City of Santa Barbara
Public Works Department

Memorandum

DATE: November 17, 2022

TO: Water Commission

VIA: Joshua Haggmark, Water Resources Manager

FROM: Dakota Corey, Water Supply Analyst

SUBJECT: Water Supply Update

Executive Summary

This water supply update provides an overview of the City's water supplies at the beginning of Water Year 2023 and includes an analysis and conclusion that the City's available water supplies are sufficient to meet demands over the next two years. However, conservatively assuming the next three years are dry, the City should begin implementing mandatory water conservation targets in the spring of 2023 to reduce the likelihood of a significant shortage in Water Year 2025. Staff will continue to monitor precipitation and water supplies throughout the winter months to determine if further action is needed in the spring of 2023.

Water Supply Update

Water Year 2022 began on October 1, 2022. Santa Barbara typically receives most of its rainfall between January and March. At the start of each new water year, staff updates the City's water supply planning charts to reflect actual water used during the previous water year (in this case, October 1, 2021 – through September 30, 2022) and extends the supply strategy one additional year for drought planning purposes. Thus, the current supply strategy extends through Water Year 2025.

In total, the City used 11,450 acre-feet (AF) of water in Water Year 2022, including nearly 980 AF of recycled water. In addition, the City sold Montecito Water District (MWD) 1,056 AF of water per the water sales agreement between the City and MWD. The primary water supply sources were Lake Cachuma, Gibraltar Reservoir, Mission Tunnel, Desalination, and Recycled Water, with a small amount of supply also coming from Groundwater and the State Water Project. A brief update on the status of each of the City's water supplies is described below:

- **Lake Cachuma**: As a result of declining lake elevation and diminished water available for allocation, the Cachuma Member Units were granted zero Cachuma allocation by the US Bureau of Reclamation for Water Year 2023 (despite modeling showing there was sufficient water for a 14% allocation). However, due to strong levels of community conservation and ongoing desal operations since 2017, the City currently has built up 19,000 AF of stored water, the largest amount of carryover water stored in Lake Cachuma. The City's stored water is approximately 30 percent of the total water currently stored in Lake Cachuma and represents nearly two years' worth of City annual demands. Lake Cachuma supplied 39 percent of the City's Water Year 2022 demand; and it is projected to supply 56 percent of the City's Water Year 2023 demand.
- **Gibraltar Reservoir**: Gibraltar was an important supply for the City in Water Year 2022, supplying approximately 14 percent (1,626 AF) of the City's total Water Year 2022 demand. Currently, Gibraltar is considered empty with approximately 900 AF of stored water remaining; the remaining water is of poor quality and can't be reasonably treated for drinking water. Fortunately, even a below average rainfall year can put water in Gibraltar, and the reservoir is ready to capture and store any precipitation that falls this winter.
- **Mission Tunnel**: The City received 718 AF, or 6 percent of its annual water demand from Mission Tunnel infiltration in Water Year 2022. Similar flows are expected for Water Year 2023.
- **Groundwater**: The Corporation Yard Well and High School Well, both located in in the Storage Unit #1 Basin, supply the City's Ortega Groundwater Treatment Plant. These two wells were turned on in July 2022 to augment City supplies. In total, 203 AF of groundwater was pumped, representing 1.7 percent of total Water Year 2022 supplies. If needed, it is estimated the City still has approximately 10,000 AF of drought storage in the Storage Unit #1 groundwater basin, and 3,800 AF of drought storage in the Foothill Groundwater Basin, which has been resting. The City's current annual groundwater pumping capacity is 3,500 AFY.
- **Desalination**: The Charles E. Meyer Desalination Plant serves as a drought preparedness, response, and recovery supply for the City. Continuous production of desalinated water has allowed the City to bank its Cachuma supplies as carryover water. The plant supplied 25 percent of the City's total demand in Water Year 2022, and is projected to supply a similar proportion for Water Year 2023.
- **State Water Project (SWP)**: The state is experiencing widespread drought conditions, and reservoirs on the State Water Project currently have record-low storage. The City's SWP allocation for 2022 was 5 percent, or 165 AF. In Water Year 2022, the City used 384 AF of its SWP water, representing 3 percent of total demands. A zero percent allocation is expected for 2023 due to continued statewide drought conditions. However, the City has approximately 1,200 AF of SWP water stored in San Luis Reservoir as a result of supplemental water purchases (862 AF in 2022) and carryover water.
- **Recycled Water**: The City's recycled water system continues to produce tertiary-treated recycled water for large landscape use. Use of recycled water offsets the need for potable drinking water to irrigate landscapes. Recycled water made up 8.5 percent of the City's Water Year 2022 demand, including fulfillment of a new

recycled water sales agreement with La Cumbre Mutual Water Company. Similar recycled water use is expected in Water Year 2023.

