2019 Water Resources Status Report

For the Time Period October 1, 2018 through September 30, 2019

Whale Rock Reservoir, August 2019.

Prepared by the Water Division of the City of San Luis Obispo, Utilities Department
The City’s 2019 Water Resources Status Report was prepared in accordance with the General Plan, Water and Wastewater Management Element, Policy A5.3.1. The reporting period corresponds to the Water Year (October 1, 2018 through September 30, 2019), the twelve-month period for which precipitation totals are measured designated by the calendar year in which it ends. This report for Water Year 2019 is organized as follows:

I. Regulatory and Water Projects Update
II. Water Supply
III. Water Demand
IV. Water Resource Availability
V. Water Supply Accounting

I. REGULATORY AND WATER PROJECTS UPDATE

America’s Water Infrastructure Act
America’s Water Infrastructure Act of 2018 (AWIA) was signed on October 23, 2018. AWIA is an update to the Bioterrorism Act of 2002 of the Safe Drinking Water Act. AWIA outlines that community water systems serving 3,300 persons must:

- Conduct a Risk and Resilience Assessment (RRA),
- Revise Emergency Response Plans (ERP),
- Submit a certification letter to EPA,
- Review and update at least every five years.

The Act requires the City to certify the RRA by June 30, 2021 and the ERP December 30, 2021.

Preparation for PSPS Events
To protect communities from wildfire, Pacific Gas & Electric (PG&E) notified its customers of its plans to implement precautionary measures during fire season. If extreme fire danger conditions threaten a portion of the PG&E electrical system, high-risk transmission lines may be turned off, resulting in potentially widespread power outages to San Luis Obispo County. PG&E refers to this as a Public Safety Power Shutoff, or PSPS event. According to PG&E, a PSPS event may be necessitated by strong winds, low humidity levels, and critically dry vegetation. PG&E advises these outages will not be localized; regional solutions will be limited because resources are likely going to be scarce on a local, regional and possibly a statewide scale. Nearby communities have already experienced similar PSPS events from their power supplier.

Since being informed by PG&E of the potential for PSPS events, the City has worked to prepare for power outages lasting up to seven days or more. In the past, the City has been able to continue to provide uninterrupted water and wastewater service during short-duration power outages and when limited areas were affected by utilizing existing water storage tanks with limited emergency power generation - some of the City’s water and wastewater facilities have permanent emergency generators in place, while others utilized a limited number of mobile generators. With the PSPS notification from PG&E and the changing climate, staff identified additional emergency power resources for the City’s water and wastewater systems to meet this increased duration.

Electrical power is the greatest dependency of water systems, with heavy reliance on electricity to run pumps and other system components.
With the support of the City Council in August, the Utilities Department worked to quickly acquire additional temporary emergency generators and make necessary electrical improvements for the Water Treatment Plant, Whale Rock Reservoir, and other water pump stations and sewer lift stations. The City has also been working closely with the County of San Luis Obispo to acquire a generator for the Salinas Booster station that provides water from Salinas reservoir to the City. Installation of permanent generators are planned for 2020. These efforts will bolster the resiliency of the City’s water and wastewater services from any event that could result in loss of electricity.

**Whale Rock Dam Spillway Assessment**

The Whale Rock Reservoir and dam are located in San Luis Obispo County at the east boundary of the town of Cayucos. The dam is 266 feet tall with a crest length of 850 feet and crest width of 30 feet impounding Whale Rock Reservoir. The top of dam elevation is 232.2 feet. The Reservoir covers an area of 600 acres and has a maximum storage capacity of 38,967 acre-feet. Dam construction was completed in 1961. Whale Rock was constructed to provide municipal and agricultural water supplies, and fish and wildlife preservation. Over the 58-year life of the Whale Rock Reservoir and dam, the lake has filled to capacity and the spillway has been used 12 times, last spilling in 2005.

In 2018, the City contracted with HDR Engineering, Inc. for inspection and assessment of the Whale Rock Dam 850-foot long spillway. The investigation included:

1. Review of design, construction, inspection, analysis, operation and maintenance, and geologic information, as provided by City.
2. Detailed visual inspection of the spillway slabs and walls from upstream of the spillway crest to downstream of the stilling basin.
3. Video/camera inspection of accessible outfall drains and heel drains.
4. Geologic inspection of foundation material adjacent to the spillway.
5. Evaluation of original spillway design versus a modern spillway design.

