

AGENDA
IRVINE RANCH WATER DISTRICT
ENGINEERING AND OPERATIONS COMMITTEE MEETING
TUESDAY, JULY 19, 2022

This meeting will be held in-person at the District's headquarters located at 15600 Sand Canyon Avenue, Irvine, California. The meeting will also be broadcasted via Webex for those wanting to observe the meeting virtually.

To observe this meeting virtually, please join online using the link and information below:

Via Web: <https://irwd.webex.com/irwd/j.php?MTID=mae108464a00e0a54d2ee9a6e2d3834a2>
Meeting Number (Access Code): 2489 272 8733
Meeting Password: pD7EpvemR43

PLEASE NOTE: Webex observers of the meeting will be placed into the Webex lobby when the Board enters closed session. Participants who remain in the "lobby" will automatically be returned to the open session of the Board once the closed session has concluded. Observers joining the meeting while the Board is in closed session will receive a notice that the meeting has been locked. They will be able to observe the meeting once the closed session has concluded.

CALL TO ORDER 1:30 p.m.

ATTENDANCE Committee Chair: Doug Reinhart _____
Committee Member (Alternate): John Withers _____

<u>ALSO PRESENT</u>	Paul Cook	_____	Kevin Burton	_____	Wendy Chambers	_____
	Jose Zepeda	_____	Paul Weghorst	_____	Cheryl Clary	_____
	Steve Choi	_____	Jim Colston	_____	Fiona Sanchez	_____
	Rich Mori	_____	Eric Akiyoshi	_____	Joseph McGehee	_____
	Jacob Moeder	_____	Malcolm Cortez	_____	Ken Pfister	_____
	Harry Cho	_____	Alex Murphy	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____

PUBLIC COMMENT NOTICE

If you wish to address the Committee on any item, please submit a request to speak via the "chat" feature available when joining the meeting virtually. Remarks are limited to three minutes per speaker on each subject. Public comments are limited to three minutes per speaker on each subject. You may also submit a public comment in advance of the meeting by emailing comments@irwd.com before 9:00 a.m. on Tuesday, July 19, 2022.

COMMUNICATIONS

1. Notes: Burton
2. Public Comments
3. Determine the need to discuss and/or take action on item(s) introduced that came to the attention of the District subsequent to the agenda being posted, and determine which items may be approved without discussion.

INFORMATION

4. SYPHON RESERVOIR IMPROVEMENT PROJECT MITIGATION – SANCHEZ / WEGHORST

Recommendation: Receive and file

5. UPDATE ON BIOSOLIDS PELLET DISTRIBUTION AND MARKETING – ZEPEDA / CHAMBERS

Recommendation: Receive and file

ACTION

6. SAN JOAQUIN RESERVOIR FILTRATION PROJECT CONSULTANT SELECTION – CHO / MOEDER / BURTON

Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement with Carollo Engineers in the amount of \$949,482 for construction phase engineering services for the San Joaquin Reservoir Filtration, Project 10379.

7. COASTAL ZONE 1-2 AND 2-4 PUMP STATIONS REHABILITATION CONSULTANT SELECTION – JAMES / CORTEZ / BURTON

Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement with GHD in the amount of \$446,243 for design engineering services for the Coastal Zone 1-2 and 2-4 Pump Stations Rehabilitation, Project 11912.

OTHER BUSINESS

8. Directors' Comments

9. Closed Session

CONFERENCE WITH LEGAL COUNSEL- ANTICIPATED LITIGATION

(Gov. Code § [54956.9](#)(d)(4))

Initiation of litigation: 1 case – potential condemnation action for mitigation lands.

10. Open Session

11. Adjournment

Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the above-named Committee in connection with a matter subject to discussion or consideration at an open meeting of the Committee are available for public inspection in the District's office, 15600 Sand Canyon Avenue, Irvine, California ("District Office"). If such writings are distributed to members of the Committee less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Committee Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available electronically via the Webex meeting noted. Upon request, the District will provide for written agenda materials in appropriate alternative formats, and reasonable disability-related modification or accommodation to enable individuals with disabilities to participate in and provide comments at public meetings. Please submit a request, including your name, phone number and/or email address, and a description of the modification, accommodation, or alternative format requested at least two days before the meeting. Requests should be emailed to comments@irwd.com. Requests made by mail must be received at least two days before the meeting. Requests will be granted whenever possible and resolved in favor of accessibility.

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July 19, 2022

Prepared by: F. Sanchez

Submitted by: F. Sanchez / P. Weghorst

Approved by: Paul A. Cook



ENGINEERING AND OPERATIONS COMMITTEE

SYPHON RESERVOIR IMPROVEMENT PROJECT MITIGATION

SUMMARY:

Irvine Ranch Water District is coordinating with representatives from the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) to develop a mitigation plan for the proposed Syphon Reservoir Improvement Project. At the Committee meeting, staff will provide an update on these coordination efforts and the initial mitigation package that has been developed to mitigate impacts to sensitive habitat that surrounds Syphon Reservoir.

BACKGROUND:

The Syphon Reservoir Improvement Project would increase IRWD's seasonal recycled water storage capacity by approximately 4,700 acre-feet (AF). IRWD proposes to increase storage in Syphon Reservoir by replacing the existing 59-foot high dam with a new 136-foot dam. The final useable storage capacity for Syphon Reservoir would be approximately 5,200 AF. A location map of Syphon Reservoir is provided as Exhibit "A".

Environmental Review:

In January 2020, the IRWD Board certified an Environmental Impact Report (EIR) for the Project that identifies mitigation measures to address impacts of the project. IRWD continues to work with consultants at Environmental Science Associates (ESA), USFWS, and CDFW on mitigation for the Project. The EIR recognized that when IRWD acquired Syphon Reservoir, the purchase included all the previous mitigation land surrounding the reservoir site that was associated with the development of the Eastern Transportation Corridor by the Transportation Corridor Authority. The grant deeds for the surrounding property incorporated use-restrictions for the previously mitigated areas. Exhibit "B" depicts the Syphon Reservoir area and surrounding area with various plant communities as identified in the EIR.

Mitigation Requirements:

IRWD and ESA have been coordinating extensively with representatives from USFWS and CDFW to discuss anticipated Project impacts to jurisdictional areas and habitats as well as the concerns of USFWS and CDFW. Since 2019, staff has worked with these agencies to refine estimates of the Project impacts and associated mitigation requirements. These discussions and evaluations have resulted in the development of an initial mitigation package for the impacted upland and aquatic resource habitats, as well as a proposed plan for long-term maintenance and contingency funding for the mitigation areas.

Upland Habitat Mitigation:

Syphon Reservoir is located within the Orange County Central / Coastal Natural Communities Conservation Plan (NCCP) Reserve. As a participatory member of the NCCP, IRWD has 53 acres of in-reserve coastal sage scrub (CSS) take credits, which can be used to offset impacts to CSS in the Reserve. The upland habitat acreage within the NCCP and previously restored grant deed areas that would be impacted from the proposed Project is estimated at 70.65 acres. Staff has informed USFWS and CDFW that IRWD intends to utilize 34 acres of its in-reserve CSS take credits for the Syphon Reservoir Improvement Project. IRWD would retain the remaining 19 acres of credits for future projects located in the NCCP Reserve.

