



# City of Santa Barbara

## Water Supply Management Report

### 2012 Water Year (October 1, 2011 – September 30, 2012)

Water Resources Division, Public Works Department  
January 2013

## 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, so 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:

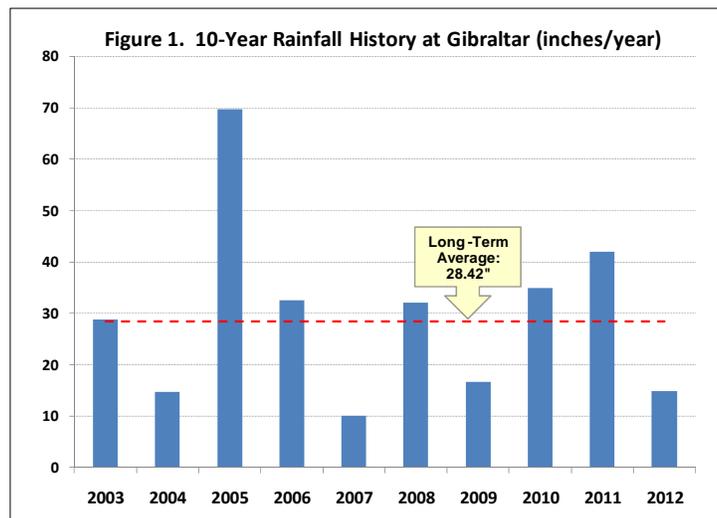
- The status of water supplies at the end of the water year (September 30, 2012)
- Water conservation and demand
- Drought outlook
- Major capital projects that affect the City's ability to provide safe clean water
- Significant issues that affect the security and reliability of the City's water supplies

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

## 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 53-year average. Additional historic information is included in Appendix A. Runoff generated by average rainfall is generally enough to fill Gibraltar; however, it typically takes above-average rainfall to produce any significant inflow to Cachuma. Rainfall in the Santa Ynez River watershed during 2012, as measured at Gibraltar, was 48% below average, resulting in very little inflow to 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 budget considerations and concern about potential erosion of burn areas.

Table 1, below, summarizes the status of the City's various water supplies at year-end.

<b>Table 1. End of Year Status of City Water Supplies*</b>	
Lake Cachuma	Total Capacity: 186,636 AF (2008 survey for 750' elevation) End of Year Storage: 142,970 AF Percent of Total Capacity: 77% The City's share of the Cachuma Project's normal annual entitlement is 8,277 AF. Actual use was 8,935 AF, reflecting some use of carryover water as well as entitlement. Consistent with the LTWSP, the City purchased 267 AF of relatively low cost water from Carpinteria Valley Water District in preparation for potential continuing dry weather. Remaining 2012 entitlement has been carried over to the current year.
Gibraltar Reservoir	Total Capacity: 5,251 AF (2010 survey) End of Year Storage: 2,508 AF Percent of Total Capacity: 48% Gibraltar Reservoir typically fills and spills two out of every three years. Deliveries over the past ten years have averaged 2,858 AFY. Deliveries in 2012 were 2,343 AF.
Mission Tunnel	Groundwater that seeps into Mission Tunnel is an important part of the City's water supply, providing 987 AF in 2012, about 14% below 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 outer State Street area have been 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 1,070 AF of groundwater during 2012.
State Water Project (SWP)	The City has a 3,000 AF "Table A" allotment, 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 625 AF of State Water in 2012, all of it exchanged with Santa Ynez River Water Conservation District, Improvement District No. 1 pursuant to our obligation under the Exchange Agreement.
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 provided 802 AF, or 5.7% of the total customer water demand, plus 299 AF of process water at El Estero Wastewater Treatment Plant (EEWTP). In recent years, recycled water has included a significant percentage of potable water for blending to meet water quality standards and reduce mineral content, with 859 AF of blend water used in 2012. Design of a rehabilitated tertiary filter system is underway to reduce the use of potable water for blending in the near term and facilitate eventual elimination of blending.

