the use of water from the DWP for any residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this Resolution or in an amount in excess of that use permitted by the Conservation Stage then in effect. For the purposes of this Resolution, any use of water on the subject property shall be imputed to the Customer including, without limitation, any use by a tenant or an employee, agent, contractor or other entity or individual.

The Board of Commissioners is authorized and directed to determine and declare the appropriate water Conservation Stage utilizing the factors contained in Section WSER 5 herein. Any Conservation Stage shall be effective upon the Board of Commissioners making such a declaration. Each water system within the DWP service area will be evaluated independently, and the water Conservation Stage for each system will be determined on a case-by-case basis.

There shall be four water Conservation Stages. The following rules and regulations associated with the Conservation Stages, described below, will be effective immediately upon declaration and approval of the Board of Commissioners.

Section WSER 8.A. Conservation Stage I: Water-use Regulations.

A. Residential and commercial customers' overall water-use reduction target: 5%.

B. Residential and commercial customers' outdoor water-use reduction target: 15%.

C. Hose washing of sidewalks, walkways, driveways, parking areas, patios, porches, or verandas, except when needed to protect public health and safety is prohibited.

D. All guidelines and regulations regarding Landscape planning and installation contained in Resolution No. DWP 2004-08A, as amended from time to time, remain in effect except for the following:

    1. Landscape irrigation will be permitted every other day. Addresses ending in odd numbers may water on odd numbered calendar days and addresses ending in even numbers may water on even numbered calendar days.

2. The square footage of turf shall be limited to 500 square feet for new or retrofitted landscapes.

E. No DWP water may be used for soil compaction or dust control.

F. Washing of vehicles, trailers, buses, or boats anywhere but at commercial car washes must be conducted with the use of a bucket and a hose equipped with a shut-off nozzle.

G. Use of water from fire hydrants, except for fire protection purposes is prohibited.

Section WSER 8.B. Conservation Stage II: Water-use Regulations.

A. Residential and commercial customers' overall water-use reduction target: 10%.

B. Residential and commercial customers' outdoor water-use reduction target: 30%.

C. All guidelines and regulations regarding landscape planning and installation contained in Resolution No. DWP 2004-08A, as amended from time to time, remain in effect except for the following:

1. Outdoor irrigation will be permitted only on days authorized by the DWP Board of Commissioners.

2. No New Turf will be permitted at any location.

D. All rules and regulations contained in Subsections E, F, and G of Section WSER 8.A. shall remain in effect.

Section WSER 8.C. Conservation Stage III: Water-use Regulations.

A. Residential and commercial customers' overall water-use reduction target: 25%.

B. Residential and commercial customers' outdoor water-use reduction target: 60%.

C. All guidelines and regulations regarding landscape planning and installation contained in Resolution No. DWP 2004-08A, as amended from time to time, remain in effect except for the following:

1. Outdoor irrigation will be permitted only two days per week and will be specified by the DWP.

2. Irrigation of turf shall be prohibited.

3. No DWP water shall be used for ponds, streams, or fountains with a capacity greater than 50 gallons.

4. No new turf will be permitted at any location.

D. All rules and regulations contained in Subsections E, F, and G of Section WSER 8.A. shall remain in effect.

Section WSER 8.D. <u>Conservation Stage IV: Water-use Regulations</u>.

A. Residential and commercial customers' overall water-use reduction target: 45%.

B. Residential and commercial customers' outdoor water-use reduction target: 100%.

C. No outdoor water use shall be permitted, except commercial car washes that recycle water.

D. All guidelines and regulations regarding landscape planning and installation contained in Resolution No. DWP 2004-08A, or as amended from time to time, remain in effect except for the following:

1. No landscape irrigation will be permitted.

2. No DWP water shall be used for ponds, streams, fountains and new or unfilled swimming pools.

3. No new turf will be permitted.

E. No DWP water may be used for soil compaction or dust control.

F. Use of water from fire hydrants, except for fire protection purposes is prohibited.

For quick reference, a summary of the regulations associated with the four water Conservation Stages described in this article is set forth in the following table. For the complete list of regulations associated with Conservation Stages I-IV, refer to Sections WSER 8.A, B, C, and D, respectively.