The USFWS and CDFW assessed the environmental value of the impacted vegetation and acreage taking into consideration IRWD's use of 34 acres of in-reserve CSS take credits. The agencies provided an evaluation of the required mitigation utilizing different ratios to compensate for impacts to covered species and sensitive habitat. The agencies' evaluation addressed the need to provide for past restoration efforts and to adequately replace any lost habitat that was previously protected by grant deeds. In the evaluation, USFWS and CDFW determined that Project impacts would require 172.73 acres of upland habitat mitigation as shown in Exhibit "C". IRWD's use of 34 acres of in-reserve take credits reduces the mitigation ratio from 4:1 to 2:1. In addition to the use of 34 acres of take credits, the mitigation package would require acquisition of mitigation lands, the restoration of CSS and upland habitat and provisions for establishing funding to support long-term maintenance of these areas.

Aquatic Resource Mitigation:

The Project will also impact approximately 6.2 acres of woody riparian habitat and 5.33 acres of freshwater tule marsh at the existing Syphon Reservoir. These expected impacts and proposed mitigation requirements are also shown in Exhibit "C". USFWS and CDFW have indicated that on-site mitigation is preferable and would receive a more favorable mitigation ratio than off-site restoration.

Staff, ESA, and engineering consultants at AECOM, evaluated multiple design options to maximize on-site mitigation for riparian and wetland habitat impacts. The design options considered feasibility and cost. The current on-site proposal would include approximately six acres of new woody riparian habitat that would be developed as part of the Project. This on-site proposal would be acceptable to USFWS and CDFW.

There are a limited number of off-site locations in Orange County that are available to develop new riparian and wetland habitat. ESA developed a conceptual design for the remaining riparian and freshwater marsh mitigation to be provided off site at IRWD's property located south of Campus Drive as depicted in Exhibit "D". The USFWS and CDFW have agreed in principle to the conceptual design for the off-site aquatic resource mitigation. More detailed designs are in development.

Irvine Company Mitigation Rights:

When IRWD acquired the San Joaquin Marsh from the Irvine Company, including the property south of Campus Drive, the Irvine Company retained all mitigation rights associated with the property. The Irvine Company previously received mitigation credit for a portion of the area known as the Small Area Mitigation Site 1 (SAMS 1) south of Campus Drive. Staff and legal counsel have been in discussions with the Irvine Company to arrange for a transfer of the Irvine Company's mitigation rights to IRWD.

Long-Term Maintenance and Contingency Funding:

USFWS and CDFW will require funding to be obligated for mitigation site establishment, long-term maintenance and restoration in the event of wildfires. Typically, the agencies expect these obligations to be met in the form of endowments. In coordination with the Irvine Ranch Conservancy and ESA, staff developed preliminary budget requirements and met with the agencies to discuss alternative funding mechanisms for IRWD. At the Committee meeting, staff will provide additional information on long-term funding requirements and alternative funding mechanisms. Staff will also provide an update on the proposed conservation and restoration package for the upland and aquatic resources, land acquisition opportunities and status of the discussions with the Irvine Company.

FISCAL IMPACTS:

Syphon Reservoir Improvement Project (Project 03808) is included in the FY 2022-23 Capital Budget. Currently, the existing budget and expenditure authorizations are sufficient to fund the mitigation/permitting work. Staff will return to the Committee and Board of Directors to request additional budget for potential land acquisitions related to the proposed mitigation package.

ENVIRONMENTAL COMPLIANCE:

An Environmental Impact Report for the Syphon Reservoir Improvement Project was prepared, certified, and the Project approved in compliance with California Environmental Quality Act (CEQA) of 1970 (as amended), codified at California Public Resources Code Sections 21000 et. seq., and the State CEQA Guidelines in the Code of Regulations Title 14, Division 6, Chapter 3.

RECOMMENDATION:

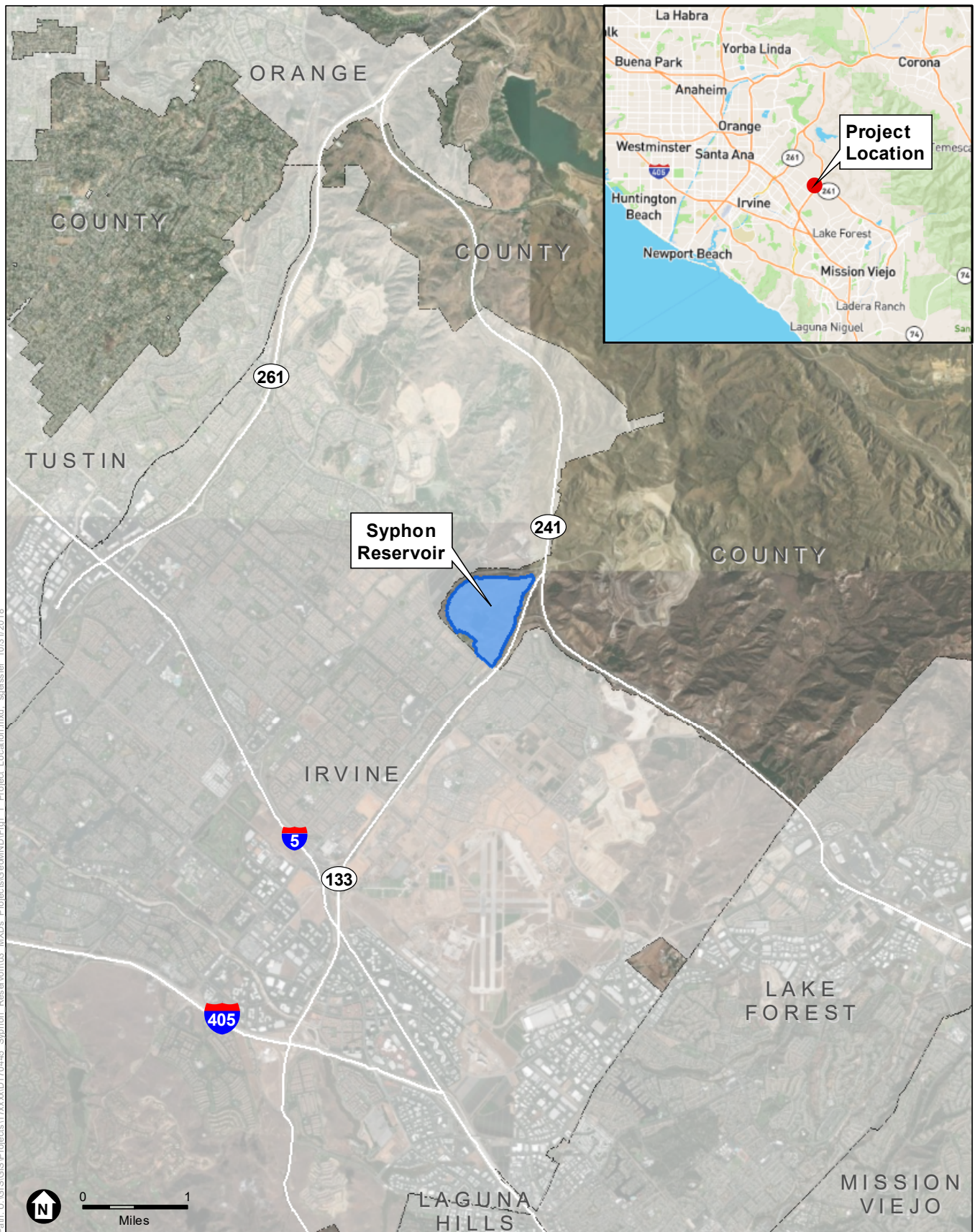
Receive and file.

