STAFF REPORT

To: **Coastside County Water District Board of Directors**

From: **James Derbin, Superintendent of Operations**
Via: **Mary Rogren, General Manager**

Agenda: **February 11, 2020**

Date: **February 7, 2020**

Subject: **Award of Contract for Preliminary Design Engineering Services and Basis of Design Report to HDR Engineering Inc. for the Nunes Water Treatment Plant Improvement Project**

Recommendation:
Authorize the General Manager to execute a professional services agreement with HDR Engineering Inc. ("HDR") for preliminary design engineering services and a Basis of Design Report for the Nunes Water Treatment Plant Improvement Project for a not to exceed amount of $149,532.

Background:
The Nunes Water Treatment Plant was originally constructed in 1982 and later upgraded in 1992 as part of the Crystal Springs project. The filter basins and clearwell have never been recoated since they were originally constructed. In addition, the sedimentation basin has not had a thorough inspection/evaluation for replacement of the sedimentation basin moving parts. These portions of the Nunes facility are now 30-40 years old and in need of repair/replacement.

At the District's request, HDR has submitted the attached proposal for preliminary design services and a Basis of Design Report to rehabilitate and upgrade the Nunes WTP. Staff proposes we utilize HDR's expertise in water treatment plant design to assist the District with needed engineering design services to upgrade the filters, sedimentation basin and clearwell.

In 2018, the District contracted with West Yost and Associates to prepare an engineering report entitled "Optimization of Treatment of Local Water Sources Feasibility Analysis". A section of this report addressed specific needed upgrades/improvements to the Nunes WTP. Staff has selected HDR to start with a preliminary design and Basis of Design Report to help further define needed improvements and to facilitate Capital Improvement planning and budgeting for the Nunes facility.

Staff recommends awarding this work to HDR based on their reputation and experience with similar projects. Once this work is complete, staff will report to the Board and the Facilities Committee on the proposed scope of rehabilitation work before a full design contract is brought for approval.

Fiscal Impact: Initial outlay of $149,532 for preliminary engineering design services.

January 14, 2020

Mr. James Derbin
Coastside County Water District
766 Main Street
Half Moon Bay, CA 94019

RE: HDR's Proposal for the Nunes Water Treatment Plant Filter Upgrades Project

Dear Mr. Derbin:

In response to your request, we are pleased to submit this proposal to complete preliminary design for filter upgrades and conceptual evaluation to add a new sedimentation (sed) basin at the Nunes Water Treatment Plant. As one of the most prominent water engineering firms in the country, HDR has been assisting clients across the country with all facets of their water treatment needs for more than 100 years. Of our 10,000 staff, more than 500 are located in Northern California and have provided our clients with innovative engineering solutions in water supply planning, modeling and conveyance, and water quality and treatment projects.

Project Team

HDR offers the Coastside County Water District (District) an experienced teams of engineers that have a consistent record of successful execution on projects like yours. Our knowledge of what it takes to deliver these projects will give you confidence throughout the design and construction of the upgrades to your plant. Our project manager, Rich Stratton, has more than 42 years of experience managing and delivering water treatment projects and is considered one of HDR's national experts in water and advanced treatment. As the project engineer, Ambarish Ravi brings close to nine years of experience designing and managing projects for water and wastewater treatment plants, including a new surface water treatment plant of comparable size to your plant.

Scope of Work

The main objective of this project is to upgrade existing filter equipment (e.g., underdrains, air scour system, valves and actuators), perform a conceptual evaluation of adding a temporary or permanent redundant sed basin, rehabilitate and recoat the filter and clearwell structures, and design miscellaneous improvements at the plant. The following are the specific project components proposed to be included in our scope of work:

- Conceptual evaluation of adding a new 1 mgd sed basin to provide redundant capacity to the existing sed basin.

- Rehabilitation of filter equipment, including replacement of the underdrains, installation of a new air scour system including blower(s), replacement of the filter media, and new instruments, if needed.
- Replacement of existing orifice plate flow meters with magnetic flow meters at new locations, replacement or refurbishment of valves, new actuators, and appurtenances, and miscellaneous improvements.
- New filter-to-waste (FTW) piping and pumping system to allow for higher FTW flows.
- New concrete coating for the filters and clearwell.
- Addition of a new 2,500-gallon sodium hydroxide (caustic) tank on a concrete pad, piping with related appurtenances, and a canopy for tank protection.
- Miscellaneous electrical and instrumentation and control (I&C) improvements as required to support the project components described above. We understand that the power service to the site is 208V 3-phase.

Our proposed scope of services is provided below.

