



# City of Santa Barbara

## Water Supply Management Report

### 2014 Water Year (October 1, 2013 – September 30, 2014)

Water Resources Division, Public Works Department  
January 13, 2015

## 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:

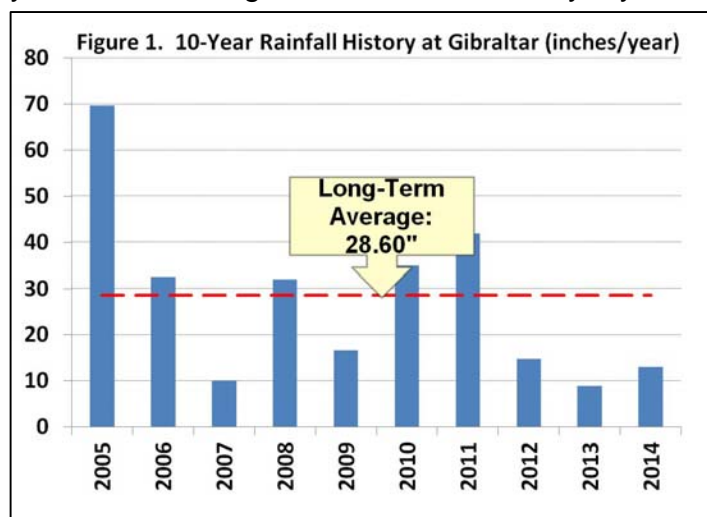
- The status of water supplies at the end of the water year (September 30, 2014)
- Drought outlook
- Water conservation and demand
- Major capital projects that affect the City's ability to provide safe clean water
- Significant issues that affect the security and reliability of the City's water supplies

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 and reactivation is under consideration due to drought conditions.

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 50-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 2014, as measured at Gibraltar, was 54% below average, and the last three water years (Oct 2011-Sep 2014) have received the lowest cumulative rainfall in recorded history for a consecutive three-year period. Over the last three years, there has been 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, cloud seeding only works when there are storm events, of which we have seen very little in the last 3 years.

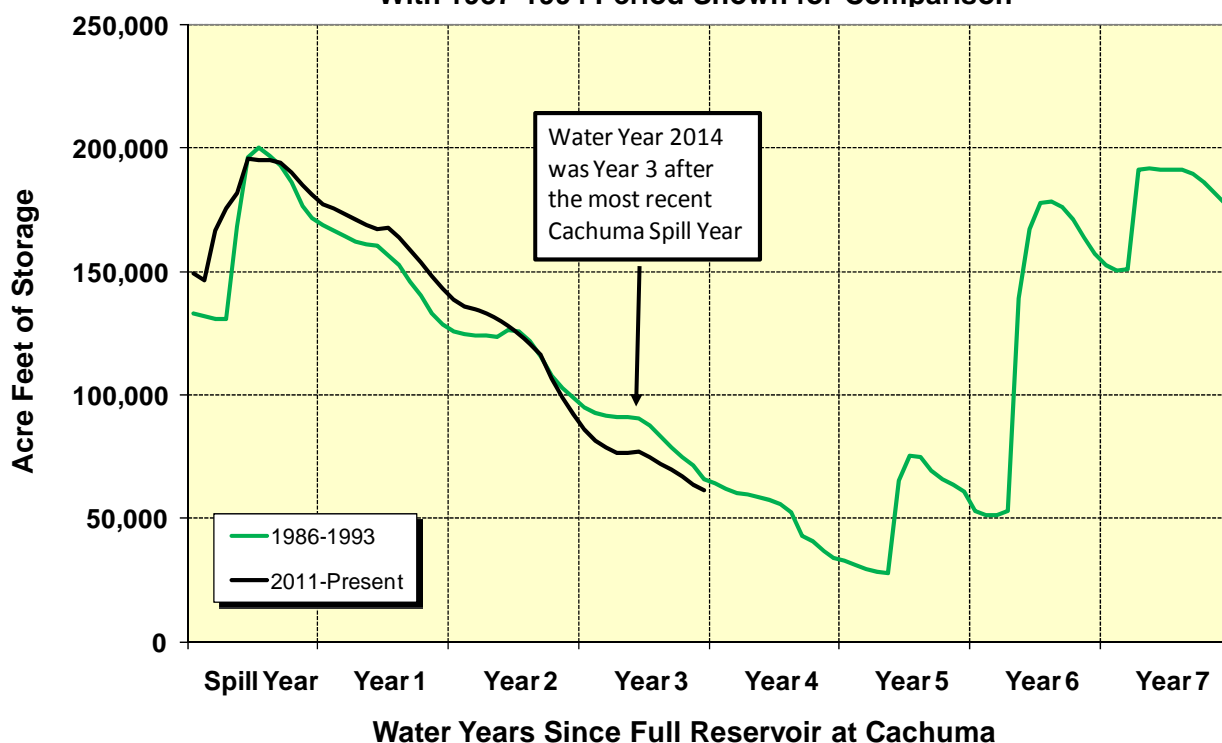
Table 1, below, summarizes the status of the City's various water supplies at year-end.