\*The Water year runs from October 1 through September 30. All data above is as of September 30, 2012

## **CITY WATER CONSERVATION PROGRAM**

In accordance with the LTWSP, the Water Conservation Program is operated to minimize the use of potable water supplies, meet the requirements of the California Urban Water Conservation Council Best Management Practices, and achieve compliance with the State's 20% X 2020 per capita water use reductions. Conservation measures are evaluated for cost effectiveness based on avoided cost of additional water supplies. Highlights of the City's Water Conservation Program include the following activities:

- Implementation of the South Coast Water Conservation Marketing Plan, including working with partner agencies to develop an umbrella brand for the County-wide water conservation program;
- Smart Landscape Rebate Program: 50% rebate on eligible, pre-approved material costs for landscape water efficiency (404 pre-installation inspections completed and 205 rebates issued since program inception);
- Free residential and commercial water check-ups (479 completed this year);
- Smart Rebates Program administered by the California Urban Water Conservation Council (CUWCC), providing incentives for water efficient fixtures;
- Water wise landscaping and graywater workshops with local irrigation supply stores, Santa Barbara Botanic Garden, and non-profit organizations;
- Launch of the new free mulch pilot program;
- Water education program reaching approximately 5,000 K-12th grade students per year; and
- Outreach and targeted assistance to highest water using customers.

## **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 gallons per capita per day (GPCD). Since the production numbers provide historical context on our demand, and per capita water use is the new mandatory metric, both are being tracked. Figure 2.A illustrates the traditional historical tracking of water system demand. Total system water production was 14,096 AF for 2012. Figure 2B shows monthly GPCD water use values, as well as a moving 12-month GPCD average. Usage for 2012 was 128 GPCD. Both values are somewhat above the projected targets, which is to be expected given 40% less local rainfall than average during the year and a corresponding increase in irrigation requirement.

Figure 2.A.

