

SCOPE OF WORK

Project Description

The project proposes to upgrade existing water main and service lateral infrastructure within the Redwood Valley County Water District (RVCWD, the District) to current seismic design standards for water infrastructure. Existing infrastructure was installed at unknown times, to unknown design standards, using unknown materials and unknown techniques and is considered significantly vulnerable to seismic hazards. The installation techniques, including the style and strength of pipe connections and the materials and compaction techniques used for the pipe bedding are not documented in either District or County records and are assumed to be substandard due to the age and history of the system. Upgrades will be accomplished by abandoning in place the existing 4-inch diameter low code water mains and installing new 6-inch water mains, and replacing existing low code water laterals with new 1-inch diameter laterals designed to meet current seismic standards. Approximately 15,026 linear feet of existing low code 4-inch diameter water mains will be abandoned in place and replaced with new 6-inch diameter polyvinyl chloride (PVC) water mains, while 5,631 feet of new 6-inch diameter PVC water main is proposed to be installed in strategic locations throughout the District to create system loops and improve system resilience and water quality. Approximately 7,653 feet of replacement water line will be installed in County roads, with approximately 3,720 feet of new water line and 5,831 feet of replacement water line installed along private roads. No new water line is proposed for placement in County roads. Approximately 1,911 feet of new water line and 1,542 feet of replacement water line will be installed through private property and not along a roadway alignment. The project will also identify and replace existing low code 3/4-inch diameter water laterals with 2016 California Residential Code-compliant 1-inch diameter water service laterals. The exact number of laterals to be replaced will be identified in Phase I, and only existing laterals associated with existing or burned residences will be upgraded; there will be no new (non-replacement) laterals installed and no total increase in number of connections to the system. These upgrades will replace the existing infrastructure of questionable construction with new infrastructure designed to meet modern seismic design standards and perform more reliably under seismic hazards.

The proposed project is located near the unincorporated community of Redwood Valley, Mendocino County, California, as identified in the attached location map and is broken-up into eight (8) distinct project areas, as depicted in the attached USGS 7.5 minute quad series topographic map. The overall project coordinates (P1-P4) and coordinates for each individual project area (A-H 1-4) are presented in the tables on the following page.

Location ID	Coordinates
P1	(-123.19329, 39.33329)
P2	(-123.19245, 39.28333)
P3	(-123.22739, 39.28297)
P4	(-123.22813, 39.33282)
A1	(-123.22092, 39.33297)
A2	(-123.22813, 39.33282)
A3	(-123.22797, 39.31980)
A4	(-123.22064, 39.31984)
B1	(-123.21115, 39.28943)
B2	(-123.21105, 39.28355)
B3	(-123.22087, 39.28345)
B4	(-123.22097, 39.28932)
C1	(-123.21146, 39.29521)
C2	(-123.21155, 39.30036)
C3	(-123.21982, 39.30025)
C4	(-123.21973, 39.29510)
D1	(-123.21979, 39.29161)
D2	(-123.22723, 39.29153)
D3	(-123.21994, 39.29948)
D4	(-123.22738, 39.29942)

Location ID	Coordinates
E1	(-123.21139, 39.30547)
E2	(-123.20941, 39.30581)
E3	(-123.20676, 39.29465)
E4	(-123.20475, 39.29467)
F1	(-123.22044, 39.28488)
F2	(-123.21892, 39.28490)
F3	(-123.21924, 39.30351)
F4	(-123.22076, 39.30350)
G1	(-123.20432, 39.28321)
G2	(-123.19609, 39.28331)
G3	(-123.19619, 39.28873)
G4	(-123.20441, 39.28864)
H1	(-123.20525, 39.29834)
H2	(-123.20522, 39.29398)
H3	(-123.19268, 39.29403)
H4	(-123.19271, 39.29839)

Approximately 46% of the project area is considered a severely disadvantaged community by the State of California, indicating that the median household income in the area is less than 60% of the statewide median household income, according to American Community Survey data from 2010-2014. The remaining 54% of the project area is not designated as a disadvantaged or severely disadvantaged community.

The project areas are currently developed with asphalt and unpaved roadways leading to numerous residential home sites, a portion of which were destroyed in the October 2017 Redwood Complex Fire, in addition to rural farmland with various levels of development. Work will occur principally within the developed roadways and previously disturbed home sites. Neither above-ground development nor development within previously undisturbed areas will occur. Right of entry covenants, to be recorded with the property, will be required in various locations along the water line alignment, to be determined during Phase I of the project. Due to the age and construction history of the system, it is likely that some areas with existing water line do not have easements formally recorded. Information currently available in County records and GIS analysis of the proposed water line alignment indicates that approximately 51 right of entry covenants may be required.