A report was completed in March 2019 with recommendations including maintenance and repair activities for the drainage system and further engineering investigations. The City and its Whale Rock partners, Cal Poly and the California Men’s Colony, will implement corrections as recommended by the California Department of Water Resources, Division of Safety of Dams.
Pipeline Condition Assessments
During the 2019 Water Year, pipeline condition assessments were completed for the Whale Rock Reservoir and Salinas Reservoir (Santa Margarita Lake) water transmission pipelines. The condition assessments used free-swimming electromagnetic inspection technology, shown in the image below, to locate and identify segments of the pipeline in need of repair. Over 16 miles of 30-inch transmission pipeline from Whale Rock Reservoir was analyzed. The assessment found that 2,610 segments had no abnormalities, and 25 segments had varying deficiencies (broken bar wraps or cylinder wall loss). The Salinas pipeline condition assessment analyzed 1.25 miles of pipeline originally installed in 1940s. Results of the assessment were described in a May 2019 report revealing 222 of the total 236 segments had no abnormalities, and 14 segments had varying deficiencies. Funding is programmed to address these pipeline deficiencies in the 2020-21 fiscal year.

Conceptual image of Electromagnetic Inspection Technology used to assess the Whale Rock and Salinas Reservoir transmission pipelines.

Sustainable Groundwater Management Act
The use of groundwater contributes to resiliency in the City’s water supply portfolio by offering a potable water source to complement the City’s three surface water supplies. The Sustainable Groundwater Management Act (SGMA) is a statewide law that requires Groundwater Sustainability Agencies (GSA) to adopt groundwater management plans that outline actions needed to return groundwater basins to sustainable levels of pumping and recharge. In May 2017, the City Council approved Resolution 10796 authorizing the City to become a Groundwater Sustainability Agency (GSA) for the San Luis Valley Groundwater Basin for the area that lies beneath and within the City’s jurisdictional boundaries. In February 2019, the City Council, acting as the San Luis Valley Basin – City of San Luis Obispo Groundwater Sustainability Agency, approved the Notification of Intent to initiate development of a Groundwater Sustainability Plan (GSP) for the San Luis Obispo Valley Groundwater Basin.

The City is working in collaboration with the County of San Luis Obispo GSA to create a single Groundwater Sustainability Plan (GSP) that provides full coverage of the San Luis Valley Groundwater Basin. To get additional information, to sign up for the interested stakeholder email list, or to see materials for past or upcoming meetings related to the GSP development, interested parties are encouraged to visit www.slowaterbasin.com. The San Luis Valley GSP must be submitted to California Department of Water Resources (DWR) by January 31, 2022.
Leak Detection
In September 2019, staff from the City’s Water Distribution section field tested acoustic correlation equipment by Echologics on an existing cast iron water main on Bebee Street. Acoustic sensors were attached to water valves to measure the speed at which sound waves travel along the pipe. These sensors effectively listen to water flowing through the pipe and can hear when water is escaping through a leak. The location can then be identified. Using this tool regularly the City will be able to:

- More accurately locate small leaks, resulting in less damage to surrounding infrastructure
- Further optimize its capital spending
- Minimize water main breaks, water loss, and damage from leaks
- Better manage aging water infrastructure

The City’s correlator can identify leaks that have not come to the surface yet, and pinpoint leak location within about two feet. The City’s Water Distribution team is looking forward to utilizing this device to reduce water loss, find leaks before they create damage, reduce road repair work, and enhance proactive maintenance of the water distribution system.

Waterline Replacement Projects
Replacement of water distribution pipes and related facilities is an ongoing program aimed to address aging, substandard, and deteriorating infrastructure, with the added benefit of reducing customer impacts associated with emergency repairs. Waterline breaks occur with more frequency with aging waterlines, and the resulting repairs are disruptive to the public and expensive to repair. The main objectives of this program are to ensure reliable water service, reduce the need for emergency repairs, and to enhance available fire flows.

During the 2019 Water Year, the City completed replacement of approximately 5,000 lineal feet of waterline on Pacific (from Nipomo to Walker), Boysen (from Chorro to Hwy. 1), Chorro (from Pismo to Pacific) and Sierra (from Ella to Bishop) streets at a cost of approximately $2.3 million.

