



Water Supply Management Report

2011 Water Year (October 1, 2010 – September 30, 2011)

Water Resources Division, Public Works Department

December 2011

INTRODUCTION

The City of Santa Barbara operates the water utility to provide water for its citizens, certain out-of-City areas, and visitors. Santa Barbara is an arid area and providing an adequate water supply requires careful management of water resources. The City has a diverse water supply including local reservoirs (Lake Cachuma and Gibraltar Reservoir), groundwater, State Water, desalination, and recycled water. The City also considers water conservation an important tool for balancing water supply and demand. The City's current Long-Term Water Supply Plan (LTWSP) was adopted by City Council on June 14, 2011.

This annual report summarizes the following information:

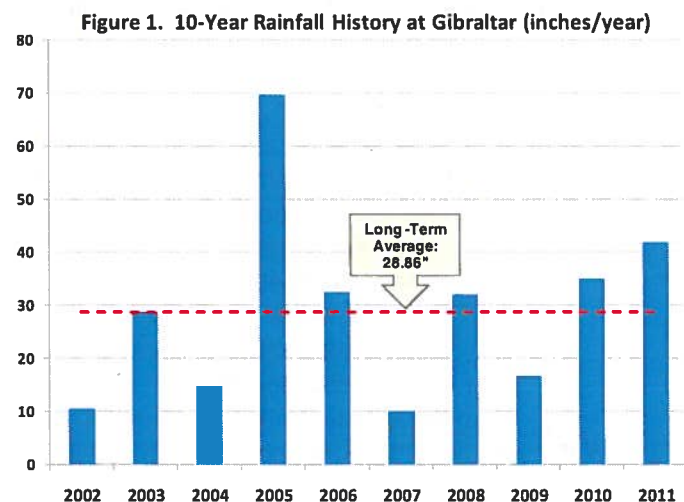
- The status of water supplies at the end of the water year (September 30, 2011)
- Water conservation and demand
- Drought outlook
- Major capital projects that affect the City's ability to provide safe clean water
- Significant issues that affect the security of the City's water supplies
- A brief summary of key issues associated with the new LTWSP

Appendix A provides supplemental detail. Additional information about the City's water supply can be found on-line at: www.SantaBarbaraCA.gov/water

On November 14, 2011, the Water Commission reviewed this report and voted to _____.

WATER SUPPLIES

The City has developed five different water supplies: local surface water; local groundwater (which includes water that seeps into Mission Tunnel); State Water; desalinated seawater; and recycled water. Typically, most of the City's demand is met by local surface water reservoirs and recycled water, augmented as necessary by local groundwater and State Water. The City's desalination facility is currently off-line.



The City's local surface water comes from Gibraltar Reservoir and Lake Cachuma, both of which are located in the upper Santa Ynez River watershed. The inflow to these reservoirs is rainwater, so rainfall data for Gibraltar Reservoir is important for water supply management purposes. Figure 1 shows rainfall for the past ten years as compared to the 52-year average. Additional historic rainfall information is included in Appendix A. Runoff generated by average rainfall is generally enough to fill Gibraltar; however, it takes above-average rainfall to produce any significant inflow to Cachuma. Rainfall during the past year was about 46% above average, more than enough to fill Lake Cachuma. To enhance rainfall, the City participates in the cloud seeding program administered by the County of Santa Barbara. However, the program has been limited in recent years due to concern about potential erosion of burn areas.

Table1, below, summarizes the status of the City's various water supplies at the end of the 2010-2011 water year.