LIST OF EXHIBITS:

Exhibit "A" –Location Map: Syphon Reservoir
Exhibit "B" – Syphon Reservoir, Surrounding Property and Plant Communities
Exhibit "C" – USFWS and CDFW Mitigation Estimate
Exhibit "D" – Conceptual Design Off-Site Riparian and Wetland Habitat

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EXHIBIT "A"



SOURCE: ESRI, 2016; OC LAFCO, 2018

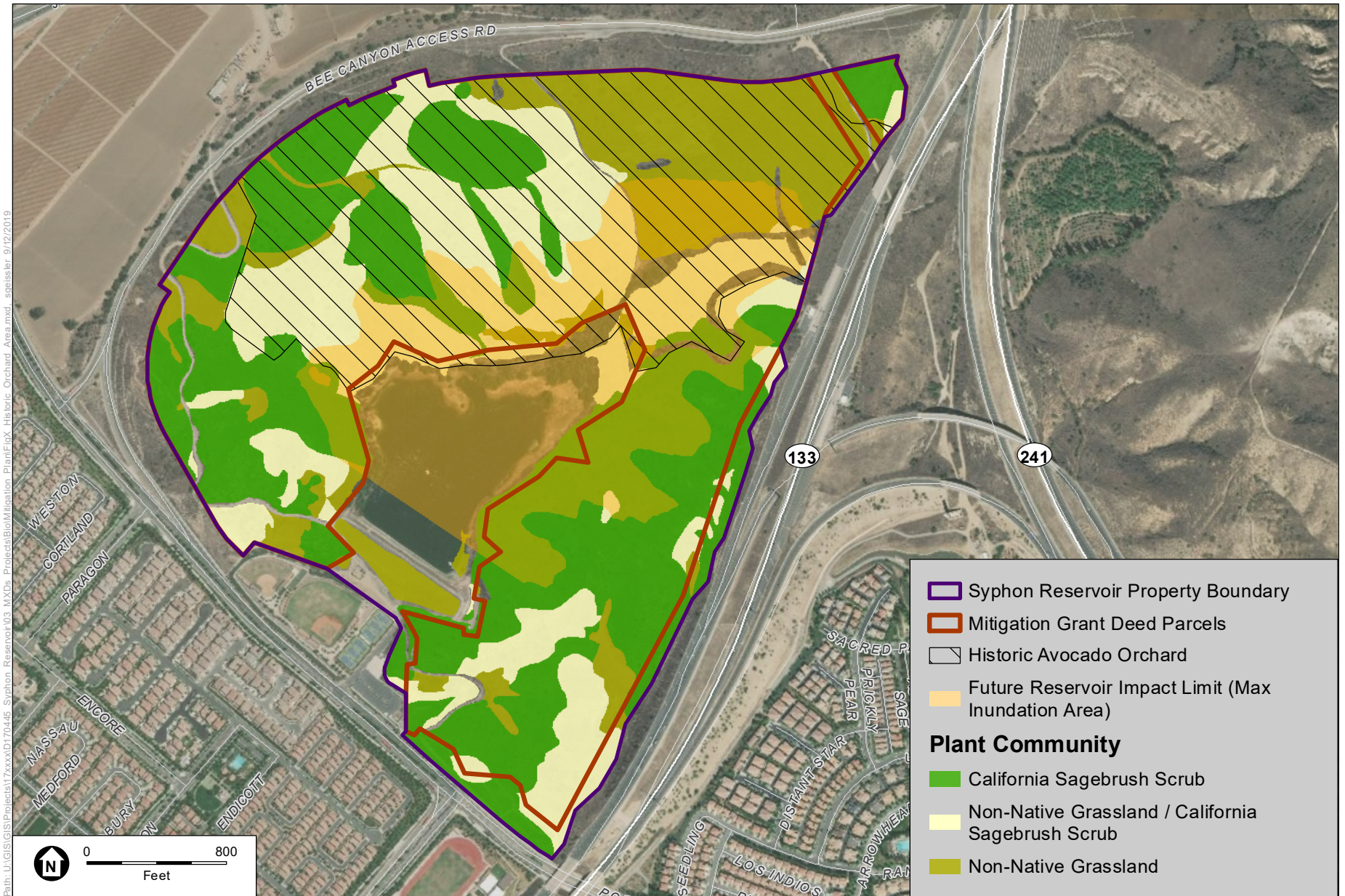
IRWD Syphon Reservoir

Figure 1-1
Project Location

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Exhibit "B"

Syphon Reservoir, Surrounding Property and Plant Communities



SOURCE: ESRI, 2016, ESA, 2019.

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Exhibit "C"

USFWS/CDFW Mitigation Package

Upland Habitat

The following elements represent what has been agreed to in principle by the Resource Agencies after deducting 34.0 take credits from IRWD's allotted CSS credits under the NCCP/HCP Implementing Agreement.

Upland Habitat Impacts

Habitat	Project Impacts (Acres)	Ratio	Mitigation Required (Acres)
CSS (27.51 ac); CSS/AG (0.99 ac)	28.50	2:1*	57.00
AG/CSS (5.5 ac)	5.50	2:1*	11.00
AG/CSS (<5% CSS: 20.86)	20.86	4:1	83.44
Sumac Chapparal	1.63	1:1	1.63
Ruderal Grassland	19.66	1:1	19.66
Total	76.15		172.73

*34 acres of take credits applied

CSS = Coastal Sage Scrub

AG = Annual Grassland (non-native)

Upland Habitat Proposed On-Site Mitigation

On-Site CSS Mitigation* – 60% Avg Native Cover Standard, all areas	Acres	Credit Ratio	Mitigation Credit (Acres)
CSS Restoration (currently < 5% native cover)	59.0	1:1	59.0
CSS Enhancement (currently > 5% native cover)	85.0	0.5:1	42.5
CSS Creation (ruderal to be graded, then planted)	10.0	0.75:1	7.5
Total	154.0		109.0

The remaining upland mitigation (equivalent to 63.73 acres) will be provided by off-site property acquisition.

