Monterey County Water Resources Agency Update

Component 3: Castroville Seawater Intrusion Project (CSIP) Distribution System Upgrades

Per the SUBGRANT AGREEMENT BETWEEN THE SALINAS VALLEY BASIN GROUDWATER SUSTAINABILITY AGENCY AND MONTEREY COUNTY WATER RESOURCES AGENCY, RELATED TO GRANT AGREEMENT NUMBER 4600014638 SUSTAINABLE GROUNDWATER MANAGEMENT ACT (SGMA) IMPLEMENTATION

Presented by:
Shaunna Murray, Deputy General Manager
March 6, 2025

Grant Task Overview:

Component 3 enhances water production from recycled sources and conveyance through the CSIP Distribution System via several upgrades that remedy conveyance limitations and distribution reductions by producing a water scheduling system for use by agriculture.

Approach:

1. Development of a hydraulic model
   - Data collection and evaluation
   - Model development and calibration
2. Model runs to determine distribution system hydraulic and supply deficiencies
3. Identification of issues and possible solutions
4. Development of project feasibility
5. Design of key projects and inputs for master planning efforts

Monterey County Water Recycling Projects
Background and Problem Statement:

The CSIP recycled water distribution system began operation in 1998, designed to deliver reclaimed water treated to Title 22 CCR standards from Monterey One Water's Regional Treatment Plant (RTP) to approximately 12,080 acres of agricultural land around Castroville. The system was established to reduce groundwater usage and slow seawater intrusion by supplementing the system's water supply with reclaimed water from the reclamation plant.

However, during peak summer irrigation demands, the reclaimed water supply is insufficient, necessitating the use of 8 currently active supplemental groundwater wells and, since 2010, water diverted from the Salinas River Diversion Facility (SRDF). These supplemental sources not only cover any occurring water deficit but also assist in maintaining adequate pressure throughout the system.

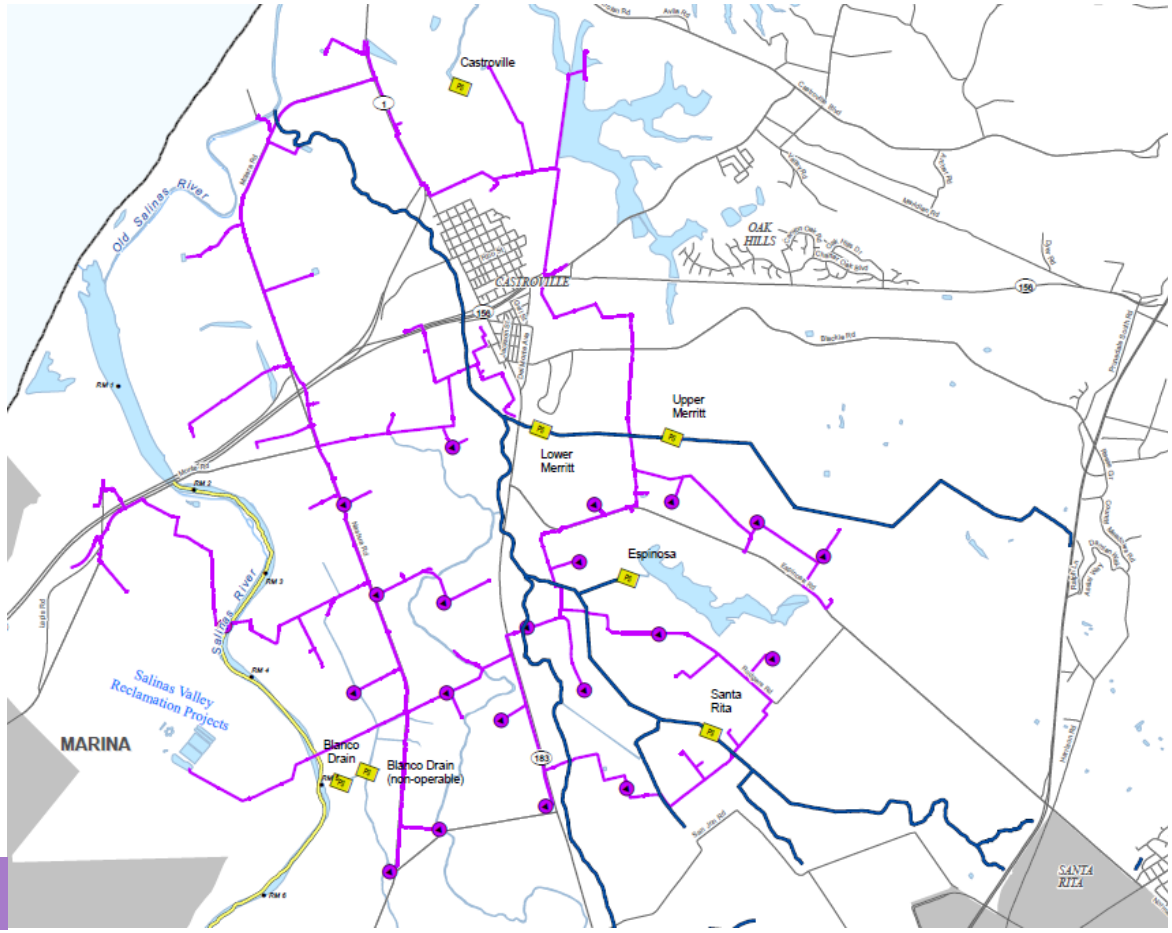
Monterey County Water Recycling Projects