Updates to the City's water supply planning strategy are conservative. Under the planning scenario, there is little to no rainfall for three years, resulting in no inflows into Lake Cachuma, and zero percent Cachuma allocations are assumed for all three future water years. A minimal amount of inflow – 1,000 AF in Water Years 2024 and 2025 – is assumed for Gibraltar Reservoir, since even below average rainfall can result in available Gibraltar supplies. The planning scenario also assumes that there are drought conditions statewide, which reduce the State Water Project (SWP) water allocation to zero percent in Water Year 2023 and 15 percent in Water Years 2024 and 2025. The analysis also assumes the desalination plant is operated continuously through Water Year 2025 at an 80 percent production rate (2,500 AF). This conservative planning approach allows staff to evaluate if the City has sufficient water to meet demands under three additional years of extreme drought.

The recent update to the City's water supply planning strategy demonstrates that, even under drought conditions, the City's water demands can be met for the next two years (through Water Year 2024) using a combination of carryover water from Lake Cachuma, Gibraltar Reservoir, Mission Tunnel infiltration, desalination, groundwater pumping, water from the State Water Project, and recycled water. However, conservatively assuming the drought persists for the next three years, the City should begin implementing mandatory water conservation targets in the spring of 2023 to reduce the likelihood of a significant shortage in Water Year 2025. If the current rainy season turns out to be below average, the analysis concludes mandatory conservation of 15 percent beginning in the spring of 2023, and 20 percent beginning in the spring of 2024 (after a second dry winter) would allow the City to stretch its supplies through Water Year 2025 and into Water Year 2026. Analyses of the effect of mandatory conservation on the City's water fund revenues indicate a minimal impact on Fiscal Year 2023 and a $3 to $4 million reduction in Fiscal Year 24, or approximately a 7% decrease in revenues.

This supply planning update incorporates water demands from the City's Enhanced Urban Water Management Plan (EUWMP), adopted in June 2021, which defined a "new normal" baseline water demand, including permanent reductions in water use made by the City's water customers (-2,500 AFY) in response to the last drought and an increase in water demand (1,430 AFY) due to the Water Supply Agreement with the Montecito Water District, which began in January 2022. The State also reset its reporting baseline from 2013 to 2020, which is roughly equivalent to the City's EUWMP baseline water demands. Thus, while the community continues to conserve at a rate of 25 percent compared to the former 2013 baseline water demands, the new EUWMP demand projection redefines the baseline. All mandatory conservation targets described above reference this new baseline.

In May 2022 in response to statewide drought conditions, the California State Water Resources Control Board (SWRCB) adopted regulations requiring water agencies to implement the water saving actions associated with a Stage Two Water Shortage, as

defined in their Water Shortage Contingency Plans. In June 2022 Council adopted a Stage Two Water Shortage Alert in response to the SWRCB's regulations. If California experiences another dry winter, additional regulations are expected from the state. Staff is monitoring the situation and will report to Water Commission and Council on any new requirements. The analysis provided in this report is based on the City's specific water supply conditions, regardless of statewide requirements. Currently, as the rainy season kicks off with the first storm of the season, staff recommends monitoring precipitation over the next several months. Staff will update the water supply plan based on rainfall and will make recommendations to Water Commission and City Council regarding the enactment of mandatory conservation, should it be warranted. Depending on the extent of precipitation in the next few months, staff will return to Water Commission and Council in late winter 2023 or spring of 2023.