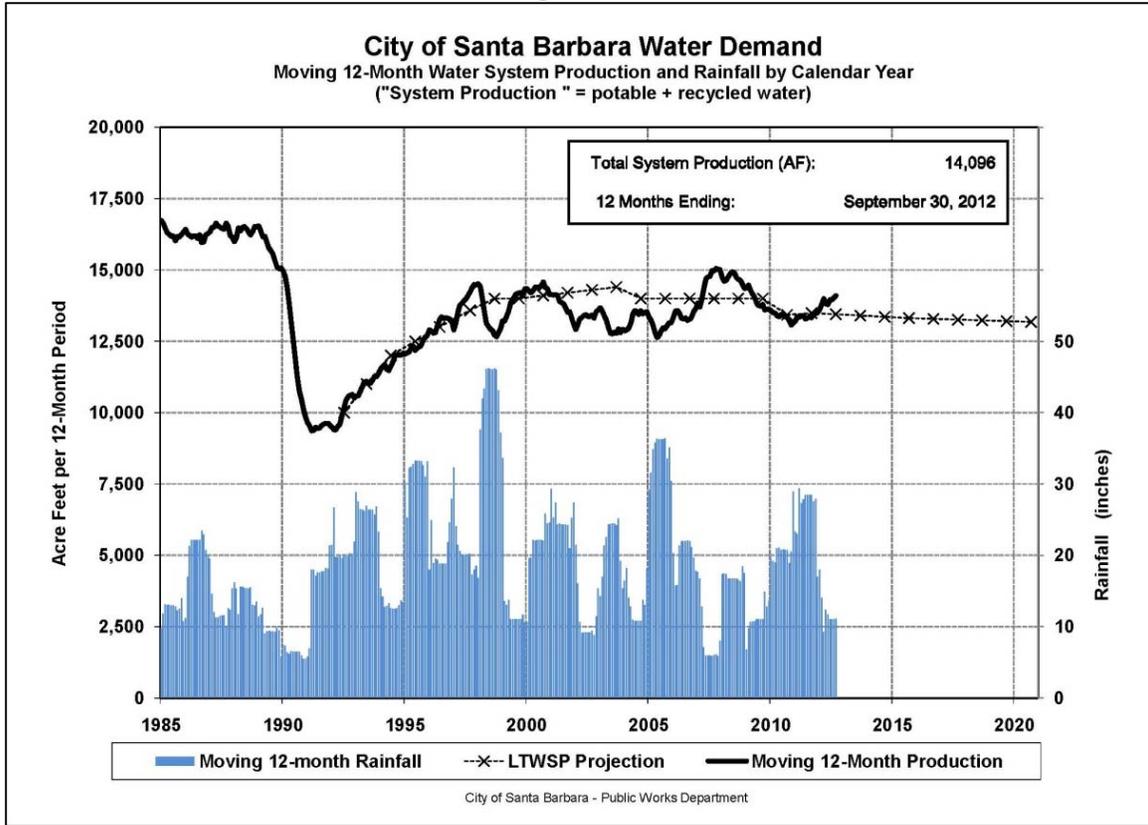
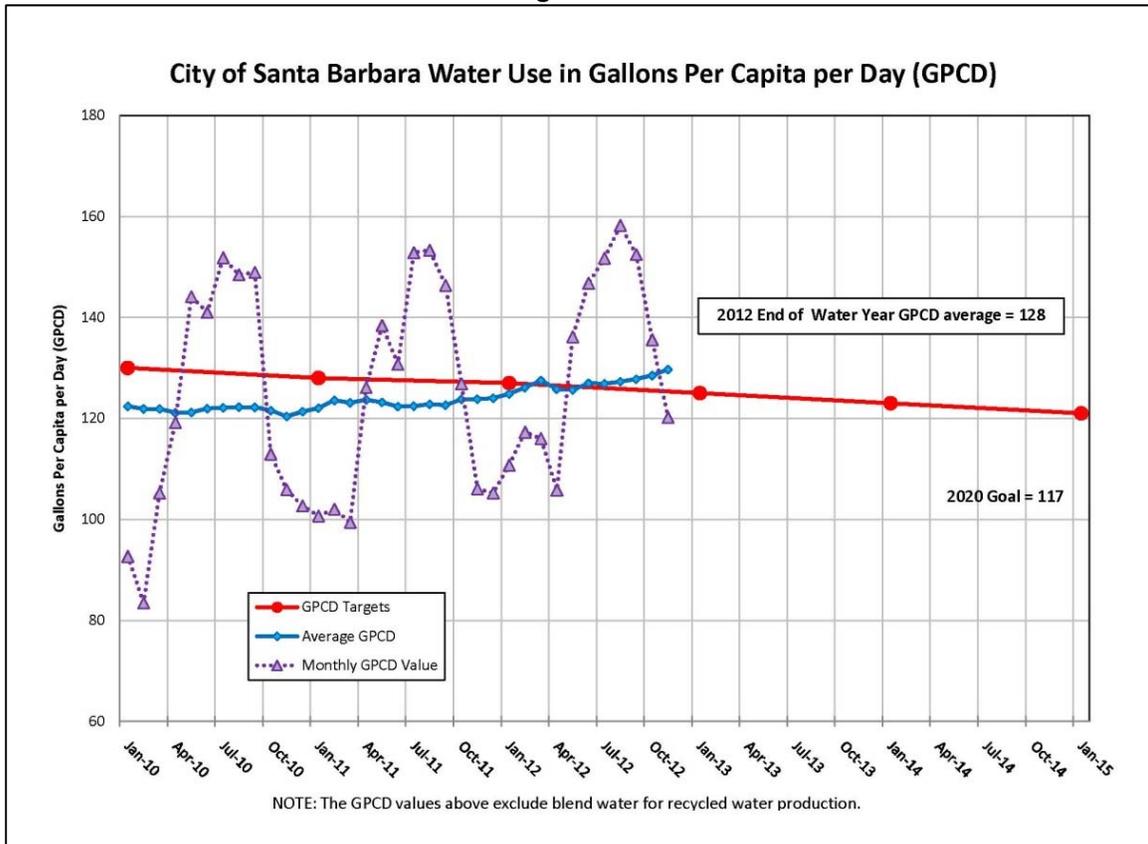