Task 1 – Project Management, Quality Assurance/Quality Control (QA/QC), and Meetings

SUBTASK 1.1 - PROJECT MANAGEMENT AND COORDINATION

This subtask includes the management activities needed for on-time and on-budget project completion, and to address the District's concerns. A project management plan will be developed to serve as a communication tool for District and HDR staff. HDR will prepare invoices, progress reports, and decision log updates on a monthly basis. The monthly progress reports will summarize budget and schedule status in measurable terms. Other activities include scheduling of staff and coordinating the quality assurance effort.

Deliverables: Monthly progress reports and invoices, project management plan, and decision log.

SUBTASK 1.2 - QA/QC PROGRAM

HDR will institute and maintain a QA/QC program for the work performed on this project. For objectivity, senior technical staff who are not involved in the project will perform internal QA/QC upon completion of conceputual design and contract documents before they are submitted to the District.

Deliverables: To be incorporated into the deliverables.

SUBTASK 1.3 - PROGRESS MEETINGS

HDR will attend the following meetings:

- One 2-hour kick-off meeting at the District's office to be attended by up to three HDR team members. One hour of the kick-off meeting will be devoted to discussion of the risk management plan. A field site visit of the treatment plant will follow the kick-off meeting. The above grade and non-confined space below grade areas of the filters and clearwell will be inspected. Up to four HDR team members will be a part of the site visit.

- Up to two 1-hour monthly progress meetings will be conducted by conference calls with up to three HDR team members. Progress calls will include a review of the status of the project scope, schedule, budget, and a discussion of ongoing project tasks.

- One 2-hour deliverable review meeting at the District's office. Up to three HDR team members will attend the meeting to be held after District review of the draft Basis of Design Report (BDR). HDR will summarize and present the design criteria for the major design elements.

- One 1-hour meeting to present the findings of the BDR to the District Board members attended by one HDR team member.

For each of the meetings, HDR will prepare and distribute draft agenda and meeting minutes to attendees for review and comment. The final meeting minutes will be distributed after addressing comments.

Deliverables: Meeting agenda and minutes.

Task 2 – Preliminary Design and BDR

SUBTASK 2.1 - DATA COLLECTION AND REVIEW

HDR will review the District-provided information relevant to the project, including existing record drawings of the facilities, previous condition assessments, design reports, and available Operation and Maintenance (O&M) Manuals.

SUBTASK 2.2 – PRELIMINARY DESIGN ANALYSIS

HDR will perform a preliminary design analysis of the following project elements:

2.2.1 Filtration System

- Removal of existing surface wash system and replacement with new air scour system for all four filters. Air scour system design will include the addition of blowers, piping, valves, appurtenances, and associated electrical and instrumentation design. Two alternatives will be evaluated for the air scour nozzle system and blower type. It is assumed that the blowers will be located outdoor, under a canopy.

- Removal and replacement of existing underdrain piping system for all filters. Up to two different underdrain types will be evaluated, including the AWI SST and the Leopold plastic block type underdrains.

- Replacement of existing filter media.

- New FTW piping and pumping system to replace existing undersized FTW system. Two alternatives will be evaluated consisting of either: (1) separate FTW valves and flow meters at each filter; or (2) using the existing backwash supply piping to convey FTW to a single control valve and flow meter. Piping and pumps to return the FTW flow to the ahead of or after the floc/sed basins will be included.

- Replacement or rehabilitation of valves in the filter influent, effluent, and backwash system piping. Analysis will include replacing or refurbishing the existing valves and installing new actuators, such as AUMA or equal.

- Evaluation of replacement of the existing orifice flow meters and their location in the filter effluent piping and with new magnetic flow meters at new locations with better hydraulic characteristics.

- New concrete coating in the filter basins.

- Miscellaneous piping, appurtenances, and equipment rehabilitation based on condition assessment.

2.2.2 Sedimentation Basins

- Conceptual evaluation of adding a new 1.0 mgd sed basin adjacent to existing sedimentation basin and on the same HGL as the existing to provide improved reliability to the floc/sed system. Options to be evaluated will include: A pad and retaining wall that sits North of the existing sed basin to bring in temporary rental unit or install a package sed basin/clarifier that would be at the same HGL as the existing so it can gravity flow through the plant. Design of a concrete pad, retaining wall, and a package sedimentation basin are not included in the scope of services at this time.

2.2.3 Chemical Feed

- Addition of a new-2,500 gallon sodium hydroxide (caustic) tank and related appurtenances outside the existing filter gallery. Addition of new piping, valves and appurtenances to connect to existing chemical feed piping. The new tank will be protected by a canopy.