City of SANTA BARBARA

ONE WATER CITY OF SANTA BARBARA

PUBLIC WORKS DEPARTMENT

WATER RESOURCES DIVISION

WATER SUPPLY UPDATE

Water Commission

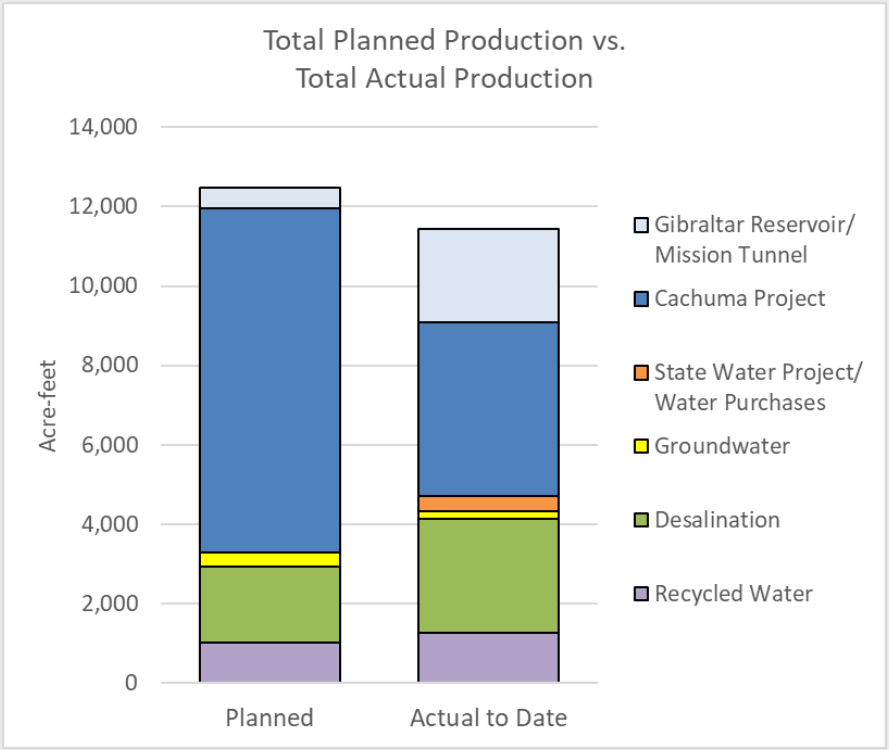
November 17,2022

Outline

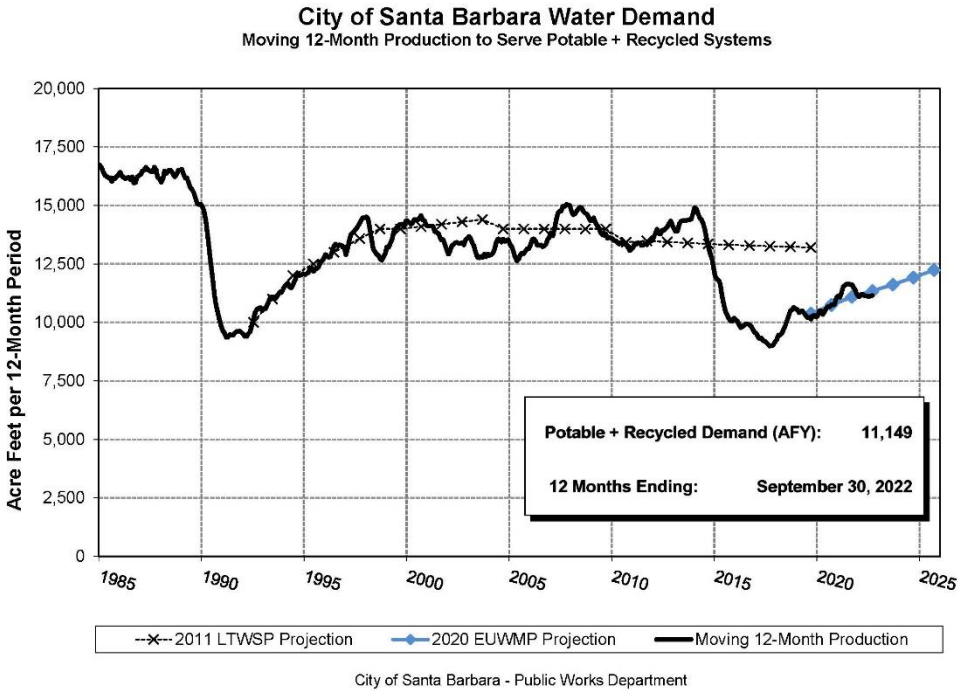
- Water Year 2022 Recap
- Statewide and Local Drought Conditions
- Water Supply Status
- Water Supply Strategy