Riparian and Wetland Habitat

Riparian and Wetland Habitat Impacts

Habitat	Project Impacts (Acres)
Woody Riparian	6.20
Tule Marsh	5.33
Total	11.53

Riparian and Wetland Proposed Mitigation

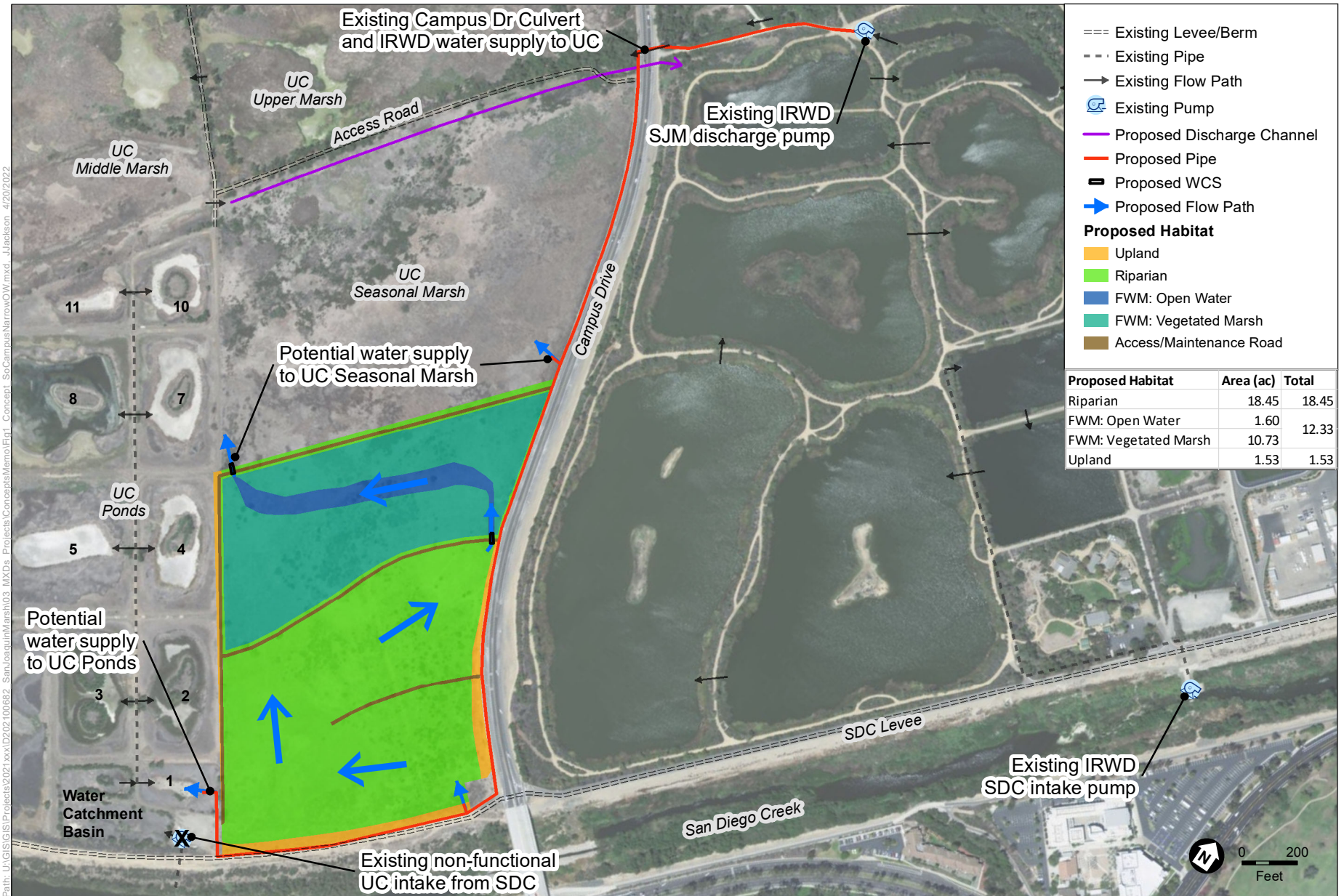
Habitat	Acres	Credit Ratio	Mitigation Credit (Acres)
Woody Riparian 3.0 acres, on-site mitigation	3.0	2:1	6.0
Woody Riparian 3.2 acres, off-site mitigation	3.2	3:1	9.6
Tule Marsh, off-site mitigation	5.33	2:1	10.66
Total	11.53		26.26

Long Term Management and Contingency Funding

All mitigation areas will require long-term management and contingency funding in perpetuity as required by the Resource Agencies.

Exhibit "D"

Conceptual Design for Syphon Reservoir Off-Site Riparian and Wetland Habitat Mitigation



SOURCE: IRWD, ESA, NAIP

Note: FWM=Freshwater Marsh, SDC=San Diego Creek, WCS=Water Control Structure

San Joaquin Marsh Wetland Mitigation Concept Design and Feasibility Study . D202100682.00



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July 19, 2022

Prepared by: J. Zepeda

Submitted by: W. Chambers

Approved by: Paul A. Cook 

ENGINEERING AND OPERATIONS COMMITTEE

UPDATE ON BIOSOLIDS PELLET DISTRIBUTION AND MARKETING

SUMMARY:

Staff will provide the Committee with an update on the production, distribution, and marketing of Class A pellets produced at the IRWD Biosolids and Energy Recovery Facility.

BACKGROUND:

The Biosolids and Energy Recovery Facility treats sewage solids generated at the Michelson Water Recycling Plant (MWRP) and produces both Class B cake and Class A pellets. Class A pellets are very dry and contain beneficial nutrients, making the pellets marketable as a soil amendment and fertilizer.

Commissioning of the facility began in June 2020. Dewatering of solids began in January 2021 and the facility began producing Class B biosolids. In April 2021, the heat dryer was commissioned and IRWD began producing Class A pellets. Since solids dewatering began, 18,730 tons of Class B cake, and 688 tons of Class A pellets have been produced.

At the Committee meeting, staff will discuss the ongoing efforts associated with the distribution and marketing of Class A pellets produced at the Biosolids and Energy Recovery Facility. A draft powerpoint presentation is provided as Exhibit “A”.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

Receive and file.

LIST OF EXHIBITS:

Exhibit “A” – Draft PowerPoint Presentation

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Exhibit "A"

MICHELSON WATER RECYCLING PLANT BIOSOLIDS AND ENERGY RECOVERY FACILITIES

Operations Update #2 Pellet Marketing and Distribution

Engineering and Operations Committee
July 19, 2022





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SEQUENCE OF E&O COMMITTEE MEETING TOPICS

#1: May 17, 2022 Update - **COMPLETE**

- Timeline of Start-up to Operations
- Process Updates
- Ongoing Challenges

#2 July 19, 2022 Update

- Pellet Marketing and Distribution
- Biosolids Pellets Production

Future Program Development

- FOG (fats, oils, and grease)
- Foodwaste



2

2

BIOSOLIDS PROGRAM'S PRIORITIZED GOALS

- Safety
- Compliance
- Reliability
- Flexibility
- Customer Management



3

PELLETS MARKETING AND DISTRIBUTION

- Currently utilizing a composting outlet (under a joint contract with SOCWA)
- Markets actively being pursued:
 - *Bulk Horticulture*
 - *Bulk Agriculture*
 - *Brokers*
 - *Energy*
- Developing a survey response and contact list



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HORTICULTURE APPLICATIONS

- Applying pellets on IRWD properties
- Continuing to work with local partners to use the pellets on their facilities:
 - Irvine Company
 - UC Irvine
 - Shadetree Partnership
 - Strawberry Farms Golf Course (pilot study)
 - Landscape Contracts (i.e., LandCare, Tropical Plaza, etc.)