<b>Table 1. End of Year Status of City Water Supplies</b>	
The Water year runs from October 1 through September 30. All data is as of September 30, 2014.	
Lake Cachuma	Total Capacity: 184,121 AF (2014 survey for 750' elevation) End of Year Storage: 58,902 AF (32% of Total Capacity) The City's share of the Cachuma Project's normal annual entitlement is 8,277 AF. Actual use was 8,523 AF, reflecting some use of carryover water as well as entitlement. Remaining 2014 entitlement of 3,188 AF has been carried over to the current year.
Gibraltar Reservoir	Total Capacity: 5,246 AF (2013 survey) End of Year Storage: 823 AF (17% of Total Capacity) Gibraltar Reservoir typically fills and spills two out of every three years. Due to current drought conditions, the last time Gibraltar spilled was May 2011. Deliveries in 2014 were 757 AF, which is below the 10-year average of 2,188 AF.
Mission Tunnel	Groundwater that seeps into Mission Tunnel is an important part of the City's water supply, providing 815 AF in 2014, about 30% below the long-term average.
Ground-water	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 remain lower than normal and are not expected to recover until drought conditions end and groundwater can be replenished during wetter years. Construction of the Ortega Groundwater Treatment Plant was completed in September 2013, and 3 out of 9 potable production wells are currently available for use with 4 more expected to be available in 2015. The City used 785 AF of groundwater in 2014.
State Water Project (SWP)	The City has a 3,300 AF "Table A" allotment (with drought buffer), subject to availability. In 2014, the State's Table A allocation was 5%, or 165 AF for the City. In response to state-wide drought conditions, the City purchased supplemental water conveyed via the SWP. The Coastal Branch and Santa Ynez Extension of the SWP are in place to deliver the City's water into Lake Cachuma. The City used 2,682 AF of State Water in 2014; of which, 885 AF was exchanged with Santa Ynez River Water Conservation District, Improvement District No. 1 pursuant to the Exchange Agreement.
Desalination	The desalination plant remains in long-term storage mode and no water was produced this year. Due to severe drought conditions, staff projects a possible need for desalinated water production in 2016 if drought conditions don't improve.
Recycled Water	The City's recycled water system serves parks, schools, golf courses, other large landscaped areas, and some public restrooms. The system provided 749 AF, or 5.1% of the total customer water demand, plus 229 AF of process water at El Estero Wastewater Treatment Plant (EEWTP). This is lower than normal due to the request for cutbacks in demand in response to drought conditions, which were required since a significant amount of potable water has been used in recent years for blending to meet water quality standards and reduce mineral content. Recycled water included 808 AF of blend water to meet demands in 2014. Construction of a rehabilitated tertiary filter system is underway to eliminate or significantly reduce the need for potable water blending.

## 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 1987-1992 is also shown for comparison. 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. At the end of 2014, the City used 61% of its entitlement, and carried over the remainder to the 2015 water year. Currently, 2015 allocations have been reduced to 45% of normal deliveries for the Cachuma member units.