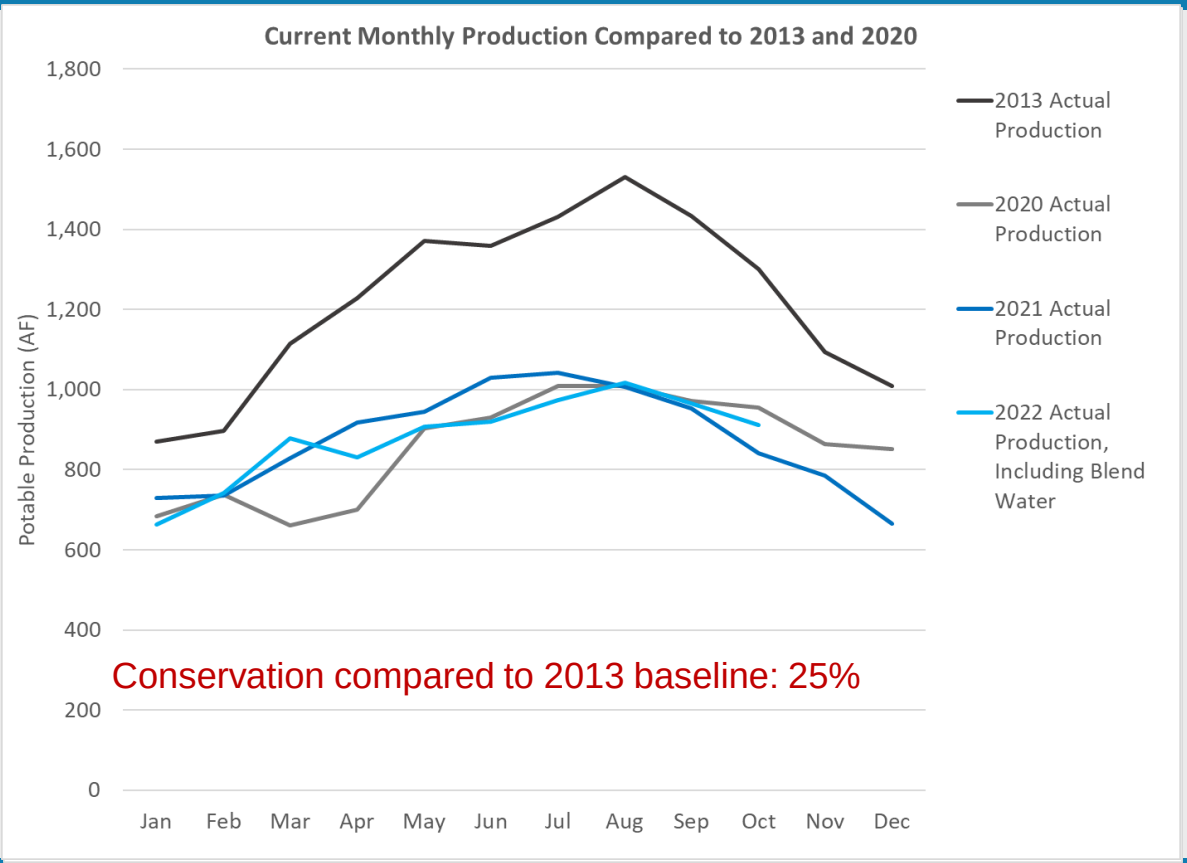
WATER YEAR 2022 RECAP

WY 2022 Planned vs. Actual Water Production



Total Production

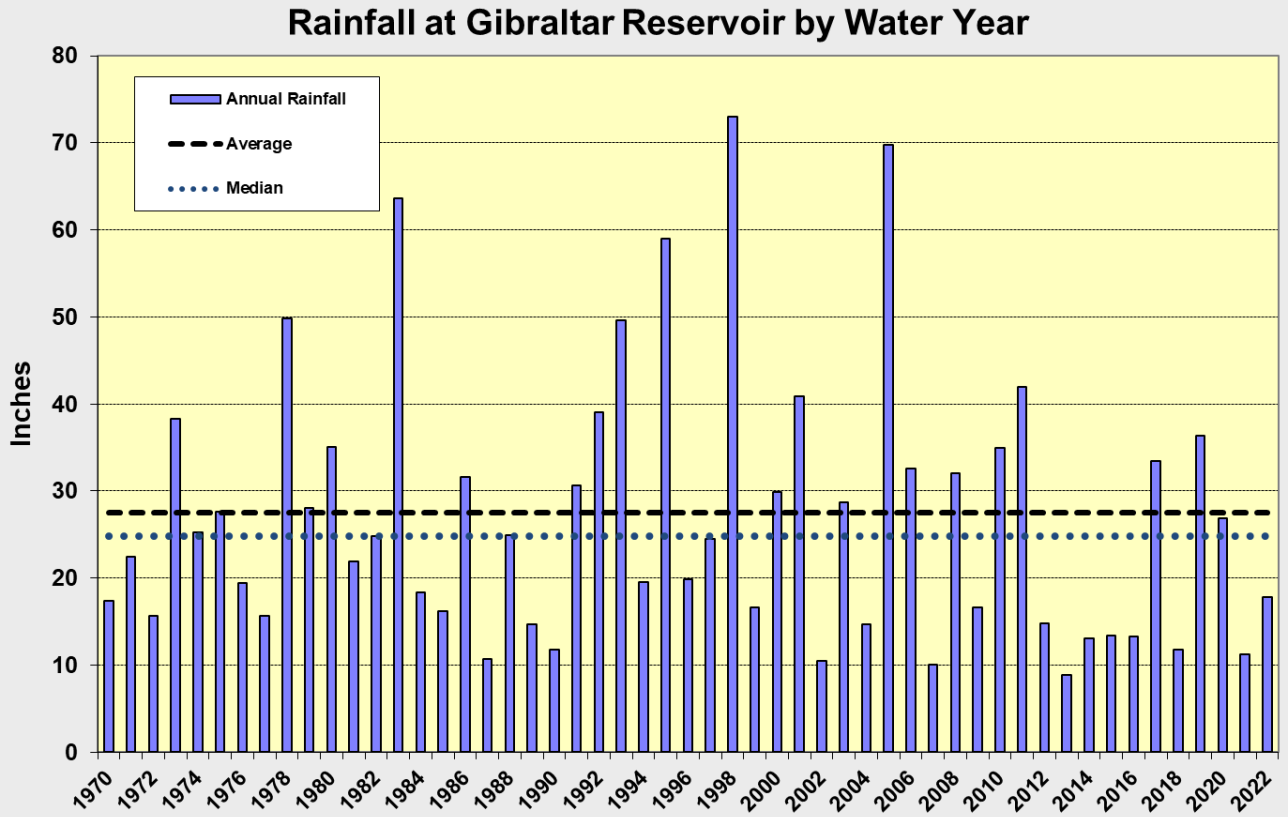



Current Monthly Production Compared to 2013 and 2020
Potable Production (AF)
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2013 Actual Production
2020 Actual Production
2021 Actual Production
2022 Actual Production, Including Blend Water
Conservation compared to 2013 baseline: 25%