DISTRIBUTION SYSTEM

Castroville Seawater Intrusion Project (CSIP)

- 48 miles of pipeline
- 8 supplemental wells
- 222 parcels
- 112 turnouts
- 9 monitoring stations
- 3 booster pumps stations
- $37M Capital
- ~$3.5M Annual O&M (excludes loan payment)

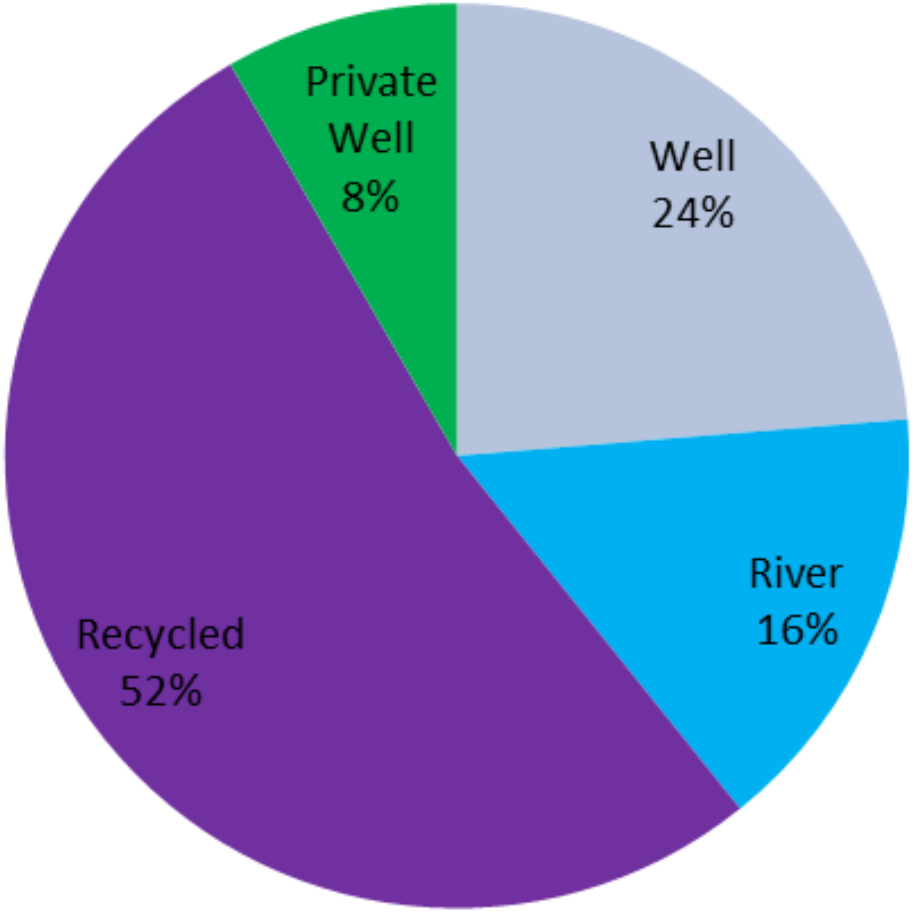
12,080 acres



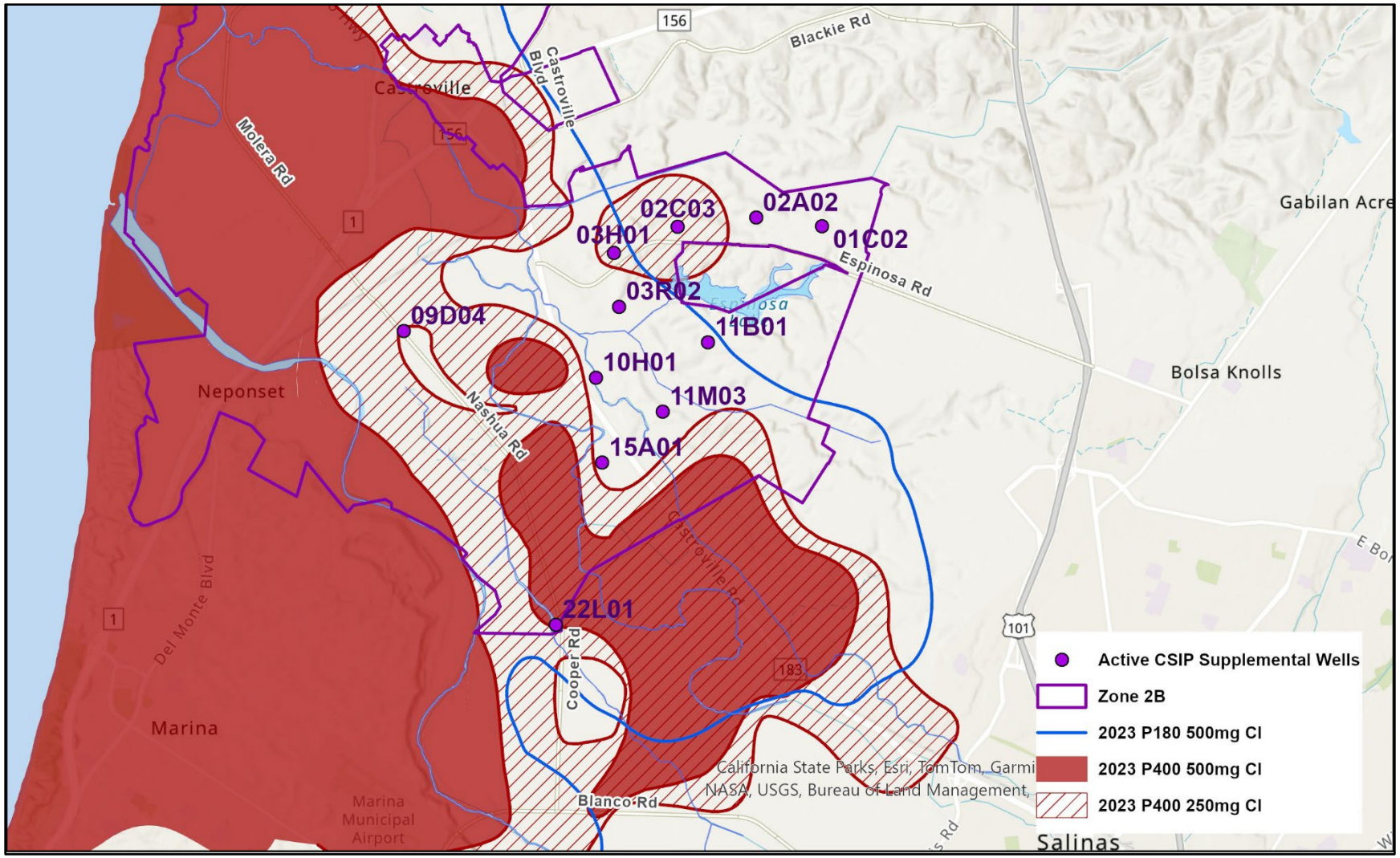
Salinas River Diversion Facility: rediverts stored water from Nacimiento and San Antonio Reservoirs to supplement recycled water usage