Table 1. End of Year Status of City Water Supplies*	
Lake Cachuma	Total Capacity: 186,636 AF (2008 survey for 750' elevation) End of Year Storage: 180,986 AF Percent of Total Capacity: 97% The City's share of the Cachuma Project normal annual deliveries is 8,277 AF. Actual use was 8,911 AF. Remaining entitlement of 5,789 AF has been carried over to the current year.
Gibraltar Reservoir	Total Capacity: 5,251 AF (2010 survey) End of Year Storage: 3,084 AF Percent of Total Capacity: 59% Gibraltar Reservoir typically fills and spills about two out of every three years. Deliveries over the past ten years have averaged 2,932 AFY. Deliveries in 2011 were 1,987 AF.
Mission Tunnel	Groundwater that seeps into Mission Tunnel is an important part of the City's water supply, providing 1,342 AF in 2011, about 17% above the long-term average.
Groundwater	Groundwater levels remain high in the downtown storage basin, since pumping has been less than the annual recharge rate during the past decade. Levels in the upper State Street area have lower than normal due to additional use of groundwater to meet water quality requirements. Four of nine production wells are currently available for use. The City used 506 AF of groundwater during 2011.
State Water Project (SWP)	The City has a 3,000 AF entitlement, plus 300 AF drought buffer. The Coastal Branch and Santa Ynez Extension of the SWP are in place to deliver the City's SWP water into Lake Cachuma, subject to availability of water supplies. The City used 750 AF of State Water in 2011.
Desalination	The desalination plant remains in long-term storage mode and no water was produced this year. Staff projects no need for desalinated water within at least the next 5 years.
Recycled Water	The City's recycled water system serves parks, schools, golf courses, other large landscaped areas, and some public restrooms. The system provides approximately 5% of the total water demand. Customer demand was 648 AF in 2011, not including process water at El Estero Wastewater Treatment Plant. In recent years, recycled water has included a significant fraction of potable water for blending to meet water quality standards and reduce mineral content. A review of secondary treatment modifications has been completed and identified modifications to improve water quality.

*The Water year runs from October 1 through September 30. All data above is as of September 30, 2011

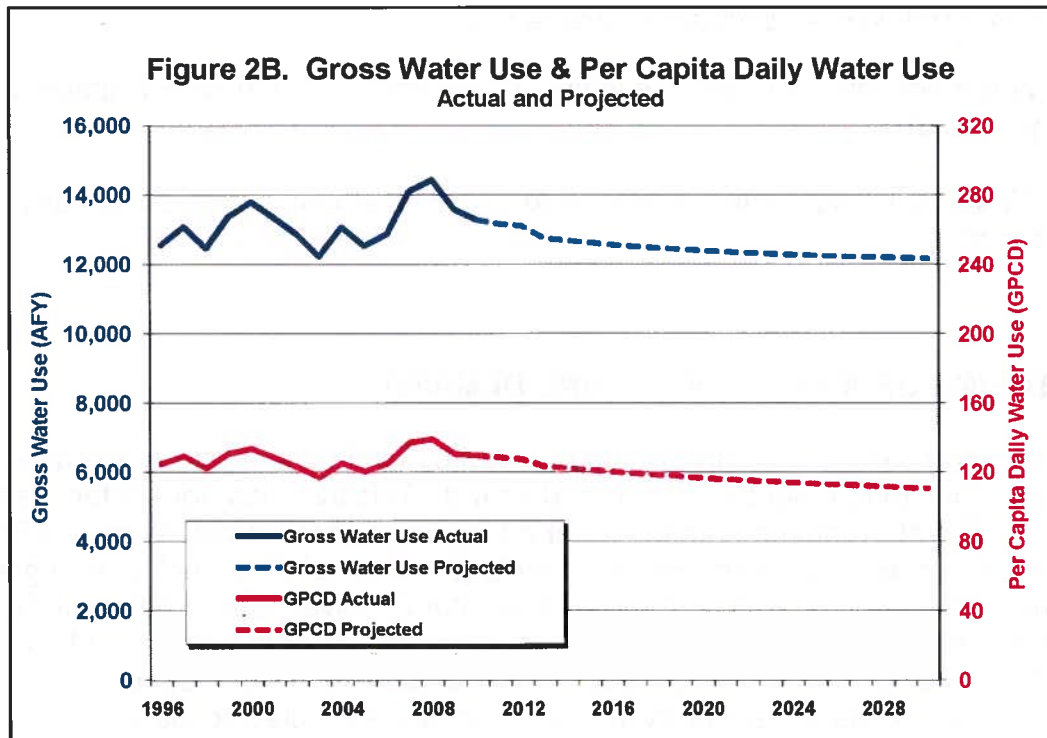
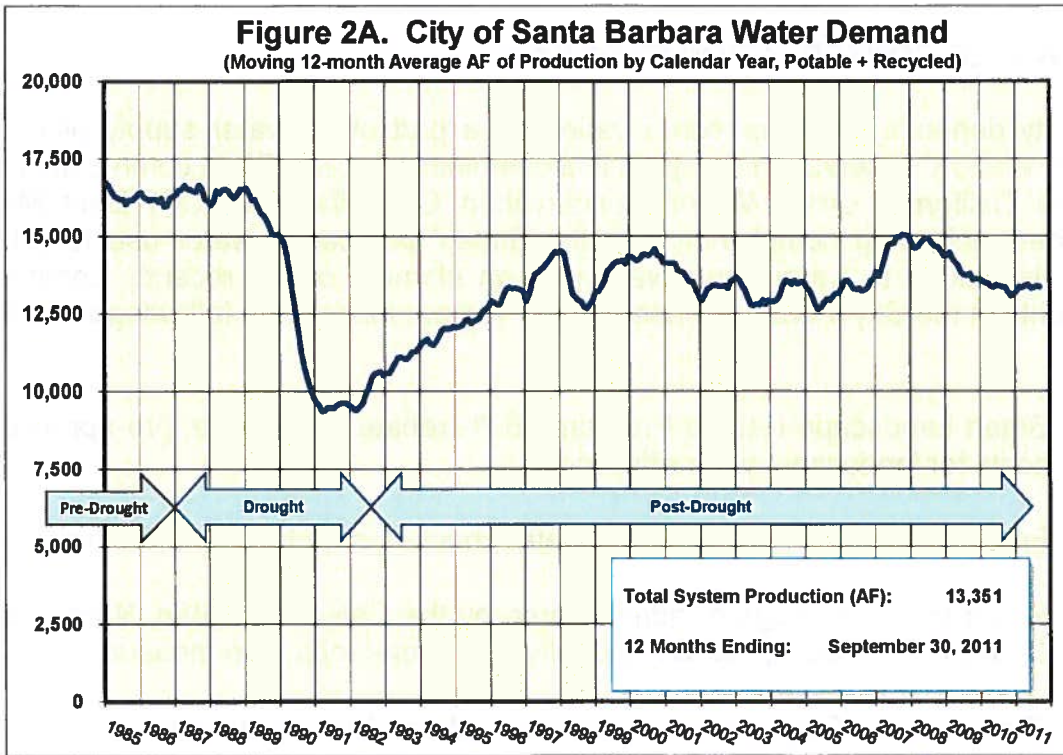
CITY WATER CONSERVATION PROGRAM