The Casa/Stenner/Murray Waterline Replacement Project proposes replacement of over 3,100 lineal feet of aged waterline on Casa, Stenner, Murray (from Hathway to Santa Rosa) and the intersections of Chorro/Meinecke and Chorro/Murray. The construction cost of the project is approximately $2 million. The waterlines replaced with this project are undersized and deteriorated. Their replacement will eliminate capacity limitations for Sierra Vista Hospital, reduce the likelihood of service interruptions due to leaks, and improve water flow for fire protection.

Short-Term Water Sales
At a March 2019 study session, City Council provided direction to staff related to short-term water sales. A potential recipient of this program may be Cal Poly while the university secures a permanent water supply specifically related to housing production. Council supported broadening existing policy language for the City to supply non-potable water (raw water or recycled water) through a short-term agreement for agricultural purposes. Short-term agreements would be crafted to include provisions for service interruption or reduction, due to operational issues or climatic events, low reservoir levels, increased
water demand forecasting, or water quality deterioration. Meaning, during a water shortage emergency, City water deliveries would be prioritized above those included in a short-term sales agreement. The City is uniquely positioned to assist Cal Poly in meeting its 2035 Master Plan goals as both a regional water partner and in support of City goals, particularly as it relates to additional on-campus housing. Cal Poly currently only has one source of potable water, which is raw water from Whale Rock Reservoir that is treated at the City’s water treatment plant and delivered to the campus as part of a contract between the City and Cal Poly. Any contracts for short-term water sales would be brought to the City Council for consideration.

II. WATER SUPPLY

Per the General Plan Water and Wastewater Management Element, Policy A2.2.1, the City uses multiple water sources to meet its water supply needs. The City has four primary water supply sources including Whale Rock Reservoir, Salinas Reservoir, Nacimiento Reservoir, and recycled water. Groundwater serves as a fifth supplemental source. The supply per source for Water Year 2019 (from October 1, 2018 to September 30, 2019) is summarized below.

### 2019 City Water Supply by Source

<table>
<thead>
<tr>
<th>Nacimiento Reservoir</th>
<th>Whale Rock Reservoir</th>
<th>Recycled Water</th>
<th>Salinas Reservoir</th>
<th>Groundwater</th>
<th>Total City Water Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,406</td>
<td>350</td>
<td>201</td>
<td>805</td>
<td>0</td>
<td>4,762</td>
</tr>
<tr>
<td>71.5%</td>
<td>7.4%</td>
<td>4.2%</td>
<td>16.9%</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Notes:
1. Values are rounded.
2. Water delivered to Cal Poly State University is excluded from the City’s water demand.
3. Groundwater was not used for potable purposes during Water Year 2019.

During Water Year 2019, 71.5 percent of the City’s total water demand was met by Nacimiento Reservoir. San Luis Obispo County operates and maintains the water delivery system from Nacimiento Reservoir to participating agencies (currently the cities of Paso Robles and San Luis Obispo, Atascadero Mutual Water Company, Templeton Community Services District, County Service Area 10A [Cayucos], Santa Margarita Ranch, and Bella Vista Mobile Home Park). The Nacimiento Project Commission provides oversight to project operations, maintenance, and the project budget. The Commission is made up of representatives from each of the four agencies’ governing boards and a County Representative who is a member of the County Board of Supervisors who also sits on the Board of Directors for the Flood Control District.

During Water Year 2019, the City utilized a total of 1,155-acre feet from Salinas and Whale Rock reservoirs, meeting 24.3 percent of total City water demand. The City pays the County of San Luis Obispo Flood Control and Water Conservation District (County) to provide oversight, operations, and maintenance of Salinas Reservoir and related water delivery facilities. The City provides oversight, operations, and maintenance of the Whale Rock Reservoir for the benefit of the Whale Rock Commission, a joint powers agency made up of Cal Poly State University, California Men’s Colony, and the City.

For Water Year 2019, the City delivered 201-acre feet of recycled water for landscape irrigation and construction water. This equates to 4.21 percent of total City water demand. New recycled water customers include Coast BMW, HASLO for the Iron Works housing project, and Prado Day Center.

### Recycled Water for Construction

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>19</td>
<td>36</td>
<td>20</td>
</tr>
</tbody>
</table>

Note: Values are rounded.
Construction water use decreased from 36-acre feet in Water Year 2018 to 20-acre feet in Water Year 2019.