**Figure 3.**  
**Recent History of Lake Cachuma Storage Levels (AF)**  
 With 1987-1994 Period Shown for Comparison



Under the adopted 2011 LTWSP, the City’s planned water supply meets 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 the current water supply strategy over a 6-year period. Since 2011 was the last spill at Lake Cachuma, 2014 was Year 3 of a critical drought period, and we are now in Year 4. The 2011 LTWSP drought water supply strategy is based on available supply during the 1947-52 critical drought period, which was considered the “design drought” for planning purposes. However, the current historic drought has been worse than the “design drought.” Therefore, the 6-year supply strategy has been adapted to reflect a more

conservative assumption of 1) no additional inflows to Gibraltar or Cachuma; and 2) no additional Table A allocation of State Water. These assumptions are based on an extended duration of recent drought conditions.

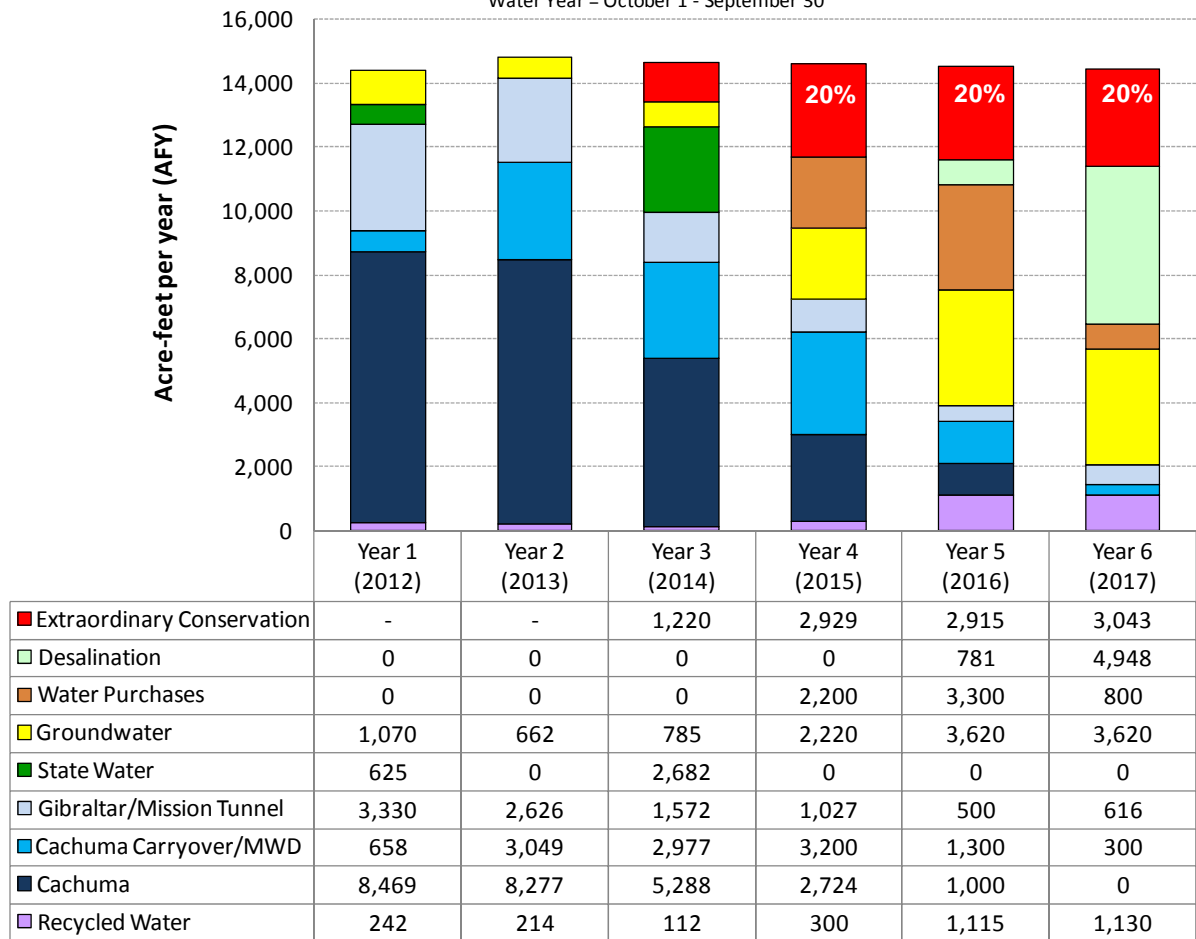
The supply strategy reflects the management policies adopted in the 2011 LTWSP; however, the planned demand reduction has been increased to 20%, meaning supplies are targeted to meet 80% of unrestricted customer demand in later years of the drought (Years 4-6). This is consistent with Governor Brown’s January 2014 declaration of drought state of emergency and request for a State-wide 20% demand reduction.