2.2.4 Clearwell

- Rehabilitation of the clearwell structure, including the addition of new concrete coating, replacement of existing ladder, and other miscellaneous appurtenances. This does not include any structural design and code analysis or seismic assessments.

An Opinion of Probable Construction Cost (OPCC) will be prepared for the proposed improvements based on an Association for the Advancement of Cost Engineering (AACE) Class 4 level.

SUBTASK 2.3 – BDR

HDR will prepare a BDR that will summarize the alternatives evaluation for major equipment selection, design criteria for new equipment and upgrades, concrete and coatings repair and rehabilitation, a Class 4 level OPCC, and 30 percent design level plans, sections, and process and instrumentation diagrams (P&IDs) for major upgrades. A conceptual evaluation of addition of a new sed basin will also be included along with schematic sketches.

Assumptions

1. Geotechnical data for structural design will be based on presumptive values in the building code. Structural design does not include deep foundations. If deep foundations are required, a geotechnical investigation must be conducted. Geotechnical investigation is not included in the budget at this time.
2. OPCC will be prepared in Microsoft Excel.
3. No surveying will be performed. It is assumed that the elevation information from the existing record drawings can be utilized.
4. Drawings will be prepared in 2018 AutoCAD 2D.

Deliverables: PDF copy and four hard copies of the draft and final BDR.

Compensation

Table 1 shows the estimated work effort and cost to perform the scope of work described above. HDR's rate schedule is also included as an attachment.

Schedule

Figure 1 shows the proposed project schedule.

We appreciate the opportunity to work with the District on this project. Please contact Rich Stratton at (916) 817-4819 or Rich.Stratton@hdrinc.com if you have any questions.

Sincerely,
HDR Engineering, Inc.

Holly L.L. Kennedy, P.E.
Senior Vice President

Richard G. Stratton, P.E.
Senior Project Manager

RGS:pk/19-10202005

Table 1 - Estimated Work Effort and Cost

Coastside County Water District

Nunes Water Treatment Plant Filter Upgrades Project

Task No.	Task Description	Principal/ QA/QC	Project Manager	Project Engineer	Staff Engineer	Structural Engineer	Corrosion Engineer	Electrical Engineer	CADD Tech	Admin/ Clerical	Total HDR Labor Hours	Total HDR Labor ($)	Total HDR Expenses ($)	Total Cost ($)
Task 1 - Project Management, Quality Assurance/Quality Control (QA/QC), and Meetings														
1.1	Project Management and Coordination	2	18							18	38	$8,980	$200	$9,180
1.2	QA/QC Program	2		2						6	10	$1,642		$1,642
1.3	Meetings and Workshops		26	20	18	6		8			78	$18,758	$1,400	$20,158
	Subtotal Task 1	**4**	**44**	**22**	**18**	**6**	**0**	**8**	**0**	**24**	**126**	**$29,380**	**$1,600**	**$30,980**
Task 2 - Preliminary Design and BDR														
2.1	Data Collection and Review		4	6	6	4		4			24	$5,144		$5,144
2.2	Preliminary Design Analysis		24	60	120	36	6	32			278	$53,196		$53,196
2.3	Draft BDR and OPCC	12	8	36	60	32	6	32	64	6	256	$46,608	$1,000	$47,608
2.4	Final BDR	2	4	12	24	4		6	16		68	$12,404	$200	$12,604
	Subtotal Task 2	**14**	**40**	**114**	**210**	**76**	**12**	**74**	**80**	**6**	**626**	**$117,352**	**$1,200**	**$118,552**
COLUMN TOTALS		**18**	**84**	**136**	**228**	**82**	**12**	**82**	**80**	**30**	**752**	**$146,732**	**$2,800**	**$149,532**

HDR Engineering, Inc.

RATE SCHEDULE
January 2020 to December 2020

Technical Specialist 5	$330 to $390
Technical Specialist 4	$280 to $330
Technical Specialist 3	$240 to $280
Technical Specialist 2	$190 to $240
Technical Specialist 1	$150 to $190
Engineer 5	$300 to $360
Engineer 4	$250 to $300
Engineer 3	$190 to $250
Engineer 2	$150 to $190
Engineer 1	$100 to $150
CAD/GIS Technician 1	$100 to $130
CAD/GIS Technician 2	$130 to $180
CAD/GIS Technician 3	$180 to $230
Project Controller	$100 to $170
Project Coordinator	$90 to $140

Rates include current overhead rate plus profit and are adjusted by an average of 4% annually on January 1st