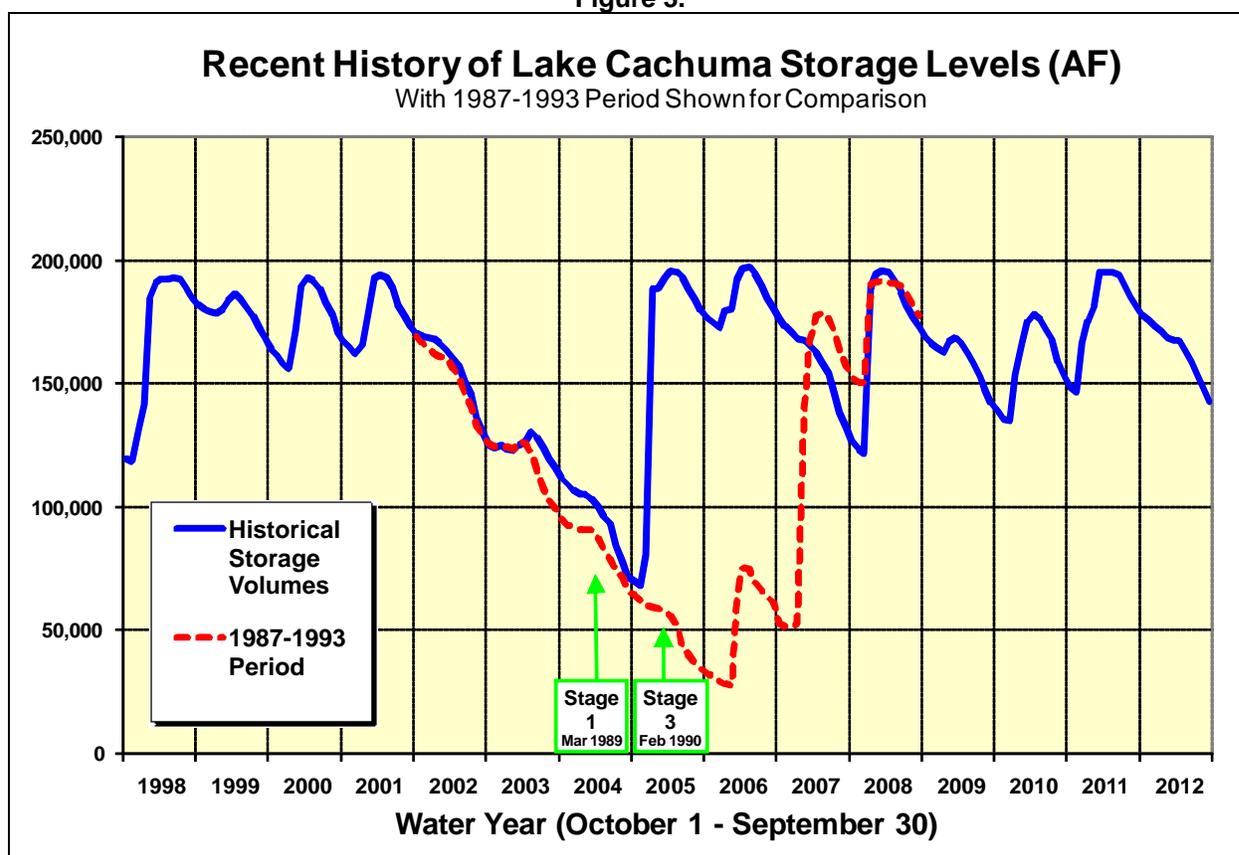
Figure 2.B.



## DROUGHT OUTLOOK

Because the City depends heavily on local surface water, our water supply reliability is vulnerable to prolonged drought. 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 2005. 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.

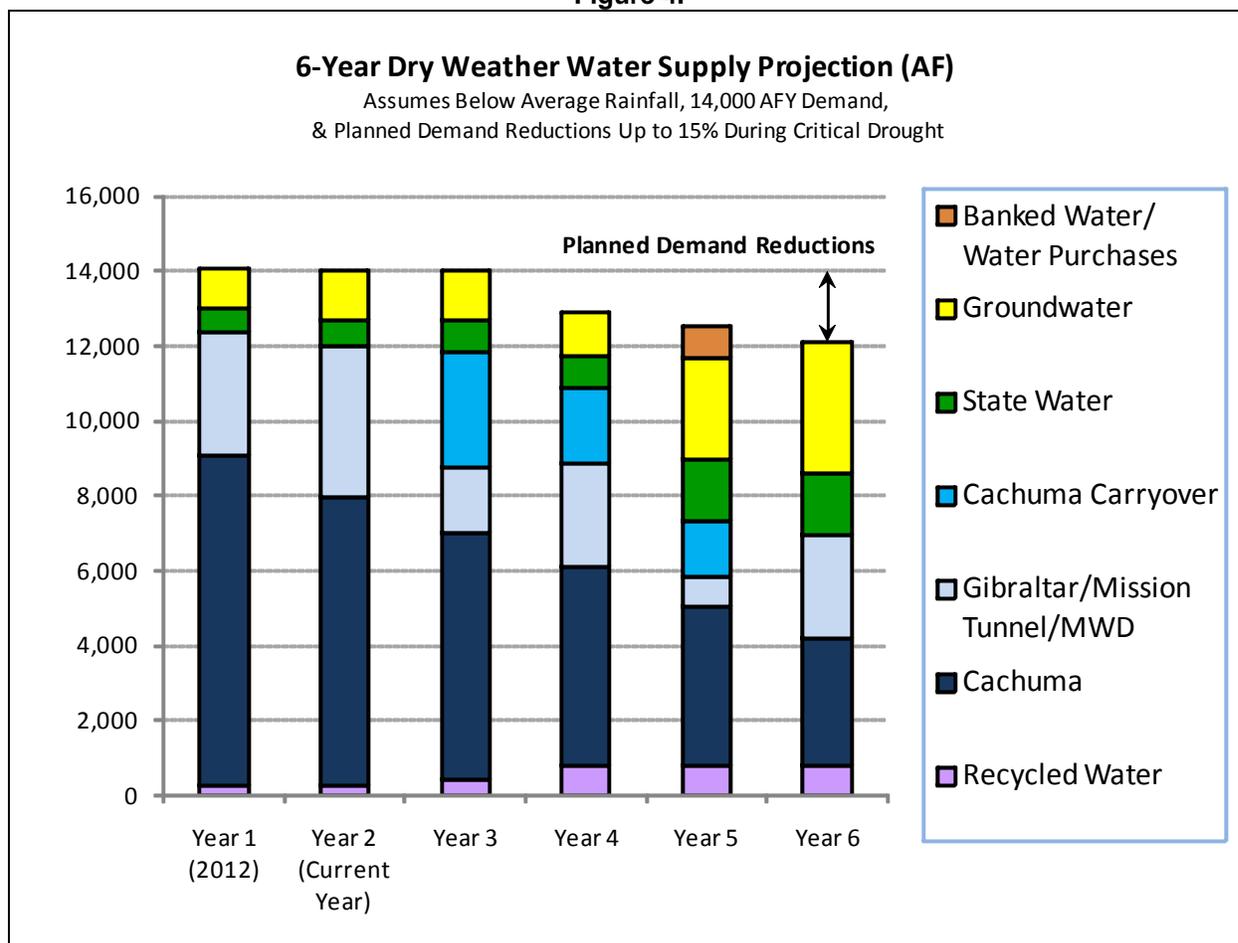
Figure 3.