STATEWIDE AND LOCAL DROUGHT STATUS

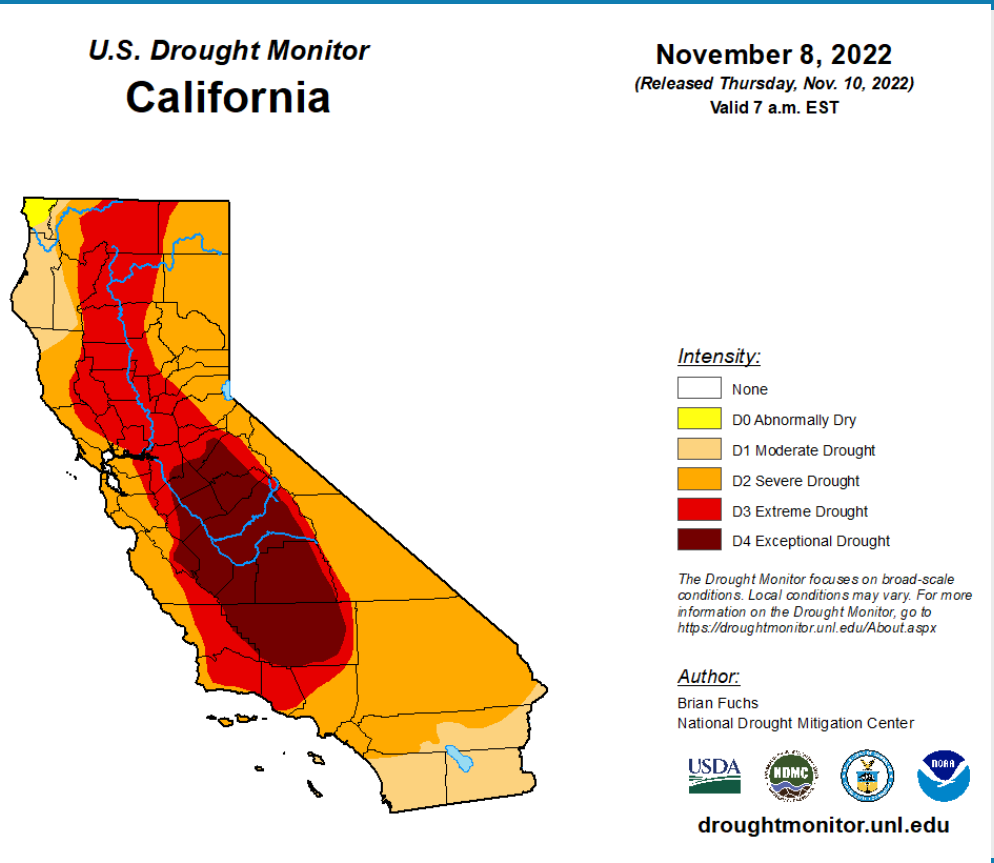
Local Rainfall Totals for Water Year 2022

- Rainfall for the Water Year 9/01/21 to 8/31/22*:
  - *County's water year runs Sept. – Aug.
  - Gibraltar Reservoir – 17.70" (68% of Normal)
  - Lake Cachuma – 12.69" (65% of Normal)
  - Santa Barbara – 13.38" (73% of Normal)


Rainfall at Gibraltar Reservoir by Water Year
Annual Rainfall
Average
Median
Inches
0
10
20
30
40
50
60
70
80
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Water Year

U.S. Drought Monitor

Above average winter temperatures and below average winter rainfall predicted.



WATER SUPPLY STATUS

Gibraltar Reservoir

- Storage as of 11/14/22: 944 AF
  - Functionally empty and ready to capture winter rains
- Status
  - Provided 14% (1,626 AF) of total WY22 supplies
  - Diversions stopped 9/23/22
    - *Utilization of Gibraltar has allowed us to increase storage in Cachuma*
  - Remaining water is poor quality

Cachuma Reservoir

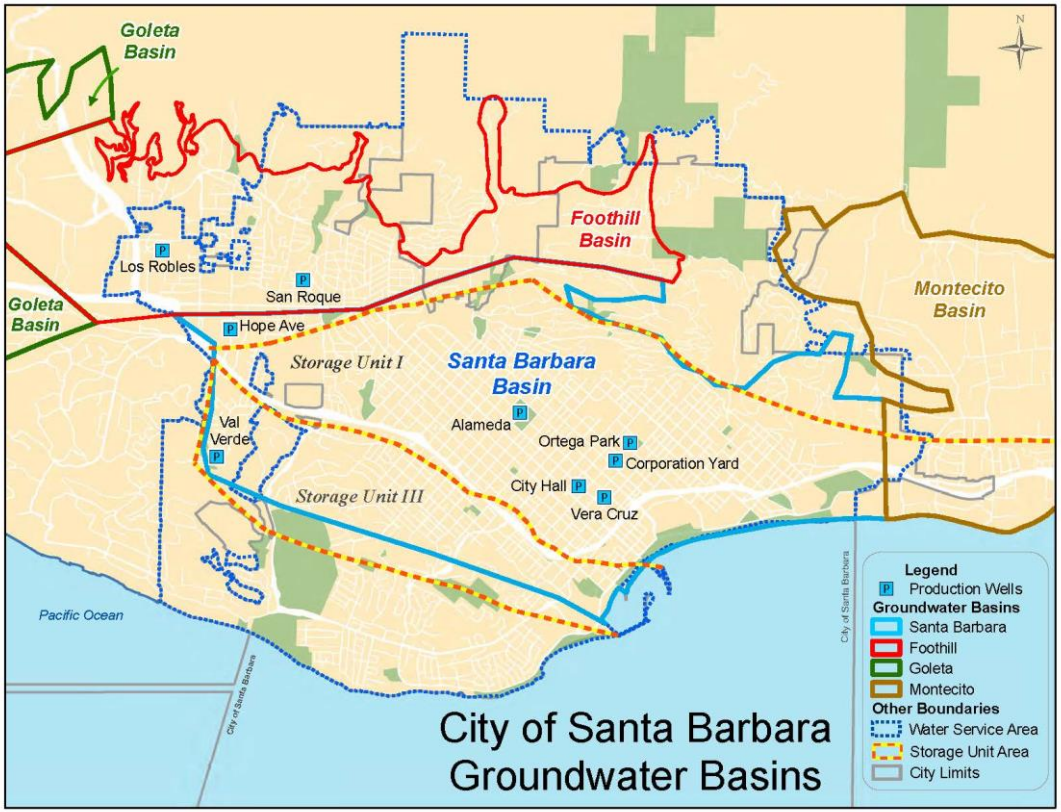
- Storage as of 11/14/22: 61,036 AF
  - (32% of capacity)
- Provided 39% (4,495 AF) of WY22 total supplies
- City's stored Cachuma supply is 18,400 AF
  - *All carryover water*
  - *0% allocation for WY2023*

