

REQUEST FOR PROPOSALS

ENGINEERING AND DESIGN SERVICES FOR
THE JENNY LIND WATER SYSTEM
TANK A-B WATER TRANSMISSION PIPELINE PROJECT
CCWD CIP #11088

Issued: December 15, 2021



Calaveras County Water District
120 Toma Court
San Andreas, CA 95249
• (209) 754-3543 • ccwd.org

Submission Deadline: February 3, 2022 / 5:00 PM

INTRODUCTION

The Jenny Lind Water System serves approximately 3,900 connections in the communities of Jenny Lind, Rancho Calaveras, and La Contenta located in western Calaveras County along State Route 26. The system includes a treatment plant, four pump stations and seven water tanks. The original Rancho Calaveras water system was known as Improvement District No.6 developed by Boise Cascade in the early 1970's. The original I.D. No.6 included an 8-inch asbestos concrete pipe (ACP) transmission/distribution main along Hartvickson Lane and Baldwin Street to supply a prior version of Tank B. In 1991, a new water plant was construction, Tanks A and B were replaced, a new 16-inch transmission line was constructed to supply Tank A, and a pump station was constructed at the Tank A site to supply and fill Tank B. The original 8-inch ACP main along Hartvickson Lane and Baldwin Street was not replaced during the 1991 system improvements.

In a heat wave on July 22 - 23, 2006, the Tank A pump station was not able to sustain maximum daily water demands and keep Tank B full; consequently, the tank went dry/empty. This event caused a prolonged area wide service interruption for more than 900 homes on the southwest side of the Rancho Calaveras subdivision. District staff said they struggled for a month to pump enough water to the tank but demands exceeded the 1.7-mgd pumping capacity. The problem was identified as being a combination of issues including a prolonged heat wave that triggered record water use, electrical surges that disabled control panels, and a pipeline bottleneck that limits flow to Tank B. During this heat wave, CCWD calculated the daily water demand to be 1,780 gpd/unit in the 900 home area served by Tank B.

In response, CCWD implemented several mitigation measures: 1) installed 2,700-ft of 12-inch pipeline on Hwy 26 and Jenny Lind Rd to improve transmission from Tank A, 2) installed 14 new pressure reducing valves (PRVs) and made adjustments to existing PRV settings to support more efficient water distribution, and 3) at Tank A pump station replaced pumps, made electrical upgrades and modified discharge manifolds to reduce headloss and improve flow. The new 12-inch pipeline and PRVs were needed to adjust zone boundaries supplying southwest portions of the Rancho Calaveras subdivision and to redirected 275,000-gpd in water demands from the Tank B zone to the Tank A zone. However, the 1970's era 8-inch A-B transmission line was not replaced because of high capital costs and remains a bottleneck.

Fast forwarding to 2021, the District is still encountering a bottleneck in the water transmission from Tank A to Tank B and continues to struggle to keep Tank B full when water use peaks in summer heat waves. As of 2017, the existing baseline demand was 950-gpm. The existing Tank A pump station has two duty and one standby pump each rated for 600-gpm or 1,000-gpm with pumps operating in parallel. Both the 2005 and 2018 Water Master Plans advise a firm pumping capacity of approximately 1,400-gpm for maximum day demand at buildout. Furthermore, the new higher capacity pumps installed at the Tank A pump station, only proved to be an interim solution. Without fixing the capacity bottleneck and replacing the A-B

transmission pipeline, applying more pump capacity at higher operating pressures has led to some negative consequences including increases in system line breaks and leaks, excessive service pressures, and costly repairs.

During period of low water demands with only one pump operating, the existing 8-inch diameter pipeline operates under 4-ft/sec. However, with two pumps operating at higher flow rates of 1,200 to 1,400-gpm, the velocities quickly rise to 8 to 9-ft/sec, respectively, which are too high. At higher velocities, damaging operating conditions can occur and has a harsh impact on the water distribution system. Staff has installed pressure recorders at various locations in the system and has consistently observed in this data transient pressure surges and spikes in the distribution system. A preliminary hydraulic analysis was made to evaluate the system operating pressures. At a flow rate of 600-gpm, the existing 8-inch water main operates up to 175-psi at its lowest elevations. At a higher flow rate of 1,000-gpm, the operating pressure increases to 205-psi in some locations. The existing water system was not designed for these severe operating conditions.