Salinas Valley Reclamation Project @ the Regional Treatment Plant: produces recycled water

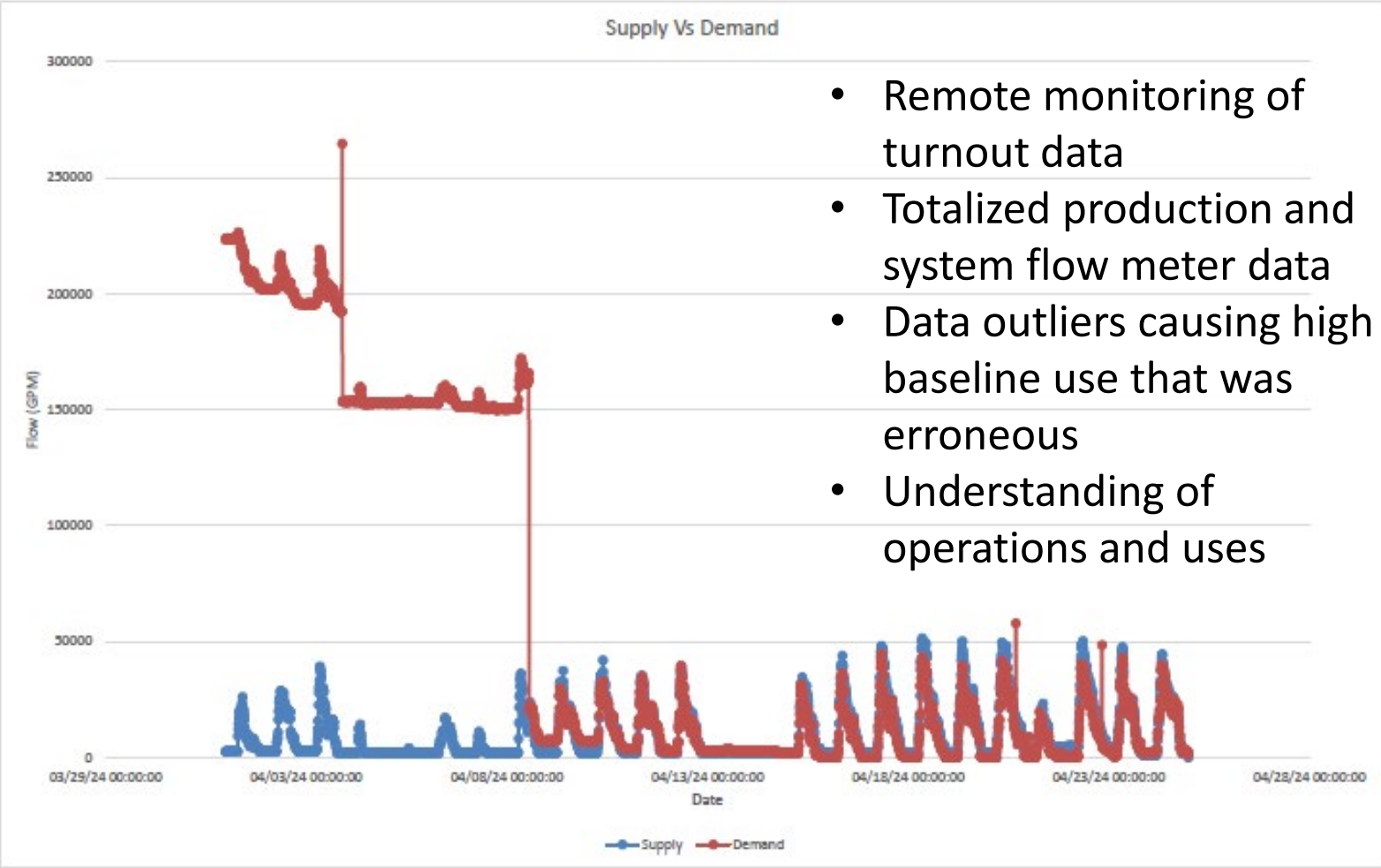
Average Annual Total Water Production By Source In the CSIP Area