State Water Project

- Current Allocation: 165 AF (5% of 3,300 Max Table A)
  - Planning for 0% allocation in 2023
- Provided 3% (384 AF) of WY22 total supplies
- ~1,200 AF stored in San Luis Reservoir
- No plans to use SWP water until summer 2024
- Water Debt: 2,000 AF
  - Pay back when SWP allocation is higher

Desalination

- Critical part of City's water supply
  - WY22: 25% of total supplies (2,874 AF)
- Important role in drought preparation, response & recovery
- Allows the City to bank surface water supplies in Cachuma


Goleta Basin
Foothill Basin
Montecito Basin
Goleta Basin
Santa Barbara Basin
Storage Unit I
Storage Unit III
Los Robles
San Roque
Hope Ave
Val Verde
Alameda
Ortega Park
Corporation Yard
City Hall
Vera Cruz
Pacific Ocean
City of Santa Barbara
Legend
Production Wells
Groundwater Basins
Santa Barbara
Foothill
Goleta
Montecito
Other Boundaries
Water Service Area
Storage Unit Area
City Limits
City of Santa Barbara
Groundwater Basins

Groundwater

- Continue to monitor water levels and seawater intrusion
- Groundwater levels are low and intrusion remains at the coast, similar to early 90s after last major drought. Full recovery of basins expected to take 5-10 years, based on observations after last major drought
- Began pumping from Storage Unit #1 in July 2022
  - Provided 2% (203 AF) of WY22 total supplies
- Drought storage still available.
- Pilot ASR study at San Roque Well for artificial recharge of treated surface water on hold until water supply conditions improve

Recycled Water

- Plant is operating and meeting customer demands
  - 9% of total supplies (981 AF) in WY22
  - Plus 297 AF used for El Estero process water
  - Only 21 AF of potable blend water used in WY22
- Important water supply role – offsets potable water use for large landscapes

WATER SUPPLY STRATEGY

Conservative Planning Assumptions

- Baseline demand projection from the EUWMP
  - Includes MWD demand beginning in Jan. 2022
  - Since 2018, City demands have tracked EUWMP baseline demands closely
- 528 AF of Mission Tunnel infiltration for each water year
  - Historically: 718 AF in WY22 and 574 AF in WY16

Conservative Planning Assumptions - Cachuma

- City's maximum annual allocation: 8,275 AF
- Annual allocation amount determined by USBR based on the amount of unallocated water available in the lake and projections of lake draw down
- Conservative: 0% Cachuma allocation for WY23 – WY25
  - USBR has already told us to expect a 0% allocation for WY24

Conservative Planning Assumptions - Gibraltar

- Maximum annual Gibraltar yield: 4,500 AF
- Last year, rainfall at Gibraltar was 68% of normal and we received ~1,600 AF of Gibraltar water supplies
- Conservative: 0 AF available for WY23
- Still conservative, but realistic: 1,000 AF of Gibraltar water available in WY24 and WY25