For disinfection byproducts monitoring, the District has four (4) sampling locations including 2533 Danaher, 10261 Myrtle, 8015 Nall and 8820 Honda. In some cases, individual sample results for Haloacetic Acids (HAA5) have exceeded the MCL of 60 ppb. Staff has concerned about changes to the water distribution system and increasing the size of water transmission pipelines, altering flow patterns and circulation in the system having unexpected negative consequences such as increasing water age and resulting in higher levels of disinfection byproducts.

PROJECT DEFINITION

The project consists of construction of a new, dedicated transmission main from the Tank A pump station to Tank B approximately 20,000-ft in length. A tentative alignment is shown in Figures 1 and 2 (attached) and it follows a route generally along Hartvickson Lane and Baldwin Street and continuing to Tank B on Usher and Harding Road. Other options for the alignment may take slightly different routes along Cane Lane and Rippon Road, and iterations of possible alignment alternatives need to be further evaluated at the preliminary design level. The new transmission pipeline will be in a separate trench parallel to the existing distribution system lines. Initially the staff has considered two different sizes and material combinations for this new transmission main either 12" diameter, Class 350 ductile iron pipe or 14" diameter, DR-14/Class 305, C900 PVC pipe.

The new transmission main would be isolated from the existing water distribution mains and only connected periodically along its alignment to the distribution at key locations, which tie-in connections would be made via pressure regulating valve (PRV) stations. The transmission main will allow flow in both directions including forward pumping from Tank A to fill Tank B and – when the pump station is idle – to allow gravity flow in the reverse direction in order for Tank B to supply water system demands and/or a condition of peak flow exceeding the pumping capacity. This

configuration allows for higher operating pressures in the transmission main to be isolated from the distribution mains and via the PRV stations fully controlled and separated from service pressures supplied to residential customers and allowing optimal service pressures to our customers.

The quantity, location and placement of the new PRV stations and tie-in connections to the existing water distribution mains is critical to achieve optimal service pressures, fire flow and reliability and redundancy. While the new transmission pipeline is under construction, the existing distribution system must continue operate in its current configuration and relied up to transfer water from the Tank A pump station continue to fill Tank B and equally to supply customer water demands along its route. However, upon completion of the new transmission pipeline, staff contemplates that the existing distribution system – no longer being necessary for A-B transmission – can then be isolated and divided into smaller service zones, each supplied via dedicated PRV stations. Except in the case of a dead-end run, e.g. cul-de-sac, each existing or new pressure zone should be served by a at least two PRV station or each zone served by looping from multiple directions.

Furthermore, while existing pavement is being saw-cut, removed and replaced with new pavement for the transmission main, CCWD will want to consider replacing old water service laterals (service saddles, corp. stops, service line, and meter valve) from the distribution main to the service box, adding guard valves to or replacing fire hydrants, and making other improvements to the existing water distribution system.

Lastly, Tank B has a 6” inlet and 8” outlet pipe that will need to be upsized, replaced and reconfigured to comply with State waterworks standards, assure mixing and turnover in Tank B, and avoid further increasing water age and contributing to the formation of disinfection byproducts. The existing Tank B inlet pipe is only 6” diameter and is too small for the pump flow rate of 1,400-gpm. The consultant will provide alternative methods of provide separate inlet and outlet piping or potentially an internal mixing manifold, e.g. Tideflex Mixing System (TMS), that provides the equivalent separation of the inlet and outlet. Since the existing Tank B cannot be readily taken out of service to make piping modification, the consultant must propose temporary provisions to enable the tank to be taken out of service and to maintain uninterrupted water service to customers.