Seawater Intrusion Map for the CSIP Area



1. Development of a hydraulic model: data collection and evaluation began in 2023 and is complete

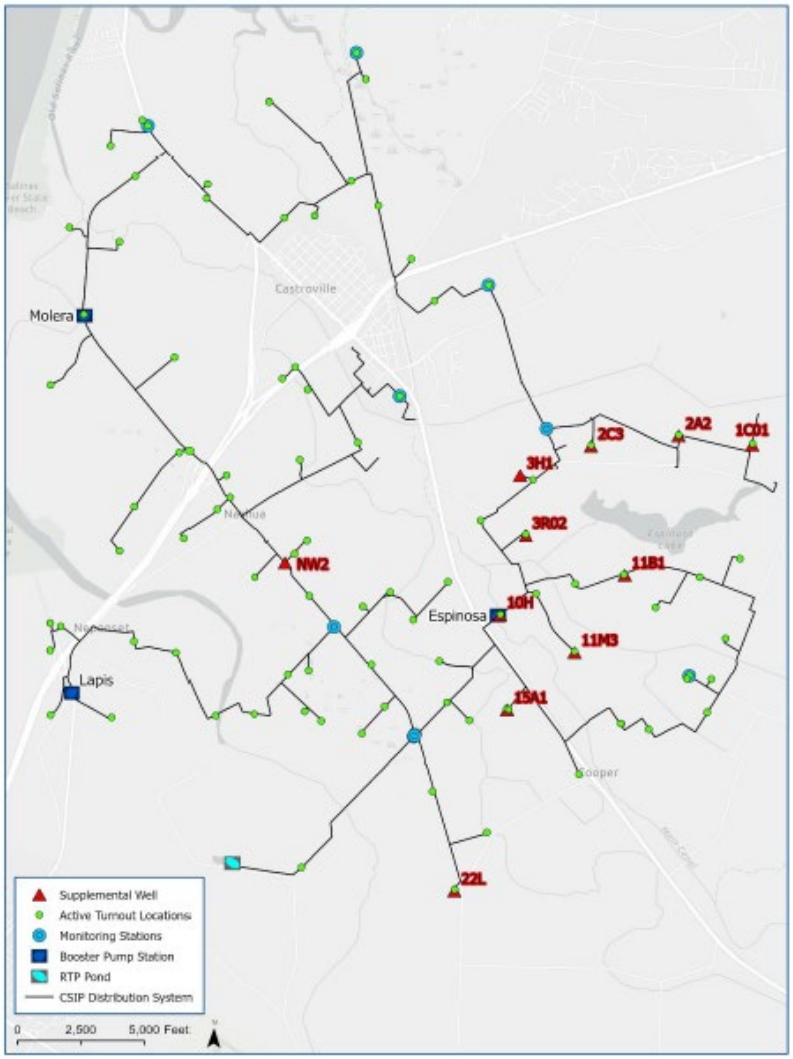


- Remote monitoring of turnout data
- Totalized production and system flow meter data
- Data outliers causing high baseline use that was erroneous
- Understanding of operations and uses