The City Council declared a Stage One Drought condition on February 11, 2014 and a Stage Two Drought Condition on May 20<sup>th</sup>, 2014. The City’s adopted 2011 Water Shortage Contingency Plan outlines the stages of drought and actions to achieve planned demand reductions. A Stage 2 Drought condition is the second of three stages of drought, with a Stage 3 Drought being the most critical stage. Under the current Stage 2 Drought condition, the City Council adopted regulations for drought water use restrictions (Resolution 14-027), and later adopted drought based water rates that that went into effect on July 1, 2014. In addition, public outreach and messaging has increased to communicate the status of drought conditions and need for extraordinary water conservation.

**Figure 4.**

**6-Year Dry Weather Water Supply Projection**

Assumes Continued Drought Conditions with no Significant Inflow to Gibraltar, Cachuma, or Delta  
Water Year = October 1 - September 30



## 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 13,248 AF for 2014 (excluding El Estero process usage). Figure 2B shows monthly GPCD water use values, as well as a moving 12-month GPCD average. Usage for 2014 was 118 GPCD. Production and usage were higher than average in previous years due to dry conditions, but showed a decline in 2014 in response to the Stage Two Drought condition declared on May 20, 2014 requiring mandatory reductions in water use.

Figure 2.A.

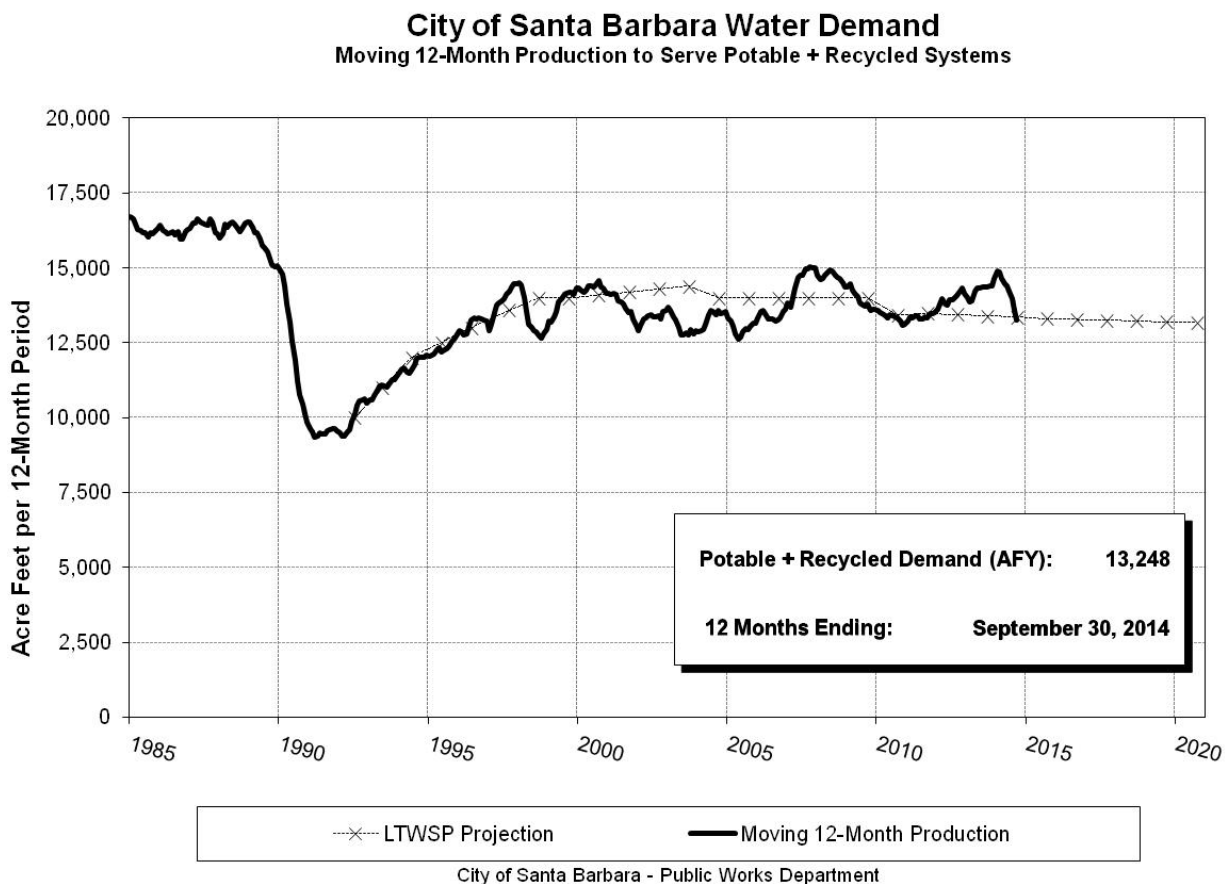
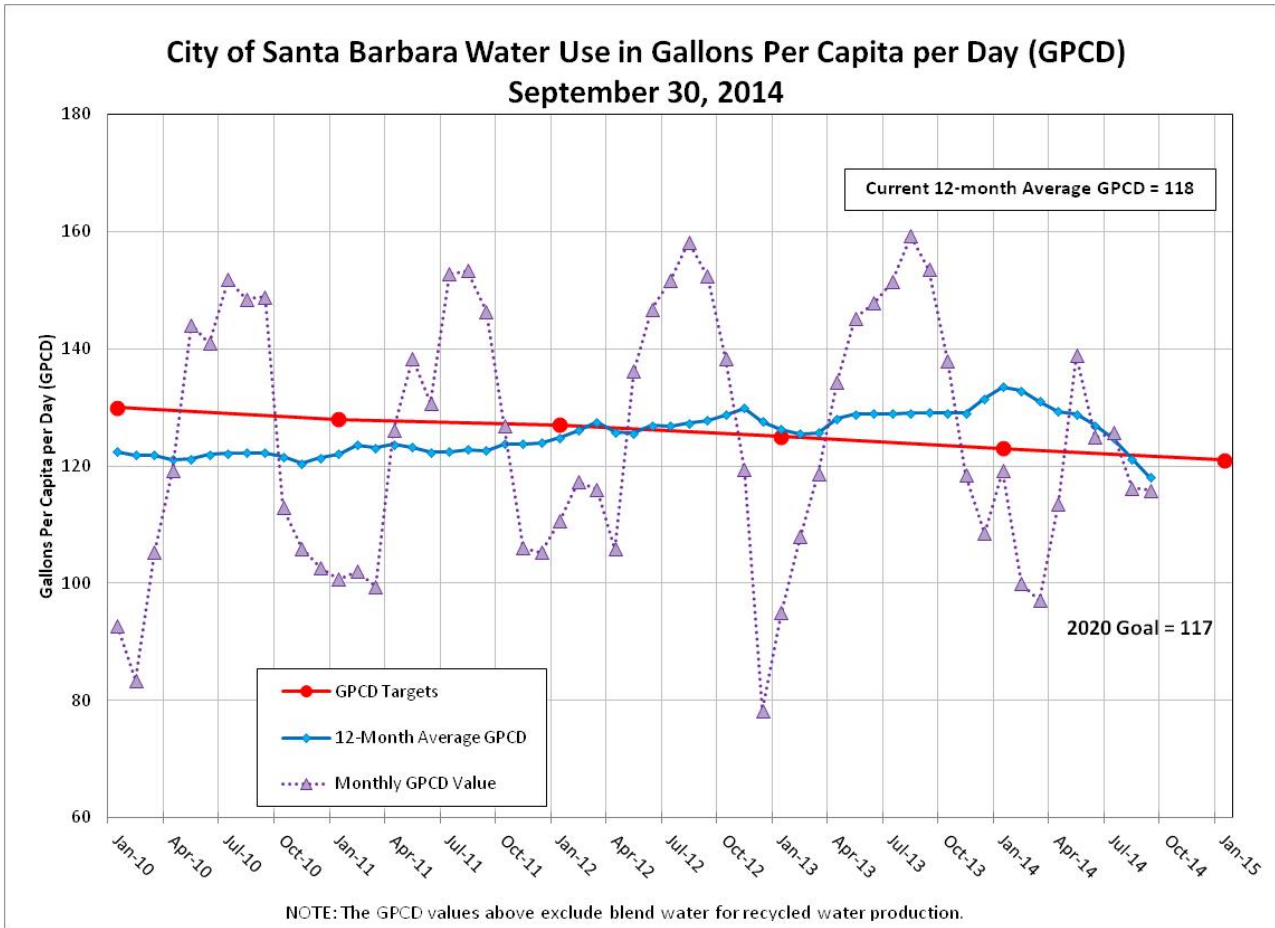