SCOPE OF WORK

The proposal is to include engineering services and other services as follows:

- 1) Preliminary Design Report: The consultant will prepare a Preliminary Engineer’s Report including cost estimate, design criteria and detailed mapping for alternate and preferred alignments. The District may decide/choose to submit an application for funding by USDA Rural Development and prior to starting work, the consultant will verify the specific format and required contents by USDA for the Preliminary Engineer’s Report. The preliminary design report will include the results of hydraulic modeling and evaluation of the existing pumps and pump station capacity.

Staff has a working water model and has done a preliminary evaluation of the proposed improvements. For preliminary design, the consultant will work closely with staff to validate the model results and project design. The modeling effort has two primary objectives. First, to assure adequate water transmission via the Tank A pumps to fill Tank B under various scenarios at the buildout including projected peak hour water demands and a maximum day plus fire flow condition. Second, to mitigate excessively high distribution system operating pressures and reduce these pressures to a more optimal range for residential service. Also, the consultant is to use the model to choose a final diameter and material for the transmission main, confirm transmission main operating pressures, finalize the location and setpoints for new PRV stations, and establish boundaries for new pressure zones (along A-B segment). Also, the consultant is to use the model to assess impacts to water age and anticipate changes to disinfection byproduct levels resulting from the subject project. Along with the hydraulic model, the Tank A pump station hydraulics should be evaluated to define the existing and proposed system curves, existing pump curve and expected performance of the existing pump station. The evaluation should establish expected performance using the existing pump station and establish if future pump station modifications are expected to accommodate growth and/or buildout. Will replacing the Tank A-B line resolve the capacity bottleneck or when and what, if any, improvements must be made to the Tank A pump station? Staff believes installation of the new transmission main will reduce system losses and the total dynamic head (TDH) requirement for the Tank A pumps, thus improving the flow rate.

2) Drawings: The consultant will prepare drawings including plan and profile sheets, existing and new hydraulic profiles, project details, design of all tie-in connections, modifications to Tank B inlet and outlet, demolition/abandonment details, bore & jack (if necessary) details, PRV stations, air valves and other appurtenances. The consultant will provide an overall schematic for layout of new pressure zone boundaries including locations for new isolation valves and operating setpoints for each PRV station for each new zone. Also, the consultant will provide standard drawings such as cover sheet, index, vicinity map, general notes, survey controls, property lines, etc. Deliverables will include 50%, 90% and 100% drawings. Each deliverable is to consist of a complete set of plan and profile drawings showing alignment, stations, topography, invert elevations; anticipate plan and profile scales are 1" = 20' horizontal and 1" = 10' vertical, respectively. The 90% and 100% deliverables are to identify all fittings and bends shown and annotated on the plan and profile sheets with corresponding survey control information. In addition to staff comments, the 100% drawings may be subject to minor revision prior to reproduction of a final bid set based on any review comments by USDA.

3) Project Manual: The consultant is to prepare a Project Manual including front end documents, technical specifications, and appendices. The manual is to be based on the current edition of the USDA Rural Development "Construction Contract Guide" and USDA stipulated edition of the Engineers Joint Contract Documents Committee (EJCDC) Standards. The State Engineer for USDA is to be contacted to obtain the most current version of the "Construction Contract Guide". The consultant must edit the

EJCDC documents to add State and Federal requirements. The front end documents consist of items such as bid documents, bonds, contract documents, general conditions and supplementary conditions, etc. The consultant will need to provide a carefully developed bid schedule, detailed bid item descriptions, and a detailed sequence of work. The technical specifications may be based upon either the consultant's versions and/or adapted from those previously used by the District on its own projects. Appendices are to include copies of encroachment permits, stormwater pollution prevention plan (SWPPP), Water Quality Control Board permits for dewatering and/or disposal of chlorinated water, environmental/CEQA documents and mitigation measures, geotechnical reports, and other such reports.

4) Encroachment Permits/Right-of-Way: The Consultant will prepare and secure all encroachment permits from County Public Works for the project. It is assumed that the consultant's design will remain within County roads and existing utility easements and not require procurement of additional right-of-way, temporary or permanent easements. As part of the permit application, plans and specifications are submitted to the County Public Works Department for review and comment. Items of concern include traffic control, trench backfill and compaction testing, location and placement of fire hydrants, extent of removal and replacement of AC paving, and storm water pollution prevention measures. The County Public works may have very specific requirements on how to repair and restore the pavement.