Stage I	Stage II	Stage III	Stage IV
Residential & commercial customers reduce use by 5%.	Residential & commercial customers reduce use by 10%.	Residential & commercial customers reduce use by 25%.	Residential & commercial customers reduce use by 45%.
Even/odd watering schedule, 15% reduction in outdoor water use.	Designated days watering schedule, 30% reduction in outdoor water use.	2 days per week watering schedule, target 60% reduction in outdoor water use.	No outside water use except car washes that recycle.
Promote indoor water use conservation.	5% reduction in indoor water use.	10% reduction in indoor water use.	20% reduction in indoor water use.
Permits required for new turf with size limit, 500 sq. ft.	No new turf.	No new turf.	No new turf.
		No turf irrigation.	No outside water use.
		No DWP water for ponds, streams, or fountains over 50 gallons.	No DWP water for ponds, streams, fountains, or new or unfilled pools.
No DWP water for soil compaction or dust control.	No DWP water for soil compaction or dust control.	No DWP water for soil compaction or dust control.	No DWP water for soil compaction or dust control.

The water-use restrictions, listed in Conservation Stages I-IV, provide general water use regulations to be implemented during water shortage emergencies. Additional restrictions and/or changes in the Water Conservation Stages may be recommended by the TRT and approved by the Board of Commissioners, whenever it determines necessary, in accordance with the considerations listed in Section WSER 5.

Section WSER 9. <u>Failure To Comply</u>.

Violations of this Resolution may result in either the installation of a flow restrictor or the termination of service in the manner set forth in the failure to comply provisions of Resolution No. DWP 2006-13 as now written or as amended from time to time.

PASSED, APPROVED, AND ADOPTED this 27th day of February 2007.

AYES: Conley, Willey, Speyers, Miller
NOES: None
ABSTAIN: None
ABSENT: One Vacant Seat

2/27/07
Date

Barbara Willey, Chairman
DWP Board of Commissioners

ATTEST:

Robyn Bratton
Secretary to the Board

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO)
CITY OF BIG BEAR LAKE)

I, Robyn Bratton, Secretary to the Board of Commissioners of the Department of Water & Power of the City of Big Bear Lake, California, do hereby certify that the whole number of members of said Board is five; that the foregoing Resolution, being Resolution No. DWP 2007-02, was duly passed and adopted by said Board, and attested to by the Secretary of said Board, all at a Regular meeting of said Board, held on the 27th day of February 2007, that the same was so passed and adopted by the following vote:

AYES: Conley, Willey, Speyers, Miller
NOES: None
ABSTAIN: None
ABSENT: One Vacant Seat

Robyn Bratton
Secretary to the Board

(SEAL)

RESOLUTION NO. DWP 2007-08

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE DEPARTMENT OF WATER & POWER CITY OF BIG BEAR LAKE, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

RESCINDING AND REPLACING RESOLUTION NO. DWP 2005-03 AND ADOPTING UPDATED REGULATIONS FOR THE RETROFIT ON CHANGE OF SERVICE PROGRAM

WHEREAS, on December 17, 2002, the Board of Commissioners of the Department of Water and Power, City of Big Bear Lake (the "DWP") declared a water shortage emergency within the DWP service area in accordance with Water Code sections 350 *et seq.*; and

WHEREAS, water shortage emergency conditions continue to exist, given that the estimate of perennial yield of the aquifers, water usage by customers, and the anticipated growth of the community within the DWP service area indicate that water demand may exceed supply within the next twenty years; and

WHEREAS, in order to protect DWP's water supply for human consumption, sanitation and fire protection, the DWP has adopted regulations that improve water use efficiency; and

WHEREAS, on May 25, 2004, the DWP Board of Commissioners adopted Resolution No. DWP 2004-05 which established, among other things, the retrofit on change of service program in DWP's service area; and

WHEREAS, the Retrofit on Change of Service Program was designed to promote water conservation by requiring the installation of water-efficient faucets, showerheads, and toilets; and

WHEREAS, on February 22, 2005, the DWP Board of Commissioners adopted Resolution No. DWP 2005-03 which updated the Retrofit on Change of Service Program; and

WHEREAS, in accordance with the authority granted by Water Code sections 350 and 375, the DWP Board desires to update and clarify the DWP's retrofitting requirements for the purposes of facilitating the enforcement of these water conservation measures.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the DWP, City of Big Bear Lake, as follows:

Section ROCS 1. Incorporation.

The recitals set forth above are incorporated herein and made an operative part of this Resolution.