The City depends on water conservation as a part of its water supply plan. The City's current Water Conservation Program is a combination of the City's commitment to carrying out the California Urban Water Conservation Council's (CUWCC) Best Management Practices, achieving compliance with the States' per capita water use targets, and the City's dedication to water conservation as an element of the recently updated LTWSP. Highlights of the City's Water Conservation Program include the following activities:

- Smart Landscape Rebate Program: 50% rebate on eligible, pre-approved material costs for landscape water efficiency;
- Free residential and commercial water check-ups (558 completed this year);
- Smart Rebates Program administered by the California Urban Water Conservation Council (CUWCC), providing incentives for non-landscape measures;
- "Garden Wise Guys" television show on Water Wise gardening;
- City's web site at www.savewatersb.org;
- Water education program reaching approximately 2,000 K-12th grade students per year; and
- Targeted billing system analysis to reach customers with particularly high water usage.

MONITORING OF WATER SUPPLY AND DEMAND

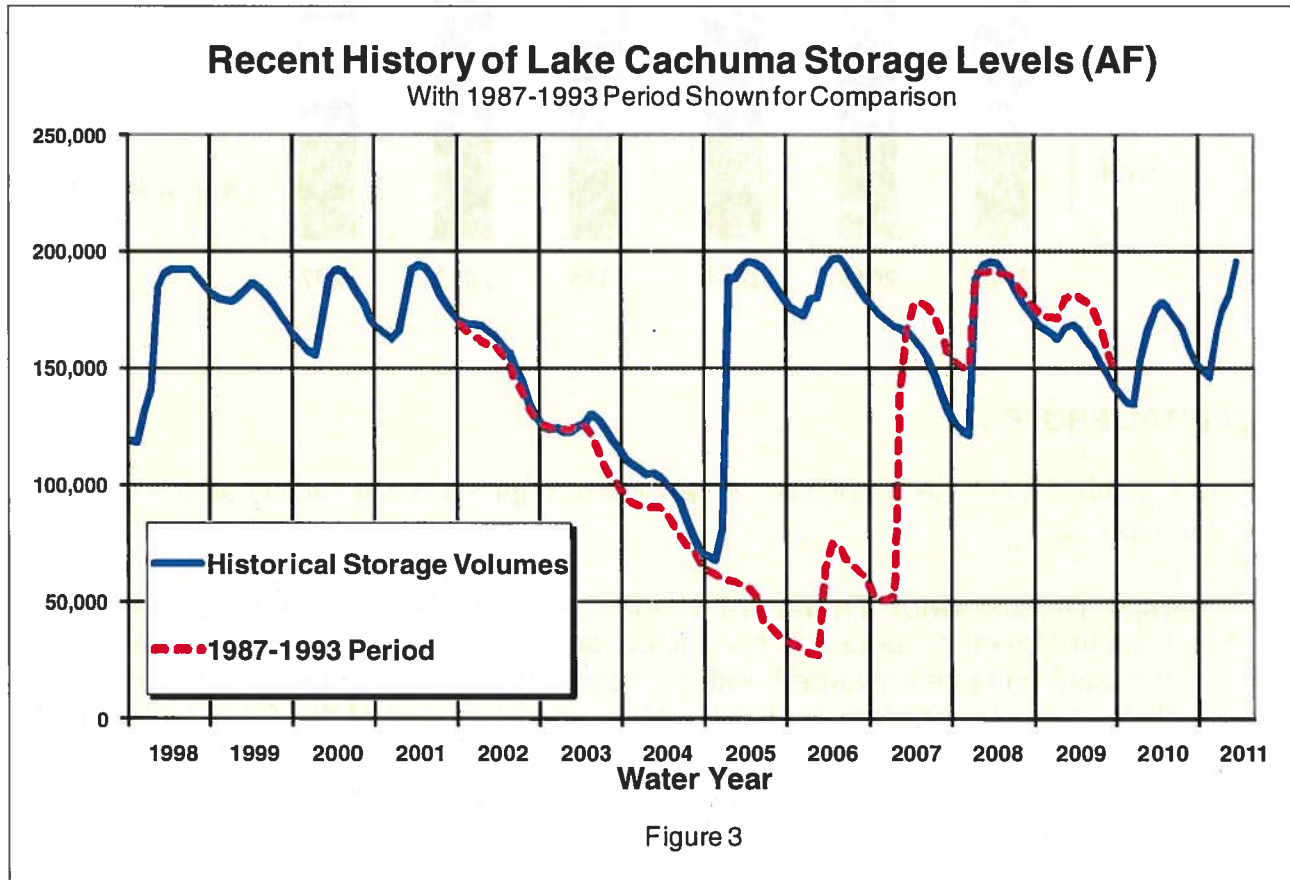
Water demand has traditionally been measured by total water system production, because water is produced to meet the customer demand. This includes both potable and recycled water. New State requirements for water conservation have established a "20% by 2020" target based on what is called "Gross Water Use." The definition includes all potable water used within the service area, except for agricultural deliveries and groundwater recharge. It does not include recycled water use, except for the potable water blending component. Since the production numbers provide historical context on our demand, and the Gross Water Use is the new mandatory metric, both are expected to be tracked. Figure 2A illustrates the traditional historical tracking of water system demand. Figure 2B shows the recent history and 20-year projection of Gross Water Use and Per Capita Daily Water Use, calculated in accordance with State requirements for meeting the "20 x 2020" conservation mandate.



Total system water production for the 2010-2011 water year was 13,351 AF. This is below the estimated normal year water demand of 14,000 AFY, reflecting somewhat above average rainfall for the year, following three years of below average rainfall, including extraordinarily dry weather in 2007. The lower demand may also reflect the poor economic situation.