Figure 2.B.



**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. Water 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:

- Continuing to implement the Water Wise CII Survey and Incentive Program for large commercial, institutional, and industrial water users, identifying strategies to substantially reduce water use. (17 water wise surveys completed this year.)
- Continuing to implement the comprehensive South Coast Water Conservation Marketing Plan including the Drought Response Marketing Plan created this spring. Highlights include drought response forums with property managers and landscape contractors, targeted advertising highlighting low reservoir levels and simple actions to save water, and increasing the number of water checkups.
- Smart Landscape Rebate Program: 50% rebate on eligible, pre-approved material costs for landscape water efficiency (1,121 pre-installation inspections completed and 499 rebates issued from program inception in 2009 to the end of water year 2013);
- Free residential and commercial water check-ups (1,394 completed this water year, compared to 635 completed in water year 2013);

- Smart Rebates Program providing rebates for high efficiency clothes washers (86 rebates in water year 2013)
- Trainings and partnerships with landscape and horticultural organizations including: water wise landscaping, irrigation, and graywater workshops with local irrigation supply stores, the Santa Barbara Botanic Garden, the Santa Barbara Master Gardeners, and Sweetwater Collaborative.
- 256 participants in the free delivery of mulch; and
- Water education program reaching approximately 2,000 K-12th grade students per year.

In response to drought, staff has increased the water conservation outreach program through an enhanced drought media campaign that includes additional targeted outreach, increased weekly social media messaging, online news outlets, and industry contacts. Staff outreach also includes making significantly more presentations to community and industry groups, offering printed materials with drought-targeted utility bill messaging, providing drought-signage at City facilities, and sponsoring many additional drought-related community trainings and workshops.

Workload for the Water Conservation Program has increased dramatically as a result of the drought. Below is a summary of staff responses to certain items, comparing the January through August period last year to the same period in the current year.

Item	Oct 2012 – Sept 2013	Oct 2013 – Sept 2014	Percent Increase
Water Checkups	635	1,394	120%
Smart Landscape Rebate Pre-Inspections	156	544	249%
Response to Water Waste Complaints	~52	834	1506%

## CAPITAL PROJECTS

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

- **Cachuma Emergency Pump Project:** Cachuma Operation and Maintenance Board was the lead agency responsible for construction of this project on behalf of the South Coast Cachuma Member Units. Due to severe drought conditions, the gravity fed conveyance system to receive water from Lake Cachuma is projected to become inoperable as the lake level falls below the intake portal to the South Coast Conduit. The Cachuma Emergency Pump Project is necessary to allow for continued use of the reservoir water. This project consists of a pumping system to convey water from low lake levels to the intake portal of the South Coast Conduit, including installation of 3,600 feet of pipeline and placement of seven pumps on a floating barge. Additionally, sediment blocking the lowest intake portal was dredged to allow for the intake of water at lower elevations.