5) Land Survey: The consultant is required to retain and/or provide professional land surveying services to prepare project horizontal and vertical datum controls, topographic mapping and surveying existing structures, utilities, poles, valves, hydrants, water service boxes, culverts, drainages, pavement limits, and other items relevant to the design. Unless otherwise approved by CCWD, the survey is to be based on the North American Vertical Datum of 1988 (NAVD 88) and the California Coordinate System of 1983 (CCS83), Zone 3.

6) Potholing/Utility Locating: The Consultant will undertake, coordinate and schedule a potholing effort to verify the location and depth of potential utility conflicts. Before potholing, the Consultant via site visits, information requests, and by other available means will attempt to locate existing fiber optic, telephone, electrical, cable, natural gas, water and other utilities crossing, adjacent to, or in conflict within the project limits. The potholing, i.e. digging exploratory holes, is to be done by a qualified third party contractor. The Consultant is to submit a plan for potholing along the alignment at strategic locations that warrant investigation to obtain better information for design. The Consultant is to develop a scope of work with maps of proposed pothole locations and solicit bids from three qualified contractors. The District may choose to reject bids and perform work using its own equipment and field crews. The Consultant will walk alignment to mark pothole locations with white paint for Contractor to notify USA North 811 before digging. The Consultant is to survey the location of each pothole and include this data in the plan sheets. The Consultant is to secure an encroachment permit and potholing contractor is to provide necessary traffic controls.

8) Environmental/CEQA: The consultant is to recommend a scope and level of effort to comply with CEQA, preparation of the CEQA document, filing of the corresponding documents with the State Clearinghouse OPR via CEQAnet. Initial technical studies are to be completed by a qualified environmental firm. Upon completion of the initial studies, the consultant must substantiate either an exemption, negative declaration (ND) or mitigated negative declaration (MND). The draft CEQA document will be issued and final version amended by responses to public comment. Also, in accordance with AB52, the District may be required (if ND or MND) to notify two (2) tribes which may resulting in a request for subsequent consultation.

9) Stormwater Pollution Prevention Plan: Consultant will develop a project specific Stormwater Pollution Prevention Plan (SWPPP) and Best Management Practices (BMP's) to comply with the Construction General Permit. The SWPPP is to be prepared by a Qualified SWPPP Developer (QSD) licensed by the California Stormwater Quality Association (CASQA). The SWPPP is to be uploaded electronically by the Consultant via the State's Storm Water Monitoring and Report Tracking System (SMARTS), certified by the District, and assigned a valid WDID number by the State. The Consultant will ensure that no less than six (6) weeks before contractor's mobilization date for start of construction that final SWPPP has been uploaded to State's SMARTS database. Also, the Consultant is to prepare six (6) printed, color copies of final SWPPP document in three ring binders and distribute two copies each to Contractor, County Public Works and District staff.

10) Meetings/Site Visits/Project Management: The Consultant is to prepare agenda, schedule and conduct periodic project meetings with District staff including meetings for kickoff, review of preliminary engineer's report, review of each of 50% and 90% deliverables, and one presentation to the Board of Directors or Engineering Committee. The Consultant is to otherwise plan for a reasonable number of project meetings, field meetings and site visits to carry out each task, assure coordination of work and communication with all the various subconsultants, professionals, utilities, government agencies, and other representatives associated with the project. Online meetings via Microsoft Teams or other online platform are encouraged in concert with periodic in-person meetings. Site visits may be needed for some tasks to facilitate coordination of work, communication, clarify objectives, better define scope, identify constraints, confirm assumptions, understand site conditions, agree on requirements, etc. for the project.