Construction of the Water Resource Recovery Facility (WRRF) Project began in 2019 and will take approximately three years to complete. When complete, the new technology used at the WRRF will reduce overall wastewater treatment time by approximately 20 hours, from approximately 28 hours to eight hours, providing a shortened timeframe for when wastewater comes into the plant and when it can be sent out into the recycled water system for irrigation use.

Although the City suspended using groundwater for potable purposes in April 2015, groundwater wells remain in an operable, stand-by position should the use of groundwater be needed. During Water Year 2019, the City continued its work with a hydrogeologist to site a future well field for a potential groundwater program expansion. The City received notice from the State Water Resources Control Board inviting the City to submit a full proposal for the Proposition 1 Groundwater Grant Program for consideration in 2019. The City was notified in October 2019 that pending negotiation with the State Board, it will be receiving the $2 million planning-phase grant for installation of monitoring wells and for monitoring groundwater quality. These are necessary steps in reestablishing the City’s groundwater program. The planning phase will continue through 2020 with implementation planned for 2021.

III. WATER DEMAND

During Water Year 2019, 60.48 percent of total water use in the City was to support single and multi-family residential uses, 28.36 percent was to support commercial and other non-residential development, and 11.16 percent was to support landscape irrigation that is separately metered. Historical water use is summarized below, as well as corresponding population, per capita use rate, and rainfall. The 2019 per capita water use was 91 gallons per capita per day (gpcd). Per capita water use is calculated by dividing total water use in the City by the City’s population. Total water use includes residential and daytime population needs for all uses such as restaurants, hotels, industrial/manufacturing, government/schools,
and irrigation. Based on the City’s General Plan Water and Wastewater Management Element policies, the City uses a factor of 117 gpcd to project water required to serve the General Plan’s estimated population in 2035.

### Population, Water Use, and Rainfall

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Total Water Use (acre feet)</th>
<th>Per Capita Water Use (gpcd)</th>
<th>Rainfall¹² (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>44,948</td>
<td>5,489</td>
<td>109</td>
<td>36.0</td>
</tr>
<tr>
<td>2011</td>
<td>45,418</td>
<td>5,285</td>
<td>104</td>
<td>18.9</td>
</tr>
<tr>
<td>2012</td>
<td>45,308</td>
<td>5,541</td>
<td>109</td>
<td>21.5</td>
</tr>
<tr>
<td>2013</td>
<td>45,541</td>
<td>5,892</td>
<td>116</td>
<td>3.8</td>
</tr>
<tr>
<td>2014</td>
<td>45,473</td>
<td>5,524</td>
<td>109</td>
<td>14.2</td>
</tr>
<tr>
<td>2015</td>
<td>45,802</td>
<td>4,990</td>
<td>97</td>
<td>11.8</td>
</tr>
<tr>
<td>2016</td>
<td>46,117</td>
<td>4,731</td>
<td>92</td>
<td>17.8</td>
</tr>
<tr>
<td>2017</td>
<td>46,424</td>
<td>4,975</td>
<td>95</td>
<td>35.1</td>
</tr>
<tr>
<td>2018</td>
<td>46,548</td>
<td>5,225</td>
<td>100</td>
<td>12.9</td>
</tr>
<tr>
<td>2019</td>
<td>46,802</td>
<td>4,762</td>
<td>91</td>
<td>27.1</td>
</tr>
</tbody>
</table>

**NOTES:**
1. Rainfall for 2010 through 2012 calendar year source was from Cal Poly CIMIS Weather Station. Rainfall for calendar year 2013 through 2019 was from SLO Reservoir.
2. Rainfall data for 2000-2014 is for the calendar year; 2015-2019 data covers the Water Year (October 1 to September 30).

The City’s water supply reservoirs are in different watersheds, therefore rainfall at various locations within San Luis Obispo County benefits the City. During Water Year 2019, three reservoir locations (Rocky Butte, SLO Reservoir, and Salinas Dam) received more than the annual average. The remaining location, Hwy 46 and W 7 Mile Road, Cambria, CA, received 92 percent of average rainfall.