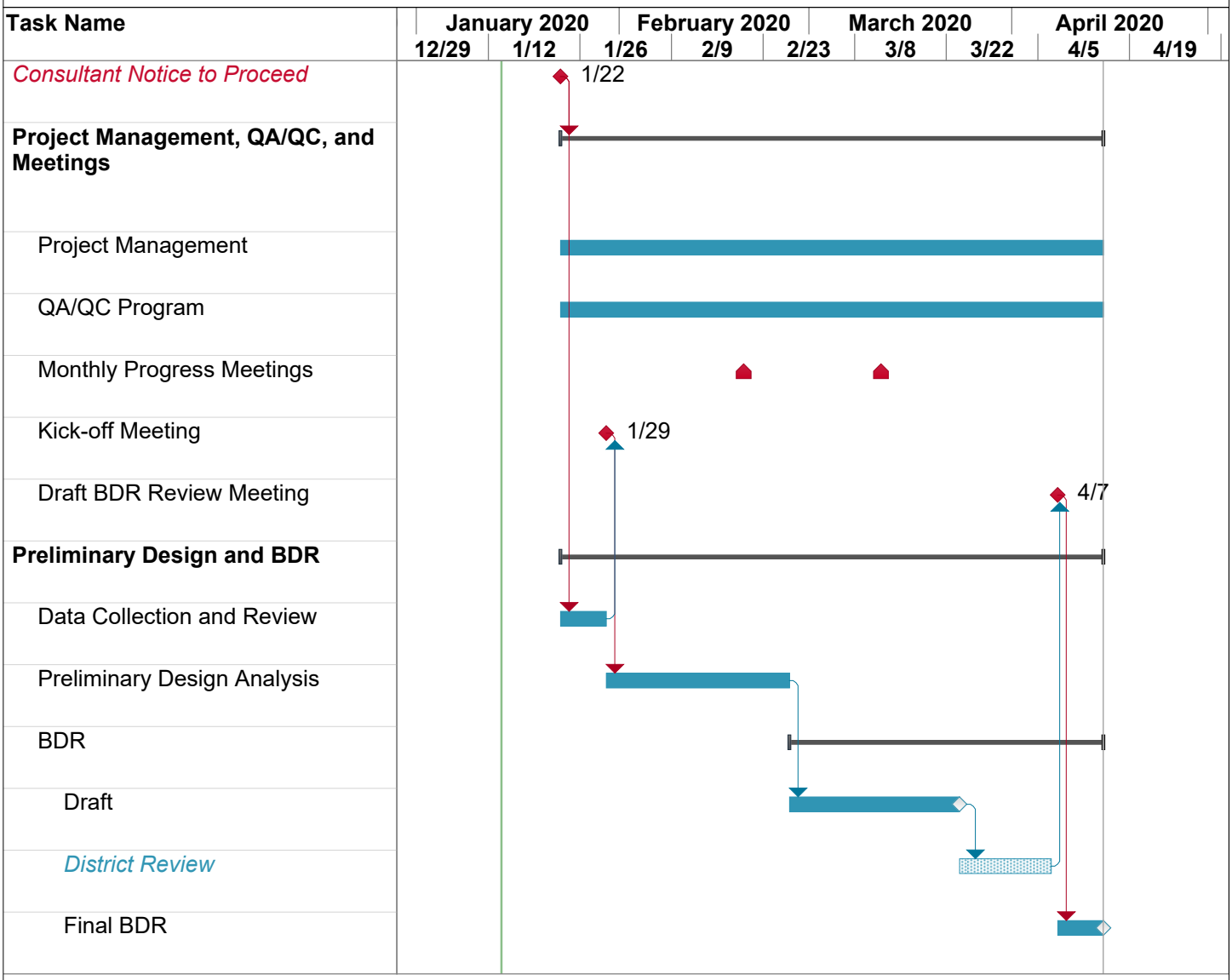
EXPENSES

In-House Expenses

Vehicle Mileage (per mile)	Current Federal Travel Regulation (FTR)
Other Travel (e.g., airfare, fuel charges, parking, ride share, lodging, meals, rental/leased vehicle, etc)	at cost
Black/White Photocopies (per copy)	$0.05 to $0.09
Color Copy (per copy)	$0.15 to $0.30
Bond Plotting – Black/White (per square foot)	$0.15
Bond Plotting – Color (per square foot)	$0.90

Please note that expenses and subconsultants are charged with a five percent markup.

Figure 1 - Project Schedule



Coastside County Water District
Filter Upgrades Project

Task
Milestone
Summary
Meetings

19-10202005