

PROJECT - Deliverables

General Project Information

* Project Name: Water Systems Repairs & Upgrades

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Version ¹	Date	Author	Reason for Change
1.1	01/30/05	Kevin O'Shea	Original

Project Deliverables

1 12" Diameter 700' Deep Well Installation

- 1.1 At the holding tank site remove the gate, fence, and posts from the north gate post to the center of the south stretch of fencing to facilitate the entry of equipment that will be entering the project site. Install temporary fencing to enclose the gap for site security. Remove the temporary fencing and reinstall the 126 feet of fence with the fence upgrades listed in section 8 after completion of the project. Includes the installation of a new 16' double gate.
- 1.2 Mobilize equipment to the drilling location. Drill a test hole to the depth of 700 feet. Perform an electric log of the test hole to determine volume and location of water bearing zones for screen placement. Ream the test hole to accommodate 12-3/4" diameter steel casing with .250" wall thickness. Set Johnson stainless steel .050" slot well screen with dielectric couplers using Gemaco centralizers. Gravel pack outer well annulus with Baldwin pea gravel. Set 50-100 feet of sanitary well sealent. Begin well development by air lifting for a period of 4-24 hours until most of the drillers lubricant is cleared from the well. Demobilize the drillers equipment.
- 1.3 After the submersible well pump has been installed lay out discharge pipe to the designated water holding area located on the customer's property.
- 1.4 Perform a 10 hour step draw test to determine the pumping water levels at different pumping rates.
- 1.5 Perform a 24 hour constant rate test to determine the pumping water level at a constant rate of draw.
- 1.6 Take water samples and bring to the lab for potability testing.
- 1.7 Prepare the site to facilitate the drillers equipment. Remove the driller cuttings from the well site and deposit in the lower SE corner of the holding tank site.
- 1.8 Pour a concrete slab at least 12" around the well casing. Chlorinate the well to finalize the well construction permit.

2 New Well Pump Installation

- 2.1 Install a 300 gpm rated 50 HP. submersible pump on 500 feet of 5" steel column pipe with check valves placed every 200 feet. The drop wire for the installation shall be flat jacketed submersible pump cable. Install a steel discharge assembly to include a deep well vent and flanged weighted check valve.
 - 2.2 Install a pipeline from the pumps discharge assembly to the new water storage tank.
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3 67,000 Gallon Water Tank Replacement

- 3.1 Take soil samples from the water tank foundation site and perform a soil analysis for the tank foundation.
 - 3.2 Clear the tank foundation site to include the removal of the existing tree stumps and brush.
 - 3.3 Remove the soil at the tank foundation site down to the existing lava cap. The soil removed will be deposited over the drillers cuttings in the lower SE corner of the site.
 - 3.4 Install a compacted gravel foundation for the new water storage tank.
 - 3.5 Perform a gravel compaction test on the gravel foundation.
 - 3.6 Install a 158,000 gallon nominal capacity water storage tank. Tank to be 41' nominal diameter x 16' shell height, per AWWA D-100-96.
 - 3.7 Install interior tank coatings per AWWA D-102 ICS Type 1. Install exterior tank coatings per AWWA D-102 OCS Type 1.
 - 3.8 Install a pipeline from the new water holding tank to connect into the existing pipeline at the existing 82,000 gallon water tank.
 - 3.9 Perform a new equipment disinfection as per Department Of Health Services standards.
 - 3.10 Line not used
 - 3.11 Remove the existing 67,000 bolted steel water tank and the connecting pipeline up to the point of connection of the new water tank.
 - 3.12 Perform a tank inspection before the end of the 12 month tank warranty period.
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4 Backup Power Generators

- 4.1 Install a 6' x 10' x 8" reinforced concrete slab at the existing well site and at the existing water storage tank site.
 - 4.2 Install a 80KW standby rated diesel generator at the existing water storage tank site. Replace the existing electric meter and main switch with a 200 amp meter panel and main switch. Install a 200 amp transfer switch and 50 hp. pump panel. Wire in to new generator and new well pump.
 - 4.3 Install a 60KW standby rated diesel generator at the existing well site. Install a 100 amp transfer switch and wire in to the existing electrical service and new generator.
 - 4.4 Generator dealer to perform generator startup and load testing to validate generator warranty.
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5 Monitoring System Upgrades