1. Development of a hydraulic model and calibration began in the spring of 2024 and is complete

Development of the existing condition CSIP distribution system hydraulic computer model

- Bentley OpenFlows WaterCAD
- Using as-built drawings and GIS data
- Including pipes, booster pump stations, supplemental wells, monitoring stations, and turnouts
- Added new Pressure Recorder Devices to improve monitoring



1. Development of a hydraulic model and calibration began in the spring of 2024 and is complete

Validate/calibrate the hydraulic model

- Field data collection and reporting to verify the computer model is producing results similar to field conditions
- Utilized Pressure, Flow/Demand, and Pond Level Data
- Overall, the model was well-calibrated
- Discrepancies between the model and field data were due to:
  - Inaccurate turnout RMU flow meter data (field verified and corrected)
  - Invalid pressure recordings due to sensor constraints (removal of constrained data)
  - Limited elevation data for hydraulic grade line conversion (field verified and conversions updated)
  - Insufficient recording accuracy of existing pressure transducers (installation of 11 additional temporary pressure recorders)
  - Indicator of a partially closed valve along Rodgers Loop (adjusted valve's model values to align with field conditions)

2. Model runs to determine distribution system hydraulic and supply deficiencies began in the summer of 2024 and is complete

Identified the feasible range of operational conditions and created specific system scenarios for analyzing the infrastructure capacities of the CSIP system. Scenarios include:

1. Identifying Constraints of the Existing Distribution System
2. Optimizing Supply Hydraulics at the RTP Pond
3. Evaluating the Impact of In-System Storage and Booster Pumps

3. Identification of issues and possible solutions began in the winter of 2024 and is complete:

1. Rodgers Loop Check Valve and Pressure Relief Valve: removes the modeled restriction and increases the total demand the system can accommodate, while meeting all pressure and velocity criteria.
2. Second Pond Outlet Pipeline: increases the total demand the system can accommodate, while meeting all pressure and velocity criteria.
3. In-System Storage and Booster Pump Station: provides a secondary source of water during peak demand periods when the supply capacity from the RTP Pond reaches its maximum. Allows new source water in the form of boosted pressure from at-grade storage tanks in the eastern area of the CSIP system and effectively replaces the groundwater wells as a source during peak demand conditions.

4. Development of project feasibility began in the winter of 2024 and will be completed this summer

- Improvements will require additional hydraulic modeling as part of the basis of design and conceptual design phases of work
  - sized based on performance criteria
  - feasibility of successful implementation
- Modeling efforts focus on maximizing supply of non-groundwater sources and peak demand conditions to determine limitations of the system
  - develop a scheduling system to reduce the magnitude of the peak demand
  - enable the supply to better serve customers without the need for groundwater pumping

5. Design of key projects and inputs for master planning efforts will begin spring of 2025 and will be completed this fall

- Once key projects are analyzed during the conceptual phase, one or more will be further developed to meet higher level design and eventual construction and implementation
- Recommendations, costs estimates and benefits will be further described for inclusion into a master planning document

Summary

- Monterey County Water Recycling Projects have been delivering recycled water since 1998 and have successfully reduced the rate of seawater intrusion in the 180/400 subbasin
- Modeling and design efforts are underway to identify projects and actions to help further reduce groundwater pumping within the CSIP Distribution Area
- Project implementation will be limited under this phase and additional resources will need to be secured to effectuate the projects and beneficial results
- The Master Planning efforts will bring together the needs for the system and help decision makers determine which projects and actions to move forward