Project Work Order Approval for Professional Engineering Services for Farmers Lane Groundwater Well Facility Evaluation Phase 2 (A010032-2011-12B)

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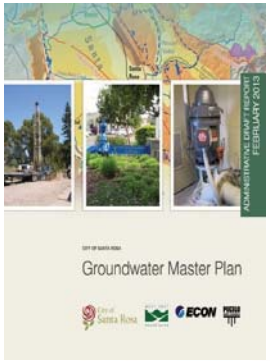
Presentation Overview

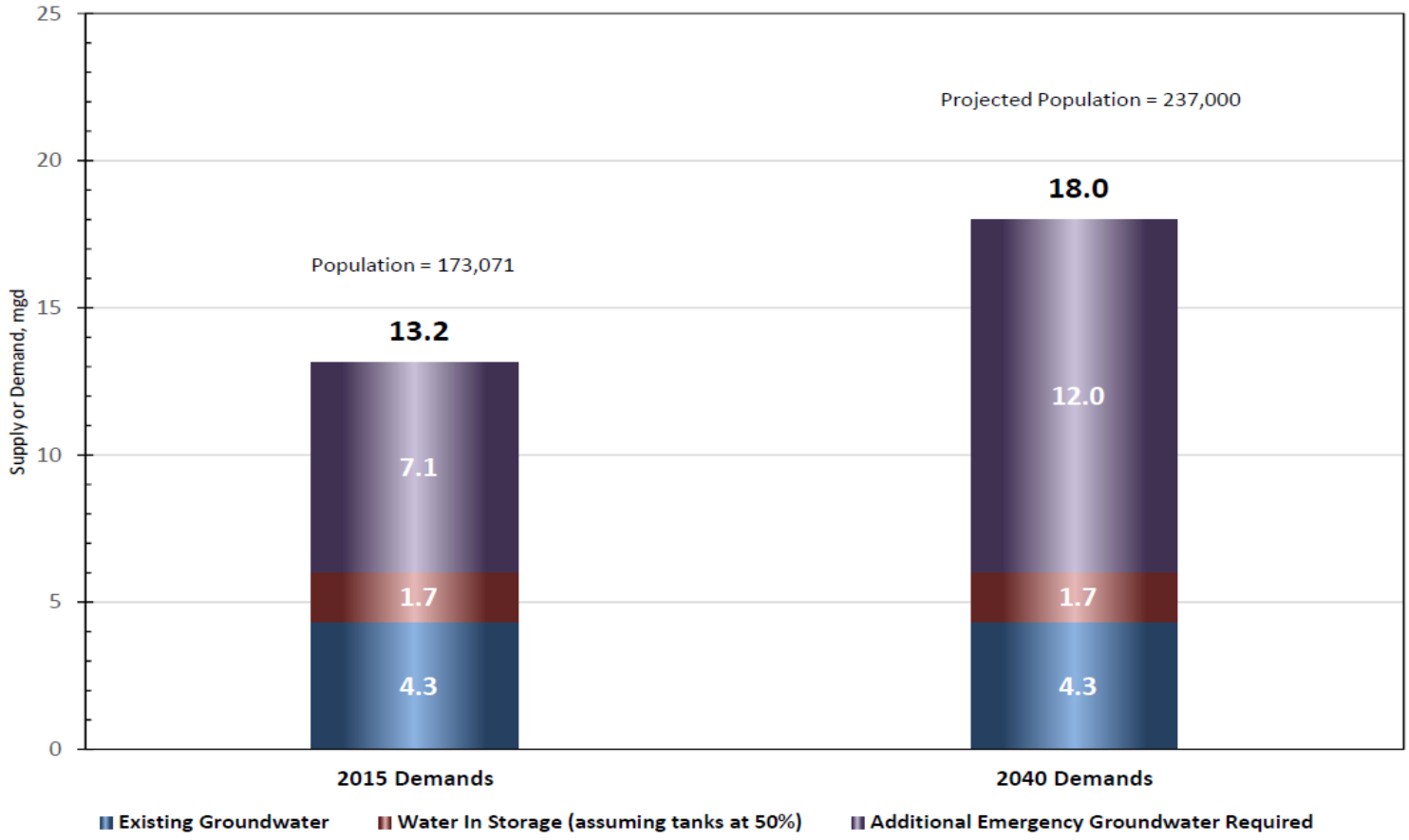
- Background – Emergency Groundwater Program
- Project Work Order (PWO #12B)
- PWO Signing Authority
- Recommendation

Background
Emergency Groundwater Program

- Ground Water Master Plan (GWMP)
  - Completed September 2013
  - New emergency wells to meet supply shortfall during emergency/transmission system impairment
  - Protection of Existing Emergency Groundwater Supplies