- 5.1 Install a well water level sensor in the new well. Install a flow sensor on the new well pump's discharge. Run conduit and wire from the new well to the booster pump building. Connect the new sensors to the existing watchman. Connect generator sensors to the existing watchman units. Reprogram the watchman for the new sensor inputs. Reprogram the cockpit for the new sensor inputs.
- 5.2 Install a chlorine sensor at the booster building location and a second chlorine sensor at the existing well location. Connect the sensors to the existing watchman system. Reprogram watchman for the new sensor inputs. Reprogram the cockpit for the new sensor inputs.
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6 Fire Hydrant Upgrades

- 6.1 Replace 3 warf head style fire hydrants in the Skansen Estates Subdivision and 3 warf style heads in the Spanish Gardens Subdivision with standard 4-1/2" x 2-1/2" fire hydrants. The replacement includes connecting to the existing mainline with a 6" pipeline, installing a new main hydrant shutoff valves, and standard plumbing assemblies for the new hydrants.
- 6.2 Install a new standard 4-1/2" x 2-1/2" fire hydrant in the Skansen Estates subdivision as per Butte County Fire Departments recommendation. The installation includes connecting to the closest existing mainline, installing a pipeline to the new hydrant location, installing a main hydrant shut off valve, and standard plumbing assembly for the new hydrant.
- 6.3 Install a new standard 4-1/2" x 2-1/2" fire hydrant in the Spanish Gardens subdivision as per Butte County Fire Departments recommendation. The installation includes connecting to the closest existing mainline, installing a pipeline to the new hydrant location, installing a main hydrant shut off valve, and standard plumbing assembly for the new hydrant.
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7 Distribution System Water Meters

- 7.1 Install 43 each 1" water meters in the Rocky Bluffs Subdivision. The installation shall include a 1" lockable shutoff valve and a concrete underground box with lid. Each installation shall be placed on the pipeline that serves the home at the closest possible point to the mainline.
- 7.2 Install 32 each 1" water meters in the Skansen Estates Subdivision. The installation shall include a 1" lockable shutoff valve and a concrete underground box with lid. Each installation shall be placed on the pipeline that serves the home at the closest possible point to the mainline.
- 7.3 Install 22 each 1" water meters in the Spanish Gardens Subdivision. The installation shall include a 1" lockable shutoff valve and a concrete underground box with lid. Each installation shall be placed on the pipeline that serves the home at the closest possible point to the mainline.
- 7.4 Provide 12 each barrel locks to fit the water meter shut off valves. Provide 2 each master keys for the locks.
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8 Fencing Repairs & Upgrades

- 8.1 At the existing well site remove the existing residential grade fence fabric and install 307 feet of 72" 9 gauge fence fabric with privacy slats and razor ribbon on the existing fence & gate posts.
- 8.2 At the water storage tank site remove the existing residential grade fence fabric and install 480 feet of 72" 9 gauge fence fabric with privacy slats and razor ribbon on the existing fence and gate posts.
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9 Mobilization/Demob

- 9.1 Includes project equipment mobilization/demobilization. Also includes employee time & travel for obtaining permits, delivering water samples, and material staging & delivery. Also includes employee time for engineering and drawings.
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10 Chlorination Equipment

10.1 Install a concrete slab at the existing well and water storage tank site. Install a rubbermaid sheds to house the chlorination equipment. Install electrical power service to the sheds. Install chlorine tanks and injections pumps and plumbing. Connect the injection tubing to the well pump discharge assemblies.

11 Building Doors

11.1 Remove the two existing storage shed quality doors and install better quality sectional doors on the booster pump building.

12 Site Landscaping

12.1 Install landscaping around the perimeter of the water storage tank site fencing and at the existing well site fencing. Install an irrigation drip system to supply water to the landscaping.

13 Permits & Fees

13.1 Cost of any Federal, State, County, and Utility permits and fees for the project.

14 Other Repairs

14.1 Remove and replace the existing well pump, drop pipe check valve, and motor drop cable. Inspect and clean the existing 85,000 gallon water storage tank. Repaint the exterior of the water storage tank. Install a lockable ladder gate on the ladder to the water storage tank. Install a vent screen over the overflow pipe of the existing water storage tank. Install an interior ladder. Recoat the interior of the tank within the next few years.

Notes