Conservative Planning Assumptions - SWP

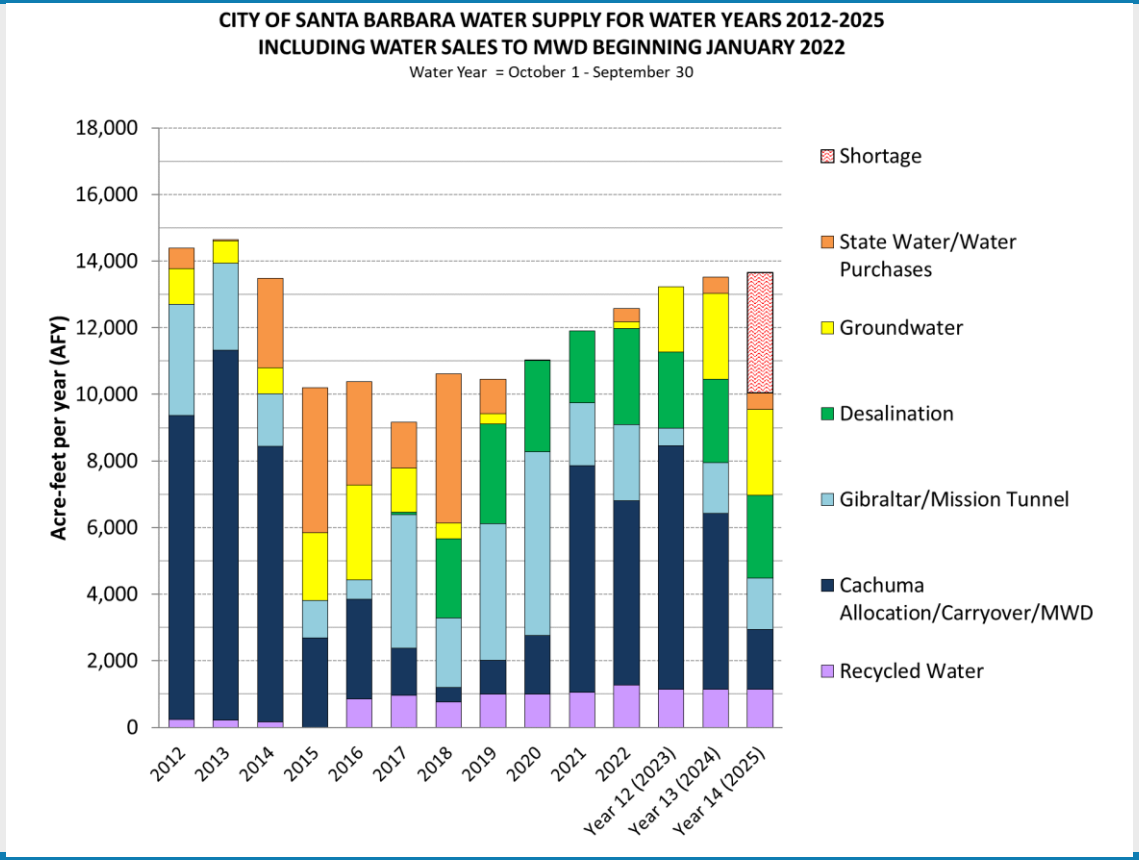
- Maximum Table A amount: 3,300 AFY
- DWR projected long-term SWP reliability: 58%
- 2014 & 2022: lowest allocation in history: 5%
- Conservative: 0% allocation on the SWP for 2023
- Still conservative, but realistic: 15% SWP allocation (495 AFY) for WY24 and WY25
  - Previous City planning efforts assumed 35% SWP allocation

Conservative Planning Assumptions - Desal

- Maximum production capacity: 3,125 AFY
- Average production WY18 – WY22: 84%
  - WY22 production: 92%
- Conservative, but realistic: Desal production at 80% of 3,125 AF for WY23 – WY25

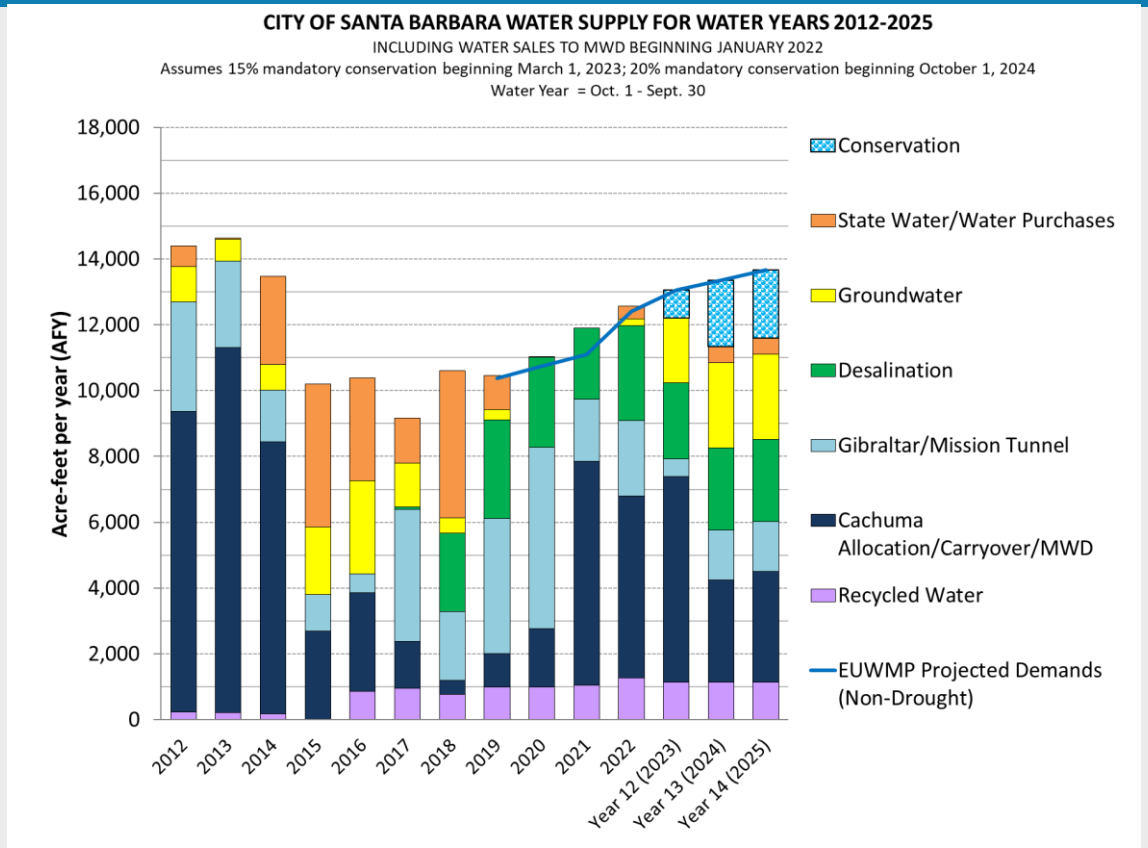
Conservative Planning Assumptions - Groundwater