Additional Groundwater Need



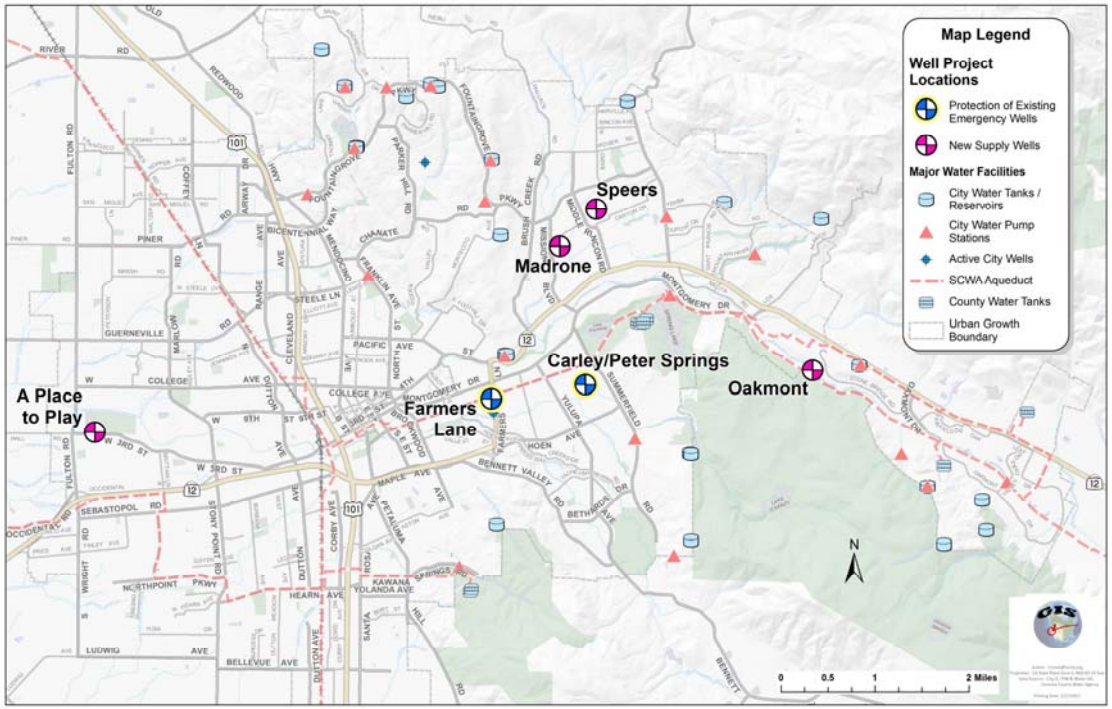
Current Well Projects

New Emergency Groundwater Wells:

- A Place to Play Test Well Conversion (Fall 2017)
- Madrone Test Well Conversion (Summer 2018)
- Oakmont/Speers Emergency Well Pilot Drilling (Summer 2017)

Protection of Existing Facilities:

- **Farmers Lane Well Upgrades (Fall 2017)**
- **Farmers Lane Treatment Plant Upgrades (Fall 2018)**
- Carley and Peter Springs (FY 18/19)
- Leete Well Evaluation (FY 18/19)



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Farmers Lane Existing Facility

- Two Production Wells
  - W4-1 constructed in 1940 (~950 gpm)
  - W4-2 constructed in 1950 (1500 gpm)

- An iron/manganese oxidation and filtration plant (2002 retrofit) prior to bringing the wells back on line for production

- A turnout/blending facility, which allows blending of SCWA waters with well water as it is delivered into the City's conveyance system

Farmers Lane Facility Upgrades

- Phase 1 - Evaluation of Farmers Lane Well Facility initiated in September, 2014 (Task A – Evaluation of Wells and Task B – Treatment Systems Evaluation

- Farmers Lane Groundwater Well Facility Evaluation Phase 2 was executed in September, 2015 to determine the best approach to rehabilitating the older wells
  - Confirmation Pump Testing was performed in early 2016
  - Design currently in process

Phase 1 - Evaluation of Farmers Lane Well Facility Recommendations

- Key Findings for Task A – Well/Production Facilities Evaluation:
  - Set the pump bowl intakes at lower elevations to continuously supply 2,500 gpm combined capacity for up to 7.5 months
  - Install Variable Frequency Drives (VFD) on higher horsepower motors to allow for a more constant flow rate to the treatment system
  - Flow meters will also be required to allow VFDs to maintain a set point flow rate
- Key Findings for Task B – Treatment System Evaluation:
  - Realization that the dissolved gas in groundwater has occurred throughout the wells' lifetime
  - Recommended treatment will involve pumping the water into two degassing tanks

Farmers Lane Groundwater Well Facility Evaluation Phase 2 Recommendations

- W4-1 – Submersible Pump (10-inch diameter bowl assembly) with 150 horsepower motor
- W4-2 – Vertical Line-shaft Pump with 200 horsepower motor
- Both pumps will have Variable Frequency Drives and flow meters installed
- Electrical System upgrades, including new service to power both W4-1 and W4-2

Electrical System Upgrade Details

- PG&E Power Drop at Well 4-2 to relieve the overload at the Treatment Plant MCC
  - Power form W4-2 to be fed back to W4-1 through existing conduits
  - Both Buildings to be expanded to include:
    - W4-2 – main meter connections, the MCC, and a VFD to operate the 200 horsepower motor
    - W4-1 – VFD to operate the 150 horsepower motor
  - A New Transformer and a 500 Kilowatt (KW) generator

Schedule

- Phase Well Upgrades and Treatment Upgrades over 3 years with an overall cost of $5.6 million dollars
  - Well Upgrades design in process (Construction anticipated to start in October 2017)
  - Will require pre-purchase Specifications for Pumps and Electrical equipment with long lead times.
  - Water Treatment Design to begin FY 17/18 (Construction anticipated in October 2018)

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Provides Additional Compensation for:

- Out-of-scope geotechnical, structural and electrical design work needed to expand the buildings at W4-1 and W4-2
- Technical Assistance regarding proposed design as City Staff works with PG&E's Water Infrastructure and System Efficiency (WISE) Program to determine eligibility for incentives.
- Develop pre-purchase specifications for pumps and electrical equipment that has long lead times to meet overall project schedule.

PWO Signing Authority

- Total Design Cost for Farmers Lane Well Upgrades is $571,900 requiring the PWO to be signed by the BPU

Recommendation

- Approve Budget Augmentation to proceed with the design of the Farmers Lane Well Upgrades