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AGRICULTURE APPLICATIONS

- Current and Future Studies
 - Food Crop Application Study to Monitor Transport of Unregulated Organic Chemicals (UOCs) in Food. (EPA Funded Study) – UCR Managing and Conducting the Study
 - Research Project using IRWD Pellets on Food Crops to Measure Soil health, Leaf nutrient, Growth rates, Soil pathogens, and Yields – UCI Managing and Conducting the Project
- Other Markets
 - Contract Farmers and Growers



South Coast Research and Education Center



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OTHER OUTLET OPTIONS

- Broker-directed usages
 - Contracted to manage all or most of the production in exchange for a share of revenue
 - Broker manages all aspects of sales and marketing
 - May or may not include transportation responsibilities
- Energy
 - Biofuel use – (i.e., Cement factories – CEMEX)



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PELLET PRODUCT NAME, LABEL, & REGISTRATION

- Analyzing the pellets
 - Determine nutrient content: N-P-K
- Creating a brand name and label
- Registering the product for distribution
- Ensuring regulatory compliance for use and distribution



IRWD Grower 6 – 4 – 0

IRWD Grower 6-4-0 is a high-quality natural fertilizer ideal for turf, landscaping and agricultural applications. It is an excellent source of slow-release nitrogen, as well as a source of phosphorus and iron.

Directions For Use

Flower and Ornamental Garden Beds: Apply at 20 pounds per 1,000 sq. ft. of garden area around the base of plant materials. Apply SoCal 6-4-0 onto the soil surface or incorporate it into the soil before planting.

Turf Areas: Apply 40 pounds per 1,000 sq. ft. of turf area as a pre-plant fertilizer and incorporate into the soil. Apply SoCal 6-4-0 using a conventional fertilizer spreader. Apply SoCal 6-4-0 at 20 pounds per 1,000 sq. ft. to established turf areas on a quarterly basis.

Agricultural crops: Application rate should be based on crop nitrogen and phosphorus requirements of the crop and soil test results.

STORAGE: This product should be kept dry during storage. Spills should be swept up and reused. Keep away from children and pets.

Guaranteed Analysis

Total Nitrogen (N)	6.0%
6.0% Water Insoluble Nitrogen*	
Available Phosphate (P ₂ O ₅)	4.0%
Iron (Fe)	1.0%

Derived from biosolids.

* 0.0% Slowly available nitrogen from biosolids

Manufactured By
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612
949 453-5500 / IRWD.COM

All product is supplied in bulk form and sold 'by the ton'. Weigh tickets are supplied to assure purchase volumes.

Irvine Ranch Water District SoCal 6-4-0 is a pelletized biosolids originating from the biological treatment of wastewater. SoCal 6-4-0 is produced as a "Class A - Exceptional Quality" biosolids under the requirements of 40 CFR 503 and California's Water Quality Order No. 2004-12-DWD. Applications of SoCal 6-4-0 should be made in accordance with approved application methods and it shall not be applied to flooded, frozen, or snow-covered areas. SoCal 6-4-0 shall be stored and application operations shall be conducted in such a way as to prevent runoff from the application and/or storage site(s) to any surface water and shall not be applied within a 10-foot buffer area around any water wells, streams, lakes, rivers and/or natural uncontrolled drainage ways. Specific County ordinances may apply for certain applications. Application of SoCal 6-4-0 is prohibited in accordance with the provisions specified above related to Application Information. The Irvine Ranch Water District accepts no liability for improper application or use of SoCal 6-4-0.



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PELLET PRODUCTION

- Began operation in April 2021
- Dryer runtimes limited to 5 – 7 hours due to pellet water side stream
- Approx. 700 tons of pellets produced
- Several process / equipment issues resulting in dryer downtime:
 - Complexity of system
 - Smoldering event
 - Drum alignment and roller wear
 - RTO refractory and instrumentation failures
 - Lead-times for getting manufacturer tech support Onsite, scheduled for August 2022



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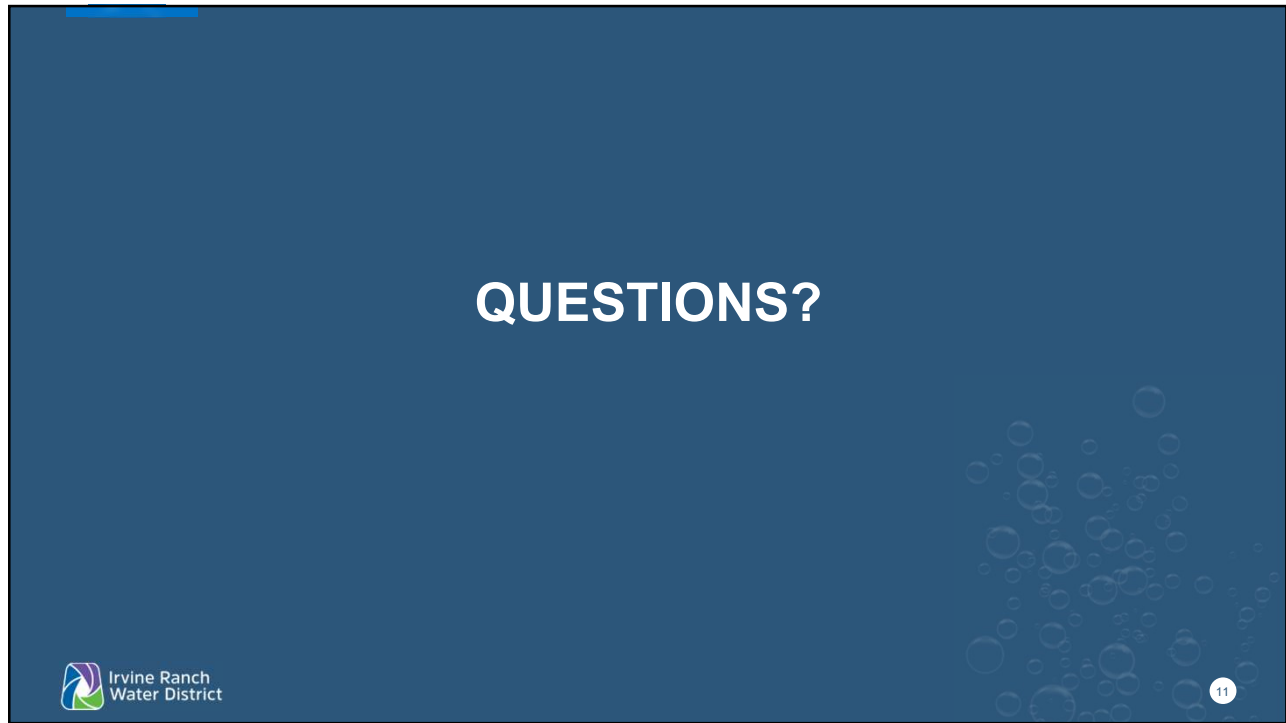
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FUTURE PROGRAM DEVELOPMENT

- FOG (fats, oils, and grease)
 - Staff has had some preliminary discussions with potential producers but will not move forward with accepting any FOG until the biogas conditioning system and microturbines are online and operating reliably.
- Food-Waste
 - Receiving of food-waste will be considered once the FOG program is established.
 - Currently, the existing FOG facilities can only accept a liquid form of foodwaste with some limitations. This will be considered in the program development phase.



