#### RECEIVE UPDATE FOR AQUIFER STORAGE & RECOVERY, APPROVE AMENDMENT NO. I WITH CAROLLO ENGINEERS, INC., CIP PW 22-36

CITY COUNCIL REGULAR MEETING

ITEM 5.2, APRIL 10, 2023



#### BACKGROUND



- The City's drinking water comes from two sources, local groundwater and surface water purchased from the South San Joaquin Irrigation District (SSJID).
- □ The City's water supply is reliable and staff has taken the necessary steps to plan for future growth and the corresponding water needs, however, there are some risks that are especially challenging to plan for.
- These risks include but are not limited to; prolonged droughts, new State regulatory requirements, emerging groundwater contaminants, and management of upstream reservoirs.
- □ To mitigate these risks and further protect the City's water supply needs, City Council approved the creation of Capital Improvement Project (CIP) PW 22-36 to evaluate the use of Aquifer Storage and Recovery (ASR) on January 2022.
- Staff submitted a grant application to DWR under the Urban Community Drought Relief Grant Program in the amount of \$4,500,000.

### ASR – PROPOSED PROJECT TIMELINE

#### **TIMELINE – LONG TERM PROJECT**



#### WHAT IS ASR?

- ASR is a water supply strategy and does not create new water
- When water supplies are plentiful, an ASR system will store available drinking water a natural aquifer underground. When our regular water supply becomes low, stored water is pumped out of the aquifer, treated to meet drinking water standards, and distributed to customers.



Graphic Source: https://www.trwd.com/aquifer-storage-may-become-the-next-big-player/



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# ASR – GLOBAL IMPLEMENTATION



- Australia
- India
- Bangladesh
- Israel
- Canada
- England
- Netherlands
- South Africa
- Namibia
- United Arab Emirates
- United States
- Others in development

#### Adelaide, Australia – ASR Well



#### Manatee County, Florida ASR Well, 1983

ACEC Grand Award, 1984



# ASR – NATIONWIDE

January 2022: About 700 ASR wells in about 140 ASR wellfields in at least 25 States, and many other countries.



State	ASR Wellfields	Wells
Florida	50	151
New Jersey	24	27
California	18	68
Arizona	13	51
Oregon	П	37
South Carolina	8	41
Colorado	6	45
Nevada	5	91
Iowa	4	4
Texas	7	45
Washington	3	7
Idaho	2	7
North Carolina	2	2
Delaware	2	2
VA, NM, SD, UT, ME, MN, KS, MS	l each	9



### ASR – WOODLAND, CA



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#### ASR – BENEFITS

- Long-term storage or water banking to improve water supply reliability
- Improve water quality
- Seasonal storage
- Reinforce surface water rights through demonstrated ASR storage
- Hydraulic control of contaminant plumes





- Enhance conventional wellfield production
- Raise groundwater levels
- Maintain distribution system flow and pressure
- Reclaimed water storage for reuse
- Economic benefits

#### ASR – FEASIBILITY STUDY APPROACH



- Reviewed available hydrogeologic information
- Selected preferred site with City input
- Drilled a test well
- Performed water quality and geochemical analysis
- Developed conceptual site layout for full-scale ASR well



# ASR – FUNDING UPDATE

- Funding application submitted in December 2022 under the Urban Community Drought Relief Grant program
- Grant not awarded during first round of awards
- □ Still under consideration for second round of awards with results in middle of 2023
- Staff will continue to pursue additional funding opportunities as they become available





### NEXT STEPS

- Drill monitoring well
- Preliminary Design

#### Permitting

- Detailed Design
  - ASR Well
  - Well Site Equipping
- Bid Period Support
- Future Tasks
  - Engineering Services During Construction
  - ASR Well Commissioning





## **RECOMMENDATION:**



Staff request City Council adopt Resolution to Approve Amendment No. I with Carollo Engineers, Inc. for the Aquifer Storage and Recovery, CIP PW 22-36 and Approve Budget Amendment