The primary source of water for the Redwood Valley Water District is surface water from nearby Lake Mendocino. The project does not propose to increase the capacity of the District, as the District is source-limited, but rather will update the water infrastructure to current code standards and protect it from potential seismic hazards. This project will help affected property owners rebuild with the knowledge that their water system is safe and up to code and provide Redwood Valley County Water District and its customers with hardened infrastructure that will improve performance in the event of a seismic hazard. This includes additional security for agricultural water users who purchase water from the District as well as domestic users.

The project design work will be performed by civil engineer(s) and other technical professionals (to be determined during the bidding process) with adequate and applicable licensure to practice in the state of California and adequate experience and expertise to complete the work. The project construction will be performed by contractor(s) (to be determined during the bidding process) licensed to work within the state of California and with demonstrated capacity to perform the work to meet all applicable local, state, and federal standards and regulations. A cultural monitor will be retained during project construction activities. Prior to commencing project construction, contractor staff will receive training regarding cultural monitoring to recognize any cultural resources discovered during project earthwork activities and to stop work in the area and report any potential cultural resources to the cultural monitor. Stormwater pollution prevention will be conducted in compliance with the State of California Construction General Permit requirements, Order No. 2009-009-DWQ. Mendocino County employees or contractors will perform the grant management and reporting activities as required by the California Office of Emergency Services (CAL OES) and the Federal Emergency Management Agency (FEMA). All work will be procured in compliance with local, state, and federal procurement procedures and requirements.

The proposed project will serve as an independent solution to problem of low-code, seismically-vulnerable water district infrastructure, requiring no additional projects or activities to achieve the proposed project benefits.

The proposed project will begin upon receipt of grant approval from CAL OES and FEMA and is anticipated to take approximately 117 weeks, including grant closeout activities. Phase I, pre-construction phase services, is anticipated to take approximately 42 weeks, while Phase II, construction phase services, is anticipated to take approximately 75 weeks.

A technical scope of work delineating all specific project activities is presented in Phases I and II below.

PHASE I

Pre-Construction Phase Service

1. Obtain and review existing documentation from Redwood Valley County Water District for existing infrastructure, including existing easements.
2. Develop a preliminary map showing the locations of proposed project.
3. Review published geologic maps and geotechnical reports and seismic hazard data for the project location
4. Perform a preliminary seismic hazard analysis to determine design criteria for proposed project.
5. Develop a project workplan and schedule to complete the project design and construction documents.
6. Identify project team and hold kickoff meeting to present project schedule and budget.
7. File for CEQA Exemption Class II Section 15302 (c) Replacement or Reconstruction of existing utility without intent to increase service area. Document that no exceptions to the exemptions exist.
8. Conduct utility location and potholing to ascertain connection locations, types, and sizes and identify non-waterline utilities in the project areas. Use locating instruments to ascertain approximate locations of utilities and conduct vacuum excavation to expose utility and document characteristics.
9. Obtain and review right-of-way and parcel maps within the area of the proposed project.
10. Mobilize survey crew to site and perform field mapping in support of developing a detailed project basemap over the next 6-8 weeks.
 1. The project will be surveyed to obtain horizontal and vertical identification of existing site features using NAVD88 Datum and include an aerial panel survey, project control survey, photogrammetry, a boundary survey of existing right-of-ways, and supplemental utility and topographic surveys. Survey crew shall also identify existing appurtenances, gas valves,

shut-offs, communications conduits/junctions, power poles, power source junctions, sewer manholes, etc.

11. Reduce survey data and generate project basemap for each project area A-H.
12. Develop a preliminary engineering report (PER) to include the following components:
 1. Project planning and condition of existing facilities
 1. Identifying the existing environmental and geologic conditions, access considerations, potholing at connections to existing facilities to determine type, location, size, and condition of connection points to existing facilities.
 2. Hydraulic model
 1. Using the survey basemap, develop a pipe network in order to analyze discharge and pressure at every node.
 3. Design criteria
 1. Using the results of the hydraulic model and seismic hazard analysis, specify the basis of design for the proposed project.
13. PER will contain the majority of the information required to design the project.
14. Provide courtesy notice of project to impacted property owners via certified mail. Negotiate right of entry covenants with property owners as necessary where easements do not exist.
15. Present project basemap to design team
16. Setup overall project plan and develop sheet sequence for project plans
17. Preliminary plans shall consist of the following:
 1. Show pipe alignment, valves, hydrants, air release and service lines, connections, and abandonment of existing facilities on both plan and section view sheets.
 2. Design detail sheets to include pipe bedding, backfill, pavement, and pavement sections
 3. Develop construction access, staging, and erosion and sediment control plan sheets
18. Provide 65% complete plans to RVCWD and other agencies for review and comment
19. Receive comments and prepare draft final plan set
20. Develop project manual to include:
 1. Bidding requirements
 2. Contract
 3. General and supplementary conditions
 4. Technical specifications
21. Finalize plans and specifications for construction; indicate new valves, hydrants, air release and service lines, show abandonment of existing facilities and describe process of abandonment and construction phasing to ensure water service to existing customers is maintained
22. Bid Phase Services: Set Bid Date and advertise project in the North Coast Builder's Exchange. Prepare Project Document Addendums if necessary and distribute to prospective Bidders.
23. Schedule, prepare for (agenda) and attend pre-bid meeting
24. Bid Opening and Project Award to Contractor
25. Execute Contract Documents between Owner, Contractor and FEMA, Issue Notice to Proceed
26. Mendocino County Grant Management including invoice reviews, reporting, and oversight
27. Mendocino County Project Management including directing engineering consultant, tracking project schedule and budget, resolving project issues as they arise
28. Consultant management of FEMA Grant reporting requirements as applicable