Under the current LTWSP, the City's water supply is planned to meet 100% of unrestricted customer demand in most years and no less than 85% of 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. Our management plan 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 water supply sources would be used to meet demand over such a 6-year period. Since 2011 was the last spill at Lake Cachuma, 2012 was Year 1 of a potential critical drought period, and we are now in Year 2. The projection assumes availability of supplies consistent with the assumptions in the LTWSP. Use of Cachuma carryover and increased groundwater pumping offset reductions in surface water availability as the drought progresses. The figure shows planned extraordinary demand reductions of 9%, 11%, and 13% for the fourth, fifth,

and sixth years respectively. This is consistent with the LTWSP's planned reduction policy during a critical drought period and is an important part of cost effective drought response.

**Figure 4.**



## 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. Construction of the facility upgrade is underway and expected to be completed by June 2013 with funding from a low-interest State Revolving Fund (SRF) loan. The project goal is to maintain availability of an important part of the City's water supply to meet peak demands, provide back-up for depleted surface water supplies during drought, and provide an emergency water supply in the event of catastrophic supply interruptions, such as tunnel failure.
- Advanced Water Treatment Project:** The project adds ozone pre-treatment facilities at the Cater Water Treatment Plant. The project is currently under construction and is anticipated to be completed in April 2013. A low-interest SRF loan was used to fund this project. The ozone project is a regional solution for the City of Santa Barbara and Montecito and Carpinteria Valley Water Districts to reliably comply with the federally-

mandated Stage 2 Disinfection By-product Rule for drinking water, which goes into effect December 2012.

- ***Recycled Water Treatment Plant Rehabilitation:*** Design of a project to rehabilitate the recycled water filters is underway. The preliminary design has been done and final design is expected to be completed in early 2013. The goal of this project is a filter process upgrade to reduce the use of potable blend water and maintain compliance with wastewater discharge standards.
- ***Corporation Yard Well Replacement:*** A new potable water production well has been designed to replace the current well at the City's corporation yard on Laguna Street. The existing well is over 35 years old and has deteriorated to the point of no longer being usable. The new well is planned for construction during February 2013 and will preserve a significant portion of our groundwater production capacity.

## **WATER SUPPLY ISSUES**

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

*Long-Term Water Supply Plan:* The past water year was our first full year under the recently updated Long-Term Water Supply Plan (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 develop policies to guide our water supply management over the next twenty years. 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>

The updated LTWSP was the basis for the City's State-mandated Urban Water Management Plan update (UWMP). The UWMP, including one addendum, has now been determined to have addressed the required elements, thereby preserving the City's eligibility for State grants and loans.