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July 19, 2022

Prepared by: H. Cho / J. Moeder

Submitted by: K. Burton

Approved by: Paul A. Cook 

ENGINEERING AND OPERATIONS COMMITTEE

SAN JOAQUIN RESERVOIR FILTRATION PROJECT CONSULTANT SELECTION

SUMMARY:

The San Joaquin Reservoir Filtration project includes construction of a new filter system, replacement of the existing booster pumps, and replacement of the existing chlorination system at the reservoir. Carollo Engineers completed the design, and the project is currently being advertised for bids. Staff recommends the Board authorize the General Manager to execute a Professional Services Agreement in the amount of \$949,482 with Carollo to provide engineering services during construction.

BACKGROUND:

San Joaquin Reservoir serves recycled water to the Zone B distribution system primarily from Interstate 405 to the Newport Coast and Crystal Cove areas of IRWD. Algal growth on the surface of the reservoir has become an issue during the summer as the water temperature rises, and algae and other debris can draft out of the reservoir. Currently, there is no filtration system for water drafting out of the reservoir into the system, and recycled water users in the area have reported clogged sprinklers, irrigation equipment, and filters on the customer side of the service meter and increased maintenance costs. This project will install a filtration system and disinfection improvements at the reservoir to mitigate algae and debris entering the Zone B system.

San Joaquin Reservoir Filtration Project Update:

In February 2019, Carollo was retained to design a new filter system at San Joaquin Reservoir. The project also includes replacement of the existing booster pumps in the reservoir control building, which are currently used to increase the pressure of the water discharged from the reservoir into Zone B as the reservoir level drafts below the HGL of Zone B. Once the filtration system is built, the pumps will feed the filters and subsequently the Zone B system and therefore new higher-pressure pumps are required to overcome the additional pressure losses through the filter system. The project also includes replacement of the existing chlorination tanks, injection pumps, and piping as the system is twenty years old and nearing the end of its useful life.

Carollo completed the design in June 2022, and the project went out to construction bid. The bid opening is scheduled for July 21, 2022, and staff will bring the construction award to the Board for its consideration on August 8, 2022.

Consultant Selection:

At staff's request, Carollo submitted a proposal for construction phase engineering services in the amount of \$949,482. The proposal, provided as Exhibit "A", includes scope for submittal reviews, responses to contractor requests for information, site visits, record drawing preparation, development of energy control procedures, and construction coordination and engineering support commensurate with the complex requirements of the project. The engineer's estimate for the San Joaquin Reservoir Filtration project is \$13,252,000. The construction project will have a similar level of complexity as the Zone A to Rattlesnake Reservoir Pump Station currently under construction, and the construction phase services agreement for that project was \$871,000.

Staff recommends the Board authorize the General Manager to execute a Professional Services Agreement in the amount of \$949,482 with Carollo Engineers for the construction phase engineering services for the San Joaquin Reservoir Filtration project.

FISCAL IMPACTS:

The San Joaquin Reservoir Filtration, Project 10379, is included in the Fiscal Year 2022-23 Capital Budget and is funded by the Recycled Standard Split. The existing budget is sufficient to fund the recommendations presented herein.

ENVIRONMENTAL COMPLIANCE:

This project is subject to the California Environmental Quality Act (CEQA) and in conformance with California Code of Regulations Title 14, Chapter 3, Article 6, a Notice of Intent to adopt a Mitigated Negative Declaration was filed with the County of Orange on November 2, 2020. Pursuant to State Guideline § 15073, the IS/MND was made available for public review for a period of 30 days from November 2, 2020, through December 1, 2020. The IS/MND was adopted by IRWD's Board of Directors on January 11, 2021. A Notice of Determination was filed with the Orange County Clerk/Recorder and the CA State Clearinghouse on January 14, 2021.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement with Carollo Engineers in the amount of \$949,482 for construction phase engineering services for the San Joaquin Reservoir Filtration, Project 10379.

LIST OF EXHIBITS:

Exhibit "A" – Carollo Scope of Work and Fee Proposal

SCOPE OF SERVICES

IRVINE RANCH WATER DISTRICT

SAN JOAQUIN RESERVOIR FILTRATION PROJECT
ENGINEERING SERVICES DURING CONSTRUCTION

JUNE 2022

BACKGROUND

The Irvine Ranch Water District (District) is constructing a new filtration process for the San Joaquin Reservoir. The project will remove algae from the recycled water to protect downstream appurtenances and irrigation systems within the distribution system. The project includes a new filtration facility, modifications to the existing booster pump station and improvements to the disinfection system. This exhibit provides the scope of work to provide engineering services during construction for the project.

SCOPE OF WORK

Task 1 Project Management

Task 1.01 – Project Management

Project management includes the effort require for general project management and administration over the duration of construction and project close out. A total duration of 24 months of construction is included. This task includes 1 hours per week for the Project Manager (PM) and 1 hours per week for the Project Assistant (PA) and an additional 2 hours per month for PM and 1 hours per month for PA for monthly reviews and invoicing.

Task 2 Construction Phase Services

Carollo will provide support and consultation to the District throughout the construction period, as outlined in the following tasks:

Task 2.01 - Conformed Documents

Carollo will provide conformed documents (drawings and specifications) based on the bid documents and addenda released during the bid period. Conformed documents will be provided in electronic format (PDF). Conformed specifications will use track changes to highlight modifications made.

Task 2.02 – Project Meetings

Attend twenty-four (24) construction meetings throughout the duration of construction period. This assumes two employees attending one meeting per month, on average, including the preconstruction meeting. It is assumed the meeting attendance is virtual.

Task 2.03 – Shop Drawing Reviews

Review and approve for acceptance of four hundred (400) shop drawing submittals, including resubmittals. Submittal review transmittals and comments shall be completed and returned to IRWD within 14 calendar days of the date of submittal receipt, according to the Contract Documents. Submittals for critical items, particularly items with long lead times, will be expedited in coordination with IRWD. Four hours of review is assumed for each submittal.

Task 2.04 – Request for Information

Respond to 150 Requests for Information (RFIs) from the construction contractor. Clarifications, details, additional calculations for clarification or modification to original design drawings will be provided as requested by the District to provide clear and concise responses. Carollo will return RFI within 7 calendar days of receipt, according to the Contract Documents. Carollo is budgeting three hours per RFI.

Task 2.05 –Plan Revisions

A budget of up to 250 hours has been established to provide revisions to the contract construction drawings as required.

Task 2.06 – Site Visits

Carollo will attend and conduct 20 site visits throughout the construction period to review construction progress, resolve technical issues, and/or review overall project schedule, coordination, and progress with the District and the Contractor. These site visits will be separate from project meetings noted above. Each site visit is assumed for two persons and four hours per visit.

Task 2.07 – Record Drawings

Prepare record drawings at construction completion using Contractor's and IRWD's inspector's markups. Deliver final record drawings as a combined PDF electronic file, and AutoCAD electronic files.