PHASE II

Construction Phase Engineering/Non-Construction Tasks

1. At least 14 days in advance of commencing construction activities, conduct a site walk of the proposed water main alignments by a qualified biologist to identify active raptor nests and make recommendations to the contractor.
2. Prepare and obtain all necessary County Encroachment permits
3. Prepare pre-construction meeting agenda and attend pre-construction meeting, distribute minutes. Receive initial Contractor Construction Schedule at the pre-construction meeting. Schedule management – Coordinate the order of work with the Contractor, County, and Engineer. Work shall consist of installation of new Water Mains/Lines, testing of water lines (Hydrostatic and Leakage Testing), disinfection of mains, bacteriological

- testing, installation of new service laterals, connection of existing service laterals to new main, abandonment of existing facilities (main, service laterals, gate valves and hydrants).
- 4. Contract with Cultural Monitor for duration of construction to oversee activities and advise on any potential cultural resources encountered during construction
- 5. Perform construction staking
- 6. Prepare submittal log & review Submittals as received. Manage American Iron and Steel (AIS) certifications and tracking.
- 7. Review and respond and/or assist with response to Requests for Information (RFI)
- 8. Provide daily, on-site inspections of construction activities
- 9. Provide construction and specialty inspections including but not limited to:
 - a) Hydrostatic Testing of the Water Lines, Leakage Testing
 - b) Construction safety (shoring, confined space, Cal OSHA)
 - c) Materials testing - field sampling and laboratory testing of various construction materials and existing soil materials as required in the construction documents.
- 10. Draft and process any required change orders
- 11. Progress payments and payment management
- 12. Documentation of compliance with environmental permitting and mitigation measures in accordance with the requirements of the environmental documents and regulatory permits. Ensure that sensitive or protected areas are not disturbed.
- 13. Assist with labor compliance as needed ;
 - Verify classifications and rates for Prime and all Subcontractors at beginning of project.
 - a) Check and verify online payroll submissions to Department of Industrial Relations.
 - b) Assist with other Certified Payroll Verifications, if needed
 - c) Verify compliance with Apprentice requirements.
 - d) Complete required employee interviews
- 14. Chair regular progress meetings, prepare and distribute meeting minutes
- 15. Conflict resolution and claim management
- 16. Complete required FEMA Grant reporting
- 17. Conduct as-built survey and develop as-built plans/record drawings showing project as constructed
- 18. Complete project closeout
 - a) Preliminary and Final Punch Lists
 - b) Photo Log
 - c) Required FEMA Grant Documents
- 19. Mendocino County Grant Management including invoice reviews, reporting, and oversight
- 20. Mendocino County Project Management including directing engineering consultant and contractor, tracking project schedule and budget, resolving project issues as they arise

Construction Phase Tasks

- 1. Furnish and install new 6" Class 200 SDR 14 C900 Water Main, including all trench work, traffic control, compaction, fittings, and thrust blocking and testing as required in the specifications.
- 2. Furnish and install new 1" Type K Copper service lateral including corporation stop and curb stop (ball valve), any necessary couplings or adapters to make the connection, connection to new main and trench work, traffic control and compaction as required by the specifications.
- 3. Replace existing service laterals, furnish and install new 1" Type K Copper service lateral including corporation stop and curb stop (ball valve), any necessary couplings or adapters

to make the connection, connection to new main and trench work, traffic control and compaction as required.

4. Furnish and install new 6" gate valve and box
5. Abandon existing gate valve and box
6. Furnish and install new 6" blow off
7. Abandon existing curb stop and meter box, remove meter box and restore site
8. Connect proposed water main to existing water main by use of a 6"x6" wet tap and valve, including trench work, traffic control and 6" wet tap and valve
9. Provide permanent trench restoration where trench work was performed, to include excavation of temporary paving, 6" cutback, SS1 Asphaltic emulsion (tack coat), and installation of 3" AC or match existing pavement thickness, whichever is thicker