Section ROCS 2. Rescission.

Resolution No. DWP 2005-03 is hereby rescinded and replaced in its entirety by this Resolution.

Section ROCS 3. Purpose.

The purpose of this Resolution is to update and clarify the rules and regulations of the Retrofit on Change of Service Program which will thereby promote water conservation.

Section ROCS 4. Retrofit Requirements.

A. Retrofit Standards. Faucets and showerheads must have flow rates of 2.5 gallons per minute or less. Toilets must have flush volumes of 1.6 gallons per flush or less.

B. Retrofit. Upon a change of service, all faucets, showerheads, and toilets shall be inspected by the property owner to determine whether the fixtures of the property meet the retrofit standards set forth in Section 4.A. of this Resolution. If the inspection reveals non-compliant fixtures, the property owner shall retrofit all such fixtures in accordance with the foregoing retrofit standards. A change of service occurs whenever the party responsible for the water bill at a property changes in the DWP's records.

C. Certificate of Compliance. Within ninety (90) days of the change of service, the customer, shall file with the DWP a written certification of compliance ("certificate of compliance"), signed under penalty of perjury, confirming that all faucets, showerheads, and toilets conform with the requirements herein. If the customer fails to provide a certificate of compliance within 90 days of the change in service, the DWP shall be authorized to implement the failure to comply procedures in accordance with Section ROCS 7.

Section ROCS 5. Compliance Inspections.

Any certificate of compliance, which is submitted to the DWP pursuant to Section ROCS 4, may be subject to verification through an inspection of the customer's premises by DWP staff. Authority and permission to enter the premises, for the purposes of verifying compliance with this Resolution shall be granted by the customer to DWP staff upon request and presentation of official identification. Compliance inspections will consist of a complete survey of all faucets, showerheads, and toilets of the premises to evaluate whether or not they comply with the flow rates or flush volumes specified herein. If any customer refuses admittance to, or hinders or prevents inspection of his or her premises, the DWP shall be authorized to implement the failure to comply procedures in accordance with Section ROCS 7.

Section ROCS 6. Exception

A property owner may file a written request for relief from the retrofit requirements of ROCS 4, whenever there are exceptional, unusual and peculiar circumstances involved with retrofitting the property in question. Such a written request shall include all information he or she deems necessary for evaluation and resolution of the request and shall be filed within thirty (30) days of the change in water service.

The General Manager or designee shall review all requests for relief and may grant relief in instances when a property owner clearly demonstrates that he or she qualifies for the foregoing exemption. The General Manager or designee may grant, deny or modify the request for relief or impose any conditions he deems appropriate. The General Manager or designee shall inform the property owner of the decision in writing. The property owner shall have the right to appeal the decision of the General Manager or designee to the Board of Commissioners. The appeal must be in writing and received by the DWP within thirty (30) days of the date of the written decision of the General Manager or designee. The appeal shall be heard by the Board of Commissioners within a reasonable time of the date the appeal is submitted to the DWP. The DWP shall provide written notice, the time, and date of said hearing to the property owner. At the hearing, the Board of Commissioners may affirm, reverse or modify the decision of the General Manager or designee. The decision of the Board of Commissioners shall be final.

Section ROCS 7. **Failure to Comply**.

Violations of this resolution may result in the actions set forth in the failure to comply provisions of Resolution No. DWP 2006-13 as now written or as amended from time to time.

Passed, approved and adopted this 24th day of April, 2007.

AYES: Willey, Conley, Speyers, Miller
NOES: None
ABSENT: Giamarino
ABSTAIN: None

4/24/07
(Date)

Barbara Willey, Chairwoman

ATTEST:

Robyn Bratton
Secretary to the Board

Certification

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO)
CITY OF BIG BEAR LAKE)

I, Robyn Bratton, Secretary to the Board of Commissioners of the Department of Water & Power of the City of Big Bear Lake, California, do hereby certify that the whole number of members of said Board is five; that the foregoing Resolution, being Resolution No. DWP 2007-08, was duly passed and adopted by the said Board, and attested to by the Secretary of said Board, all at a Regular meeting of the said Board, held on the 24th day of April 2007, that the same was so passed and adopted by the following vote:

AYES: Willey, Conley, Speyers, Miller
NOES: None
ABSTAIN: None
ABSENT: Giamarino

Robyn Bratton
Secretary to the Board