*Recycled Water Demand:* In accordance with the LTWSP, recycled water use by City customers will be expanded by 300 AFY, for a total of approximately 1,100 AFY of customer demand, not including process water at EEWTP. This year's strategy was to focus on maximizing recycled water use by existing customers and adding new sites that are adjacent to the recycled water distribution system. Efforts to facilitate increased recycled water use at the Santa Barbara Zoo, Cottage Hospital, and Samarkand Retirement Community were successful. A new site, Stonecreek HOA, is also in the final stages of the process to connect to recycled water for irrigation.

The LTWSP states that a contingency plan for eliminating the need for blending will be developed for implementation based on economic, regulatory or water supply requirements. In accordance with this policy, the design of a rehabilitated tertiary filter system is underway to reduce blending requirements in the near term and facilitate eventual elimination of blending.

*Cachuma Project Water Rights Hearing:* The Bureau of Reclamation (Reclamation) and the members of the Cachuma Project continue to await a decision on Cachuma Project water rights by the State Water Resources Control Board (SWRCB). The decision will reflect SWRCB's determination on a 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 Final EIR for the decision has been officially entered into the hearing record and a draft water rights order is anticipated in 2013. The SWRCB decision is important to the City because it could affect the amount of water available from Lake Cachuma for water supply purposes.

*Gibraltar Pass Through Operations:* The 2007 Zaca Fire burned approximately 60% of the Gibraltar Reservoir watershed, which normally contributes up to 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 Santa Ynez River water agencies. 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 storage and delivery through Cachuma Project facilities. Due to the Zaca Fire effects, the City has elected to commence this phase of operations and is working with the Reclamation to negotiate a "Warren Act" contract, as required by federal law to allow such use of the Cachuma Project. A second round of computer modeling work to assess the effects of Pass Through operations is almost complete and will be the basis for environmental review. The Pass Through option will allow the City to stabilize its Gibraltar deliveries as the reservoir continues to fill with sediment. An updated assessment of sediment management options is also planned, per the LTWSP.

*State Water Project/Delta Issues:* The Sacramento-San Joaquin Delta is a critical conveyance link for 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, expressed in the State's Bay Delta Conservation Plan, is that these two co-equal goals need to be acknowledged as a part of any solution. The City relies on State Water to a limited extent, but it can be an important source of water for banking as a way of increasing the reliability of our water supply. Currently available banking opportunities are in groundwater basins in the western San Joaquin Valley.

*Groundwater Management Plan:* The City has relatively small groundwater storage, but it plays an important part in meeting demand during drought periods. It is also our only active potable water supply that is truly local. The latter is important in the event of a catastrophic interruption of water supplies from one or both tunnels through the Santa Ynez Mountains. During 2012, staff commenced efforts to develop a formal Groundwater Management Plan to ensure that groundwater resources are managed so as to be available to contribute to the City's water supply during normal years, drought periods, and emergency conditions. A grant application for funding under the California Groundwater Assistance Program has been submitted.

## 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 current and projected 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 Two Groundwater Storage Units in Use:	1,800 AFY
Approximate Pumping by Private Pumpers:	-500 AFY
Net Perennial Yield Available to the City:	1,300 AFY
Average projected City groundwater pumping under LTWSP at target supply of 15,400 AFY:	1,083 AFY
Groundwater Production in 2011-2012:	1,070 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 Water Year (WY) 2012-2013 Supply Plan reflects a projected total demand of 14,000 AF.

**Table A-2. Sources of Supply (AF)**

Source of Supply	WY 2012 Original Supply Plan	WY 2012 Actual	WY 2013 Supply Plan (Projected)
Gibraltar Reservoir	3,413	2,343	3,413
Cachuma Project	7,039	8,935	7,039
Mission Tunnel	1,100	987	1,100
Devil's Canyon	(w/ Gibraltar)	0	(w/ Gibraltar)
Juncal Res. (300 AF from MWD)	(w/ Cachuma)	(w/ Cachuma)	(w/ Cachuma)
State Water Project	650	625	650
Groundwater	999	1,070	999
Desalination	0	0	0
Recycled Water	800	802	800
Net Other Supplies <sup>1</sup>	(na)	-667	(na)
<b>Total Production:</b>	14,000	14,096	14,000
<b>Total Demand:</b>	14,000	14,096	14,000
<b>Percent Shortage:</b>	0	0	0

<sup>1</sup> 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