### Water Year 2019 Rainfall Totals

<table>
<thead>
<tr>
<th>Rainfall Measurement Location</th>
<th>Watershed</th>
<th>Annual Average Rainfall (in inches)</th>
<th>Water Year 2019 Total Rainfall (in inches)</th>
<th>Water Year 2019 Percent of Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocky Butte</td>
<td>Nacimiento Reservoir</td>
<td>40</td>
<td>52.40</td>
<td>131%</td>
</tr>
<tr>
<td>Hwy 46 and W 7 Mile Road, Cambria, CA</td>
<td>Whale Rock Reservoir</td>
<td>30</td>
<td>27.65</td>
<td>92%</td>
</tr>
<tr>
<td>SLO Reservoir</td>
<td>City</td>
<td>24</td>
<td>27.10</td>
<td>113%</td>
</tr>
<tr>
<td>Salinas Dam</td>
<td>Salinas Reservoir</td>
<td>22</td>
<td>33.25</td>
<td>151%</td>
</tr>
</tbody>
</table>

**Source:** [https://wr.slocountywater.org/list.php?sensor_class=11&mode=sensor&cache=1&refresh=off](https://wr.slocountywater.org/list.php?sensor_class=11&mode=sensor&cache=1&refresh=off)
IV. WATER RESOURCE AVAILABILITY

The following table summarizes the Water Resource Availability based on Water and Wastewater Management Element, Section 3. Water availability for 2019 is 10,136-acre feet.

<table>
<thead>
<tr>
<th>Water Resource</th>
<th>Acre Feet</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salinas &amp; Whale Rock Reservoirs</td>
<td>4,910</td>
<td>Safe Annual Yield (^1)</td>
</tr>
<tr>
<td>Nacimiento Reservoir</td>
<td>5,482</td>
<td>Dependable Yield (^2)</td>
</tr>
<tr>
<td>Recycled Water</td>
<td>244</td>
<td>2018 Annual Usage (^3)</td>
</tr>
<tr>
<td>Siltation from 2010 to 2060</td>
<td>(500)</td>
<td>WWME Policy A 4.2.2 (^4)</td>
</tr>
<tr>
<td></td>
<td><strong>10,136</strong></td>
<td><strong>2019 Annual Availability</strong></td>
</tr>
</tbody>
</table>

NOTES:
1. The City’s Safe Annual Yield model was updated in 2018.
2. Dependable Yield is the contractual amount of water the City has rights to from Nacimiento Reservoir.
3. The quantity of recycled water included is the actual prior year’s usage (calendar year 2018) per General Plan Water and Wastewater Management Element Policy A 7.2.2.
4. Reservoir siltation is a natural occurrence that reduces storage capacity over long periods, resulting in the reduction of safe annual yield.
V. WATER SUPPLY ACCOUNTING

Per General Plan Water and Wastewater Management Element, Section 5, the City accounts for water supplies necessary to meet three specific community needs:

- Primary water supply
- Reliability reserve
- Secondary water supply

The City’s primary water supply is defined as the amount of water needed to serve the build-out population identified in the General Plan, Land Use Element (2014). Table 3 in the Land Use Element identifies an urban reserve capacity of 57,200 people. The quantity of water needed for the primary water supply is calculated per WWME Policy A 5.2.2, using 117 gallons per capita per day (gpcd).

The City’s reliability reserve provides a buffer for future unforeseen or unpredictable long-term water supply impacts. The quantity of water for the reliability reserve is defined in WWME Policy A 5.2.3, using 20 percent of the existing City population (46,802, 2019 population) at 117 gpcd. The reliability reserve will change over time as the City’s population changes. The reliability reserve concept is included in the City’s Charter (Section 909) which identifies that the water may not be used to serve future development.

The City’s secondary water supply is the amount of water remaining from available water resources above those needed to meet the primary water supply and reliability reserve. The secondary supply is identified to meet peak water demand periods or short-term loss of City water supply sources, per General Plan Water and Wastewater Management Element, Policy A 5.2.4.

Water supply accounting is summarized in the table below and shown in Appendix A.

<table>
<thead>
<tr>
<th>2019 Water Supply Accounting (acre feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>10,136</td>
</tr>
</tbody>
</table>

In summary, the City maintains a robust water supply portfolio with greater than five years of water available. Per capita water use (obtained from adding up all water used by visitors, residents, commercial uses, etc.) decreased during the 2019 Water Year to 91 gallons per capita per day (gpcd) from 100 gpcd during the 2018 Water Year.