Task 2.08 – Energy Control Procedures

Prepare Energy Control Procedures (ECPs) to document safe methods to isolate equipment from air, chemical, power, or liquid pressure for maintenance access purposes. The following ECPs are anticipated:

- Reservoir Booster Pumps 1, 2 and 3
- Process Control Valve
- Bypass Valve
- Filter Inlet Valve
- Filters 1-12
- Pneumatically Actuated Valves on Each Filter
- Filter Backwash Supply Pumps 1 and 2
- Filter Backwash Flow Meter
- Filter Backwash Waste Pumps 1 and 2
- Filter Backwash Waste Flow Meter
- Valve Vault Sump Pump
- Sodium Hypochlorite Storage Tanks 1 and 2
- Sodium Hypochlorite Storage Tank Isolation Valves 1 and 2
- Sodium Hypochlorite Metering Pumps 1 and 2
- Sodium Hypochlorite Flow Meter
- SJR Injection Vault Inlet Valve
- Zone B Vault Inlet Valve
- Air Compressor
- 2 Air Dryers
- MCC
- PLC
- Five (5) Unidentified ECPs

Task 2.09 –Construction Coordination

Carollo will provide miscellaneous construction support that is not related to the above tasks. The support will be provided as a result of District or contractor general inquiries rather than submitted questions, RFIs, submittals, or plan revisions. Support will be provided as requested by the District and according to the available hours for each subtask noted below.

Task 2.09A – General Plan Clarifications

Carollo will review and respond to Contractor inquiries that are deemed minor and do not result in significant changes to the construction plans. A total budget of 100 hours is provided.

Task 2.09B – General Construction Alternatives Analysis

Carollo will review Contractor suggested alternatives, including equipment, sequencings, means and methods, and unforeseen conditions. Engineering calculations will be prepared as needed and the analyses results will be summarized, as needed, to provide proper direction to the Contractor. Carollo will provide exhibits and support IRWD in interacting with interested parties, including IRWD Operations, City of Newport Beach Fire Department, and others. Work will be performed at the District's request. A total budget of 150 hours is provided.

Task 2.09C – General Field Questions

Carollo will address questions posed in the field by IRWD inspection, the Contractor, or other interested parties. A total budget of 150 hours is provided.

Task 2.09D – Instrumentation/Control and Electrical

Carollo will assist IRWD staff in coordinating shutdowns and switchovers for all SCADA and electrical related equipment and provide additional assistance to the Contractor as required to execute the work. A total budget of 120 hours is provided.

Task 2.09E – Startup and Testing

Carollo will assist IRWD staff in coordinating the startup and testing phase of the project, including preparation of relevant testing protocols, identifying, and coordinating required activities in advance of the scheduled need, and assisting the Contractor with meeting the needs of the Contract Documents. A total budget of 100 hours is provided.

Exhibit B
Irvine Ranch Water District
San Joaquin Reservoir Filtration Project
Engineering Services During Construction

June 2022

Task	Task Description	Senior Professional	Lead Project Professional	Project Professional	Professional	Assistant Professional	Senior Technician	Technician	Document Processing	Task Hours	Task Subtotal	Other Direct Costs	Subconsultants	Task Total
1	Project Management													
1.01	Project Management	0	64	120	80	0	0	0	0	264	\$ 68,344	\$ -	\$ -	\$ 68,344
	Task Subtotal	0	64	120	80	0	0	0	0	264	\$ 68,344	\$ -	\$ -	\$ 68,344
2	Construction Phase Services													
2.01	Conformed Documents	0	2	4	10	24	8	24	8	80	\$ 16,762	\$ 3,240	\$ 6,500	\$ 26,502
2.02	Project Meetings (24 Total)	6	8	36	24	8	0	0	0	82	\$ 20,678	\$ -	\$ 2,500	\$ 23,178
2.03	Shop Drawing Review (400 Total)	40	24	280	516	540	0	0	0	1400	\$ 327,664	\$ -	\$ 15,000	\$ 342,664
2.04	Requests for Information (150 Total)	18	12	124	90	196	0	0	0	440	\$ 103,772	\$ -	\$ 12,000	\$ 115,772
2.05	Plan Revisions (250 Hours Total)	4	8	24	40	60	30	74	0	240	\$ 52,778	\$ -	\$ 12,000	\$ 64,778
2.06	Site Visits (20 Total)	0	24	60	24	24	0	0	0	132	\$ 33,204	\$ 5,760	\$ 4,000	\$ 42,964
2.07	Record Drawings	4	4	16	24	80	24	124	0	276	\$ 58,244	\$ 2,400	\$ 12,000	\$ 72,644
2.08	Energy Control Procedures	2	8	24	54	72	0	0	24	184	\$ 41,088	\$ -	\$ -	\$ 41,088
2.09	Construction Coordination													
A	General Plan Clarifications	4	8	24	36	28	0	0	0	100	\$ 24,148	\$ -	\$ -	\$ 24,148
B	General Construction Alternatives Analysis	4	8	32	50	56	0	0	0	150	\$ 35,498	\$ -	\$ -	\$ 35,498
C	General Field Questions	8	24	34	48	36	0	0	0	150	\$ 37,154	\$ -	\$ -	\$ 37,154
D	Instrumentation/Control & Electrical	24	0	32	64	0	0	0	0	120	\$ 30,280	\$ -	\$ -	\$ 30,280
E	Startup and Testing	8	8	24	36	24	0	0	0	100	\$ 24,468	\$ -	\$ -	\$ 24,468
	Task Subtotal	122	138	714	1016	1148	62	222	32	3454	\$ 805,738	\$ 11,400	\$ 64,000	\$ 881,138
	Hours Total	122	202	834	1096	1148	62	222	32	3718				
	Rate	\$ 295	\$ 296	\$ 255	\$ 235	\$ 215	\$ 225	\$ 190	\$ 160					
	Project Subtotal	\$ 35,990	\$ 59,792	\$ 212,670	\$ 257,560	\$ 246,820	\$ 13,950	\$ 42,180	\$ 5,120		\$874,082	\$11,400	\$64,000	\$949,482

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July 19, 2022

Prepared by: W. James / M. Cortez

Submitted by: K. Burton

Approved by: Paul A. Cook 

ENGINEERING AND OPERATIONS COMMITTEE

COASTAL ZONE 1-2 AND 2-4 PUMP STATIONS REHABILITATION CONSULTANT SELECTION

SUMMARY:

The Coastal Zone 1-2 (CZ1-2PS) and the 2-4 Pump Station (CZ2-4PS), which serve Coastal Zones 2 and 4 in Newport Coast, have seldomly been used since the completion of the Coastal Zone 4 Pump Station (CZ4PS). Due to this lack of use, CZ1-2PS and CZ2-4PS have become inoperable. This project will rehabilitate CZ1-2PS and CZ2-4PS and return them to operational use as the secondary supply of drinking water to the Newport Coast. Staff recommends the Board authorize the General Manager to execute a Professional Services Agreement with GHD in the amount of \$446,243 for design engineering services for the Coastal Zone 1-2 and 2-4 Pump Stations Rehabilitation.