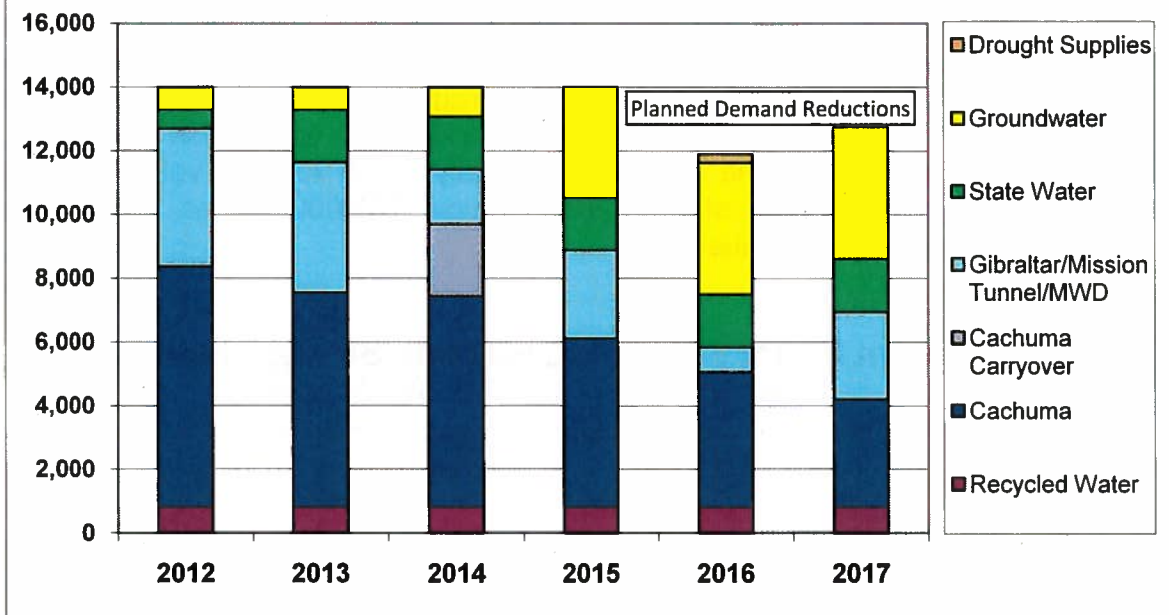
DROUGHT OUTLOOK

Because the City depends heavily on local surface water, drought is the situation most likely to reduce our available water supplies. Lake Cachuma is our primary source of surface water and its storage level is the most important indicator of potential near-term drought impacts. Figure 3 shows a recent history of storage levels at Lake Cachuma. The severe drought period of 1987-1993 is also shown for comparison to the less severe dry period of 2002 through 2004. Cachuma members normally begin to take voluntary reductions in deliveries when the reservoir storage drops below 100,000 AF as a way of stretching supplies in case drought continues.



Under the new LTWSP, the City's water supply is planned to meet 100% of normal year demand in most years and no less than 85% of normal year demand during the latter portion of a 6-year period of below average rainfall, which defines our "critical drought period." When rainfall is below average, there is limited inflow to Lake Cachuma and the storage level continues to drop. So our management plan now assumes the first year after a spill at Cachuma may be the first year of a 6-year critical drought period. Figure 4 shows a projection of how we would expect to meet a current normal year demand of 14,000 AFY over such a 6-year period beginning with the current (2012) water year and assuming continued below average rainfall and minimal inflow to Lake Cachuma. The figure shows Cachuma carryover and increased groundwater pumping to offset reductions in surface water availability as the drought progresses. The projection shows planned reductions in demand of 15% and 9% for the fifth and sixth years respectively, which is consistent with the planned shortage policy in the LTWSP for a critical drought period.

**Figure 4. 6-Year Dry Weather Water Supply Projection (AF)
Assumes Below Average Rainfall; 15% Acceptable Demand Reductions**



CAPITAL PROJECTS

Staff continues work on a number of projects to improve the reliability and quality of City water supplies:

- Ortega Groundwater Treatment Plant:** A comprehensive process to identify the optimal treatment scheme was conducted, and a contract for rehabilitation and upgrade of the plant has been awarded, with construction expected to begin early in 2012. The project goal is to maintain availability of an important part of the City's water supply to provide back-up for depleted surface water supplies during drought, meet peak demands, and serve as an emergency water supply in the event of catastrophic supply interruptions.
- Advanced Water Treatment Project:** The project to add ozone treatment facilities at the Cater Water Treatment Plant is underway. A low-interest State Revolving Fund loan has been approved to fund this project as well as the groundwater treatment improvements, well rehabilitation, and distribution system improvements at Reservoir No. 1. These improvements will facilitate distribution of water from low elevations to higher zones as would be necessary during catastrophic water supply interruptions. The ozone project is expected to allow the City to more reliably meet pending water quality regulations.
- Recycled Water Treatment Plant Rehabilitation:** Funding has been appropriated to rehabilitate the recycled water filters. Design of this project will commence now that a secondary treatment process upgrade has been identified to better treat the wastewater to achieve readily filterable water.

WATER SUPPLY ISSUES

There are a number of significant issues related to the City's water supplies, discussed briefly below.

Long-Term Water Supply Program Update: An important accomplishment during 2011 was the Council's adoption of the updated LTWSP. This was the product of numerous technical studies and a year-long collaboration between staff and the Water Commission to appropriately quantify our water supplies and then develop policies that will guide our water supply management of the next twenty years. Following is a summary of some key issues not already addressed above:

- Water Supply Target: A water supply target of 15,400 AFY was adopted, based on estimated normal year demand of 14,000 AFY, plus a 10% safety margin. Given the State mandate for water conservation, this target amount can be expected to be applicable throughout the 20-year period of the plan, as demand from new development is offset by increasing efficiency and use of recycled water.
- Conservation Program: Based on a comprehensive model of our Water Conservation Program, we have identified the cost effective measures that will play a major role in meeting the State mandate. Some are ongoing parts of our current program; others are new, and are being researched for the most effective method of implementation. A survey of City customers has been conducted and a strategic and tactical marketing plan has been developed, with implementation slated for kick-off in 2012. We are evaluating the impact of new State plumbing codes on our efficiency goal with respect to savings potential from new requirements for high efficiency toilets, urinals, showerheads, and faucets.
- Recycled Water: The new plan includes adding 300 AFY of new demand on the recycled water system to offset expensive potable supplies and developing a plan to phase out the use of potable water for blending to meet water quality targets.
- Desalination: The desalination plant remains a part of our water supply for use in catastrophic drought. At the same time, the plan includes identifying more cost effective alternative drought supplies, including water banking and purchase of non-project water through the State Water Project, for the critical drought period. A contract for banked storage has been developed by CCWA, by which members can store surplus carryover water in a Central Valley groundwater basin for delivery up to ten years later for use during drought.
- Drought Response Measures: The new plan is based on 100% deliveries in most years and identifies extraordinary demand reductions of up to 15% as part of our response to the occasional critical drought period. This is up from 10% under the previous plan, but significantly less than the 50% reductions being sought during 1991. We now plan for a six-year critical drought period, compared to five years previously, to reflect the uncertainty of water supplies and the potential impacts of climate change.

- Sedimentation Management: Reservoirs in our area are subject to ongoing loss of volume and yield as a result of sedimentation. The plan calls for a long-term strategy to cost effectively manage sedimentation at Gibraltar Reservoir and, in conjunction with appropriate State and Federal agencies and other project members, at Lake Cachuma as well.

The updated plan is available to the public on the City's website at the following address:
<http://www.santabarbaraca.gov/Resident/Water/Rates/Documents.htm>

Cachuma Project Water Rights Hearing: The Bureau of Reclamation (Reclamation) and the members of the Cachuma Project continue to await a decision by the State Water Resources Control Board (SWRCB) following a major hearing on the Cachuma Project's water rights completed in November 2003. This was a continuation of SWRCB's long-standing review of the Cachuma Project operations in terms of its effects on downstream water users and on public trust resources (steelhead trout). A December 2002 settlement agreement resolved a number of issues among several of the participants in the hearing, and is under consideration by the SWRCB. The SWRCB ruling has been repeatedly delayed pending completion of the necessary environmental documents. After several drafts, the Final EIR for Cachuma operations has been completed and its release is expected soon, with a possible hearing to follow in early 2012. While this would be an important milestone, it may still be another year before a final decision is issued. The SWRCB decision is important to the City because it could affect the amount of water available from Cachuma for water supply purposes.