- 100 AF/month of pumping from Storage Unit #1 beginning in August 2022 (Corp. Yard and High School wells)
- 145 AF/month of pumping from Storage Unit #1 beginning in July 2023 when Alameda well is connected to OGWTP.
- 70 AF/month of pumping from the Foothill Basin beginning in January 2023(Hope and San Roque wells)


CITY OF SANTA BARBARA WATER SUPPLY FOR WATER YEARS 2012-2025
INCLUDING WATER SALES TO MWD BEGINNING JANUARY 2022
Water Year = October 1 - September 30
Acre-feet per year (AFY)
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Year 12 (2023)
Year 13 (2024)
Year 14 (2025)
Shortage
State Water/Water Purchases
Groundwater
Desalination
Gibraltar/Mission Tunnel
Cachuma Allocation/Carryover/MWD
Recycled Water

Mandatory Conservation

- 15% mandatory conservation beginning in March 2023
- 20% mandatory conservation in WY24 and WY25
- Preserves Cachuma supplies to stretch into WY26


CITY OF SANTA BARBARA WATER SUPPLY FOR WATER YEARS 2012-2025
INCLUDING WATER SALES TO MWD BEGINNING JANUARY 2022
Assumes 15% mandatory conservation beginning March 1, 2023; 20% mandatory conservation beginning October 1, 2024
Water Year = Oct. 1 - Sept. 30
Acre-feet per year (AFY)
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Year 12 (2023)
Year 13 (2024)
Year 14 (2025)
Conservation
State Water/Water Purchases
Groundwater
Desalination
Gibraltar/Mission Tunnel
Cachuma Allocation/Carryover/MWD
Recycled Water
EUWMP Projected Demands (Non-Drought)

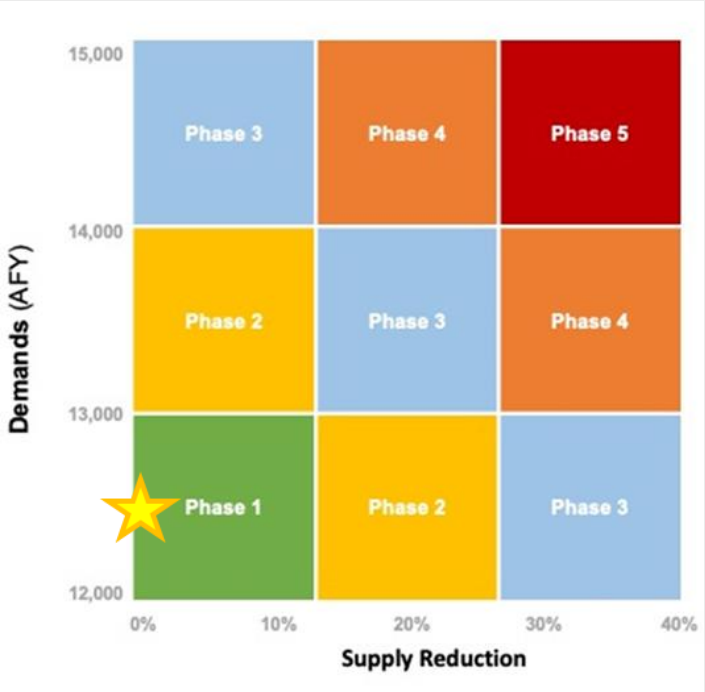
Summary of Water Supply Outlook

- No water shortage projected through water year 2024
- Anticipating needing 15% water conservation in spring 2023
- If drought conditions continue, 20% conservation needed in WY24 and WY25
  - Stretches water supplies into WY26
- Tracking winter precipitation and state requirements

QUESTIONS?

BACKUP SLIDES

Supply and Demand Monitoring



Implementation Phases

1. Existing Conditions:
   - Monitor
   - Implement recommendations
2. Begin planning for a new supply.
3. Implement new supply
4. Begin planning for additional new supplies
5. Implement additional new supplies