11) Bid Period Services/Addenda/Conformed Set: For bidding, the Consultant is to provide electronic copies of the final project manual (bid documents, specifications, and appendices) and scaled final drawings in PDF format. The full-scale drawing when printed 100% must be true to scale as per the design scale noted on each sheet. Also, the consultant is to provide half-scale drawings in PDF format that when printed fit on 11x17 paper at exactly 1/2 scale designated on each sheet. The District will conduct the public bid and advertisement, distribute the project manual and drawings to bidders, maintain plan holders list, and issue addenda and RFI's during

the bid period and all correspondence with bidders will be made by the District. The Consultant is to conduct a pre-bid meeting and job walk, prepare addenda, answer RFI's, etc. Addenda may be to correct errors in the bid set and drawings and/or result from bidders' questions and comments. For construction, the Consultant is to provide twenty (20) printed copies of the conformed set of the project manual and twenty (20) copies each of the full size (22"x34") and half scale (11"x17") drawings, and update electronic files.

12) Engineering Services During Construction: The District has not yet determined the full level of assistance required from the Consultant or scope of services for the construction phase, and it will depend largely upon the District's experience and success with the Consultant during the design effort. The District has staff capable of performing both construction management and field inspections and the Consultant's primary role may be strictly to support these functions in a technical capacity. Field work may depend on the proximity of the consultant's office or if staff is already located nearby in the area. For the initial proposal, it should be assumed that the consultant scope of work will be limited to only engineering services during construction to review submittals, answer RFI's, evaluate change orders, participate in progress meetings (online if possible), and making periodic site visits as needed to resolve technical issues and questions.

PROPOSALS/SELECTION CRITERIA

The Consultant is asked to submit proposal in format that best represents and demonstrates their qualifications and experience, team and organizational structure, project understanding and approach, etc. As a minimum the District expects a statement of qualifications, project references, detailed schedule with tasks and milestones, total fee estimate with each task stating hours and rates, and costs/markup for subconsultants. The project is to be designed under direction and regular supervision of a Professional Civil Engineer (P.E.'s) registered by the State of California. For any Engineer-in-Training (E.I.T.) staff, those hours are to be equally balanced by P.E. staff hours. The District will be looking at various criteria in making its evaluation and selection. Criteria may include staff qualifications and experience, content and presentation of proposal, sufficient amount and allocation of staff hours, general sense of cost effectiveness and value, prior performance on other District projects, project schedule and availability to meet and deliver within stated timeframe, and consultant's travel time and proximity to the project.

RECEIPT OF PROPOSALS

No later than 5:00 PM, Feb. 3, 2022, submit proposal and separate fee estimate to:

Calaveras County Water District
120 Toma Court
San Andreas, CA 95249
Attn: Kate Jesus, Engineering Coordinator
Phone: (209) 754-3181
Email: katej@ccwd.org

Proposals and fee estimate are to be submitted electronically in PDF format by the deadline stated above. Please contact Kate Jesus, Engineering Coordinator, at (209) 754-3181 or katej@ccwd.org, if you have information requests or wish to further discuss this project with staff before submitting a proposal.