Gibraltar Pass Through Operations: The Zaca Fire burned approximately 60% of the Gibraltar Reservoir watershed, normally the source of about 35% of the City's water supply. On top of historical siltation, the reservoir's storage capacity has now been reduced by an additional 1,535 AF, leaving a storage volume of 5,250 AF. In 1989, the City entered into the Upper Santa Ynez River Operations Agreement (the "Pass Through Agreement") with other members of the Cachuma Project. The City agreed to defer its planned enlargement of Gibraltar Reservoir in exchange for provisions that would allow the City to "pass through" a portion of its Gibraltar water to Lake Cachuma for delivery through Cachuma Project facilities. The City has elected to commence this phase of operations and is working with the U.S. Bureau of Reclamation to negotiate a "Warren Act" contract, as required by federal law to allow such use of the Cachuma Project. Modeling work to assess the effects of Pass Through operations has been completed. A draft technical memorandum is being finalized for use during environmental review. The Pass Through option will allow the City to stabilize its Gibraltar deliveries as the reservoir continues to silt in.

State Water Project/Delta Smelt-Wanger Decision: The Sacramento-San Joaquin Delta is the source of all water moved to the south by the State Water Project. There is substantial debate about the relative importance of water supply and environmental benefits in regard to how the Delta is managed. The current approach is that these two co-equal goals need to be acknowledged as a part of any solution.

Delivery allocations are forecasted as a percentage of each member's maximum delivery amount (referred to as "Table A" amount). Beginning in 2007, a number of federal court

decisions impacted diversions from the Delta, meaning a reduction in the delivery allocations for State Project members. At the same time the state was experiencing a prolonged dry period. More recently, there has been some easing of those restrictions and State Water supplies are also more plentiful due to a very wet year in 2011, during which 80% of Table A amounts were available. The City relies on State Water to a limited extent, but it can be an important source of water for banking as a part of increasing the reliability of our water supply.

Appendix A – Supplemental Water Supply Information

Groundwater Balance

Project conditions of the State Water Project (SWP) require the City to use SWP water to offset any demonstrated groundwater basin overdraft. Under the LTWSP, the City uses groundwater conjunctively with surface supplies, such that significant groundwater use only occurs when surface supplies are reduced. Basins are rested following periods of heavy pumping to allow water levels to recover. As summarized in Table A-1, the perennial yield exceeds average annual pumping and groundwater basins are in long-term balance with no overdraft projected. More detailed analysis is available in the LTWSP.

Table A-1. Groundwater Balance

Estimated Perennial Groundwater Yield of 3 Groundwater Storage Units:	1,900 AFY
Approximate Pumping by Private Pumpers:	-500 AFY
Net Perennial Yield Available to the City:	1,400 AFY
Average projected City groundwater pumping under LTWSP at target supply of 15,400 AFY:	1,083 AFY
Groundwater Production in 2010-2011:	506 AF

Projection of Supply Availability

Table A-2 summarizes the City's water supply sources and fulfills a requirement of the project conditions for the SWP. The projected 2011-2011 Supply Plan reflects a projected total demand of 14,000 AF.

Table A-2. Sources of Supply (AF)

Source of Supply	WY 2011 Original Plan	WY 2011 Actual	WY 2011 Supply Plan Projected
Gibraltar Reservoir	3,413	1,987	3,412
Cachuma Project	6,732	8,911	7,582
Mission Tunnel	1,200	1,342	1,100
Devil's Canyon	(w/ Gibraltar)	184	(w/ Gibraltar)
Juncal Res. (300 AF from MWD)	(w/ Cachuma)	(w/ Cachuma)	(w/ Cachuma)
State Water Project	650	750	650
Groundwater	1,206	506	1,206
Desalination	0	0	0
Recycled Water	800	648	800
Net Other Supplies ¹	(na)	-977	-750
Total Production:	14,000	13,351	14,000
Total Demand:	14,000	13,351	14,000
Percent Shortage:	0	0	0

¹ Represents miscellaneous production sources (positive values) and water used from the distribution system for purposes such as transfers to adjacent water purveyors, groundwater recharge, or blending with recycled water (negative values).

Long-Term Rainfall Data