- **Recycled Water Treatment Plant Rehabilitation:** Final design of a project to rehabilitate the recycled water filters was completed in November 2013, with construction anticipated to be complete in summer 2015. The goal of this project is a filter process upgrade to reduce the use of potable blend water and maintain compliance with recycled water standards.
- **Groundwater Well Projects:** Groundwater is an important part of the City's water supply to meet peak demands, provide back-up for depleted surface supplies during drought, and provide an emergency water supply in the event of catastrophic supply interruptions, such as tunnel failure. Construction of the Ortega Groundwater Treatment Plant was completed in September 2013. Several groundwater well projects are currently underway to increase production capacity. The following is a summary of well status and work currently underway:

Storage Unit #1 Basin:

- *Corporation Yard:* Online with temporary pump system. Final completion of well replacement project with permanent pump system expected in Jan 2015.
- *Alameda:* Offline due to well failure. Replacement well is currently in design and scheduled to be online in Summer 2015.
- *High School:* Offline due to water quality issues. Piping conveyance to Ortega Groundwater Treatment Plant is currently in design. Contract for design of wellhead improvements forthcoming. Well expected to be online in 2015.
- *Vera Cruz:* Offline due to electrical failure. Contractor is scheduling repair. Expected to be online in 2015.
- *City Hall:* Offline due to pump failure and partial collapse of well. Consultant is preparing recommendations. Expected to be online in 2015.
- *Ortega:* Offline due to need for major rehabilitation or replacement.

Foothill Basin:

- *San Roque:* Online.
- *Hope:* Online.
- *Los Robles:* Offline due to well failure. Replacement well required.

Storage Unit #3:

- *Valle Verde Well:* Non-potable well rehabilitated and expected to be online in December 2014 to augment supply to the recycled water system.

- **Charles E. Meyer Desalination Facility:** Due to the severity of the present statewide drought, the City is considering reactivating the Charles E. Meyer desalination facility. On May 6, 2014, City Council authorized execution of a contract for preliminary design services for reactivating the desalination facility. Assuming continuation of current drought conditions, the City is preparing to be ready to award a construction contract as early as April 2015. However, due to the substantial cost of facility reactivation, a final decision will be delayed as long as reasonably possible, depending on water consumption and water supply factors. Per the adopted 2011 LTWSP, the primary role of the desalination facility is a drought relief measure. During normal periods, the facility would be minimally operated at a level sufficient to keep the facility in a ready-state standby mode.

## 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 City's 2011 Long-Term Water Supply Plan (LTWSP) 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 plan is available to the public on the City's website at the following address:

<http://www.santabarbaraca.gov/gov/depts/pw/resources/system/docs.asp>

The 2011 LTWSP was the basis for the City's State-mandated Urban Water Management Plan update (UWMP), which is required every five years. The UWMP, including one addendum, has been determined to be in compliance with the State's requirements per the Urban Water Management Planning Act, 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 in the long term, for a total of approximately 1,100 AFY of customer demand, not including the existing 300 AFY process water demand at EEWTP. In 2013, the City participated in the Integrated Regional Water Management South Coast Recycled Water Plan to identify technical, institutional, political, and social opportunities to advance the use of recycled water and address related constraints for implementation. The study identified both near-term and long-term goals for the expansion of recycled water use on the South Coast, including the City of Santa Barbara's recycled water system. Additional customers are connected to the system over time, and additional pipeline extensions are required in order to achieve the additional 300 AFY of demand within the City's service area.

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, construction of a rehabilitated tertiary filter system is underway to reduce blending requirements in the near term and facilitate eventual elimination of blending.

*Cachuma Project State 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 January 2015. The SWRCB decision is important to the City because it could affect the amount of water available from Lake Cachuma for water supply purposes.