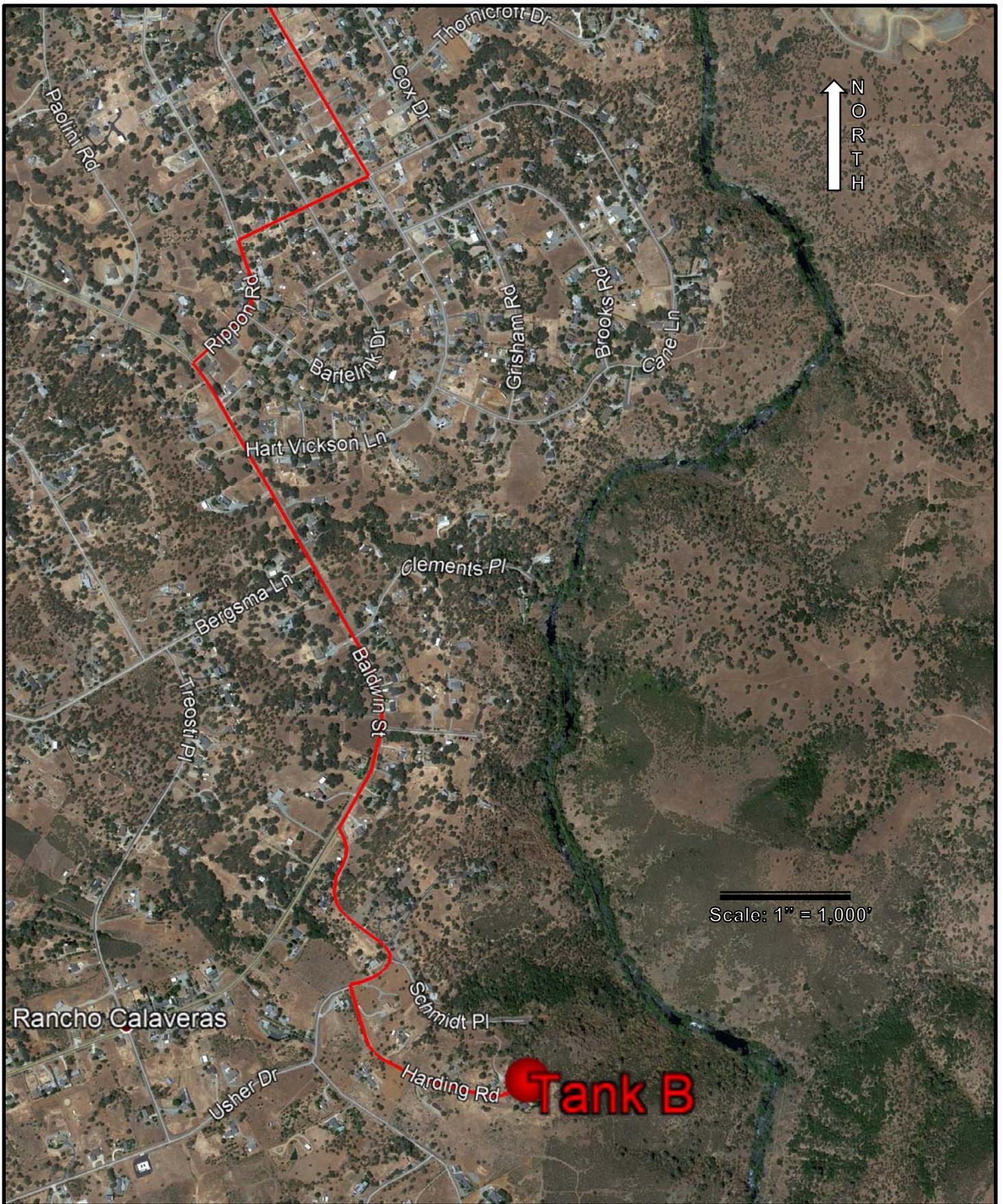
SCHEDULE

Task	Dates
Issue RFP	December 15, 2021
Pre-Proposal Meeting / Job Walk	January 6, 2022 / 1:00 PM
Proposals Deadline (or before)	February 3, 2022 / 5:00 PM
Proposal Review/Consultant Selection	February 4 - 17, 2022
Contact Award / Board Meeting	February 23, 2022
Design	March - October 2022
Bid For Construction	November - December 2022
Award Construction / Board Meeting	January, 2023
Construction	February 2023 - December 2023

DISTRICT NOTICES

All consultant firms responding to this solicitation should note the following:

- 1) The District reserves the right to reject all proposals, not enter into any agreement, cancel and/or amend this process at any time, issue similar RFPs or RFQs in the future, request clarification of any submitted information, and/or make a selection and award a contract based on its own judgement and as it finds to be in the best interest of the District.
- 2) Any and all costs arising from preparation of this statement of qualifications and proposal and participation in the selection process incurred by any consultant firm is to be borne by the firm without reimbursements by the District.
- 3) Upon award of a contract, the Consultant will be required to enter into the District’s standard Professional Services Agreement (PSA) a copy of which can be furnish upon request prior to submitting your proposal.



**Figure 2. Preliminary Alignment (Part B / Baldwin, Usher & Harding)
Jenny Lind A-B Transmission Pipeline Replacement Project**