*Cachuma Project Biological Opinion:* In 2000, a Biological Opinion was issued by the National Marine Fisheries Service (NMFS) for the U.S. Bureau of Reclamation's (Reclamation) operation and maintenance of Bradbury Dam (the Cachuma Project). NMFS

is the agency that oversees protection of Southern California steelhead. The BO addresses the effects of the proposed Cachuma Project operations on steelhead and its designated critical habitat in accordance with Section 7 of the Endangered Species Act of 1973. Reclamation and the Cachuma Project Water Agencies have developed the proposed revisions to the Project operations since 1993 to improve habitat conditions for steelhead trout while still maintaining water supplies. In 2014, the NMFS formally initiated a reconsultation of the Biological Opinion. A revised BO is anticipated in Spring 2015. Similar to the State water rights decision, the revised BO is important because it could affect Cachuma Project operations and the amount of water available 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 additional sediment load resulting from the fire reduced the reservoir's storage capacity by 1,535 AF, leaving a current storage volume of about 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. Computer modeling work to assess the effects of Pass Through operations is now complete and is the basis for environmental review currently underway. 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 (SWP). However, the reliability of State Water supply is at risk due to drought, environmental restrictions, and seismic events. The Bay Delta Conservation Plan (BDCP) is a proposed solution that balances coequal goals of water supply and environmental benefits. In May 2013, a Revised Administrative Draft BDCP was released. The Draft BDCP and Draft Environmental Impact Report were released in December 2013 for a 228-day public review period that closed on July 29, 2014. A partially Recirculated Draft BDCP, EIR/EIS, and Implementing Agreement (IA) are expected in early 2015. The recirculated documents will include those portions of each document that warrant another public review prior to publication of final documents. No final decisions have been made regarding going forward with the BDCP or in selecting an alternative; those decisions will only occur after the completion of the CEQA and NEPA processes.

The City receives State Water through the Central Coast Water Authority (CCWA), a regional wholesale water provider for areas within Santa Barbara County and San Luis Obispo County. Santa Barbara County's contract for State Water is set to expire in 2035. CCWA is currently negotiating a contract extension with DWR as well as other contract amendments. According to CCWA's legal support, if no agreement is reached, DWR can automatically renew the current contract through issuance of new revenue bonds past the current contract expiration date.

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. The City currently has State Water stored in groundwater banking programs 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 2013, staff continued 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. Due to drought workload and competing priorities in 2014, development of the formalized GMP was put on hold. However, this effort is expected to be ramped up again and will address the State of California's newly adopted Sustainable Groundwater Act of 2014. The act requires the formation of a local groundwater sustainability agency that must assess conditions in their local water basins and adopt locally-based management plans. The Sustainable Groundwater Management Act provides local GSAs with tools and authority to 1) require registration of groundwater wells, 2) measure and manage extractions, 3) require reports and assess fees, and 4) request revisions of basin boundaries, including establishment of new sub-basins.

## 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 2013-2014:	785 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) 2014-2015 Supply Plan reflects a projected total demand of 11,680 AF including ~230 AF for El Estero process water, which reflects a 20% reduction in overall demand as required by the current Stage 2 Drought condition.

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

Source of Supply	WY 2014 Original Supply Plan	WY 2014 Actual	WY 2015 Supply Plan (Projected)
Gibraltar Reservoir	877	757	500
Cachuma Project	9,723	8,523	5,923
Mission Tunnel	550	815	531
Devil's Canyon	0	0	0
Juncal Res. (300 AF from MWD)	(w/ Cachuma)	(w/ Cachuma)	(w/ Cachuma)
State Water Project	2,450	2,682	2,200
Groundwater	910	785	2,220
Desalination	0	0	0
Recycled Water	90	170	306
Net Other Supplies <sup>A</sup>	(na)	-256	(na)
<b>Total Production:</b>	14,600	13,476	11,680
<b>Total Demand:</b>	14,600 <sup>B</sup>	13,476 <sup>C</sup>	11,680
<b>Percent Shortage:</b>	0	0	0

<sup>A</sup> Represents miscellaneous production sources (positive values) and water used from the distribution system for purposes such as transfers to adjacent water purveyors or groundwater recharge.

<sup>B</sup> Planned demands include ~300 AFY for El Estero process water.

<sup>C</sup> Actual 2013 demand includes 12,497 AFY potable demand, 749 AFY recycled demand, and 230 AFY El Estero process demand.

## Long-Term Rainfall Data