BACKGROUND:

CZ1-2PS and CZ2-4PS are below-grade drinking water pump stations located along Newport Coast Drive in Newport Beach; a location map is provided as Exhibit "A". The pump stations, both constructed in 1990, were designed with similar configurations. The CZ1-2PS is supplied by the interconnection with Metropolitan's Coast Supply Line near Pacific Coast Highway. CZ1-2PS discharges into the Coastal Zone 2 pipeline providing water to the Coastal Zone 2 Reservoir and service to Newport Coast properties located in Zone 2. Downstream of the Coastal Zone 2 Reservoir connection is CZ2-4PS, which discharges into the Zone 4 domestic water pipeline and supplies the Coastal Zone 4 reservoir and the Newport Coast properties located in Zone 4.

After the completion of CZ1-2PS and CZ2-4PS, the CZ4PS at OC-63 on Bonita Canyon Road near State Route 73 was constructed as a second source of supply to the area. This pump station subsequently became the primary feed to the Newport Coast since it was less expensive to deliver water to the area from this pump station. Since then, the CZ1-2PS and CZ2-4PS have not operated with any regularity and have become inoperable with obsolete componentry. This project will rehabilitate both CZ1-2PS and CZ2-4PS and return them to operational condition, providing a redundant water supply source to the Newport Coast. It is also a prerequisite project to the future project at the CZ4PS to replace that facility's electrical gear. The CZ1-2PS and CZ2-4PS will need to be in operation when CZ4PS is taken offline for maintenance activities or when it is operating with reduced capacity.

Consultant Selection:

On March 28, 2022, staff issued a request for proposal for design engineering services for the project to five consultants: David Evans, GHD, Stantec, Tetra Tech, and West Yost. Stantec withdrew after receiving the RFP due to a lack of staff availability. Proposals were received

from the remaining four consultants. Staff completed its evaluation of the proposals and found the following merits in GHD's proposal:

- GHD has a clear and thorough project understanding not only for the rehabilitation of the pump stations, but also understanding the coordination work required to acquire permits from Caltrans and the City of Newport Beach;
- For its technical approach, GHD identified critical issues that will need thoughtful consideration including pump flow configuration (average daily versus maximum day demands), air conditioning improvements for new electronics (e.g., motor control center, and equipment procurement and delivery that will affect the project schedule); and
- GHD has assembled a top tier project team composed of experienced local staff along with experienced subconsultants including N2W (Mechanical/Electrical), NMG Geotechnical and Traffic Control Engineering (David Kuan).

Based on these merits, staff recommends awarding a Professional Services Agreement to GHD in the amount of \$446,243. The consultant selection matrix and GHD's proposal are provided as Exhibits "B" and "C", respectively.

FISCAL IMPACTS:

Coastal Zone 1-2 and 2-4 Pump Stations Rehabilitation, Project 11912, is included in the Fiscal Year 2022-23 Capital Budget. The existing budget is sufficient to fund the project's design phase.

ENVIRONMENTAL COMPLIANCE:

This project is exempt from the California Environmental Quality Act (CEQA) as authorized under the California Code of Regulations, Title 14, Chapter 3, Sections 15301 and 15302. Section 15301 provides exemption for minor alterations of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. Section 15302 provides for the replacement or reconstruction of existing structures and facilities where the new structures will be located on the same site as the structure replaced.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement with GHD in the amount of \$446,243 for design engineering services for the Coastal Zone 1-2 and 2-4 Pump Stations Rehabilitation, Project 11912.

LIST OF EXHIBITS:

- Exhibit "A" – Location Map
- Exhibit "B" – Consultant Selection Matrix
- Exhibit "C" – GHD Scope of Work and Fee Proposal

EXHIBIT "A"



COASTAL SUPPLY LINE
INTERCONNECTION

COASTAL ZONE 1-2
PUMP STATION

COASTAL ZONE 2
RESERVOIR

COASTAL ZONE 2-4
PUMP STATION

NEWPORT COAST DR

PACIFIC COAST HIGHWAY

NEWPORT COAST DR.

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EXHIBIT "B"
Coastal Zone 1-2 and 2-4 Pump Station Rehab
Project 11912
Consultant Selection Matrix

	Weights	David Evans		GHD		Tetra Tech		West Yost	
TECHNICAL APPROACH									
*Project Understanding	30%	4		1		2		3	
*Project Approach	30%	3		2		1		4	
*Project Team	20%	4		1		3		2	
*Man Hour Estimates	20%	3		1		2		4	
Forced Ranking System:									
1- Best, 2- Second Best, etc.									
Weighted Score		3.50		1.30		1.90		3.30	
CONSULTANT RANKING		4		1		2		3	
PROJECT TEAM									
Project Manager		S.Kamangar, 25		Ulysses Fandino, 20		Tom Epperson, 41		Robert Reid, 33	
Project Engineer		Kathleen Hong, 7		Chris Bartleman, 18		L.Esguerra, 19		Jeff Wanlass, 20	
QC/QA		Rod Langer, 32		Bill Roberts, 27		Not Listed		Tim Banyai, 28	
Process-Mechanical Design		Andi Seidel, 20		James Wang, 24		Matt Vera, 8		Tyler Newman, 6	
Electrical		O. Fernandez, 40		Mehdi Mardi, 27		Mazen Kassar, 29		Michael Rizza, 26	
Structural		Alison Wyatt, 16				Eric Yuen, 15		Joe Wendt, 8	
Traffic Control		TCE		TCE		Peter Kim		TCE	
Geotech		Aesco		NMG		Leighton Consulting		Converse	
Surveying		Robert Vasquez		Calvada		Metz Surveying		Borchard	
Potholing		C Below		USI		C Below		TC Mueller	
Corrosion		Corrpro		Jeff Knauer		V&A		V&A	
PLAN SET SHEET COUNT			Sheets		Sheets		Sheets		Sheets
General			3		5		7		3
Civil /Mechanical/Structural			15		24		23		20
Electrical/Instrumentation			17		28		23		21
Traffic Control			8		10		7		10
TOTAL SHEETS			43		67		60		54
FEE / HOURS		Fee	Hours	Fee	Hours	Fee	Hours	Fee	Hours
Task 1 - Project Management		\$27,020	116	\$24,328	107	\$33,600	130	\$41,639	128*
Task 2 - Preliminary Design		\$88,212	522	\$112,978	331	\$128,799	503	\$171,075	343*
Task 3 - Final Design		\$162,964	870	\$308,937	1460	\$297,601	1817	\$249,698	624*
* Subconsultant hours not included with proposal.									
TOTAL FEE and HOURS		\$278,196	1,508	\$446,243	1,898	\$460,000	2,450	\$462,412	1,095*
Unit Prices									
	\$/dwg	\$6,470		\$6,660		\$7,667		\$8,563	
	\$/hour	\$184		\$235		\$188		\$422	
Professional Liability Insurance		Yes		Yes		Yes		Yes	
General Liability Insurance		Yes		Yes		Yes		Yes	

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EXHIBIT "C"

Proposal for Engineering Design
Services

Coastal Zone 1-2 and Zone 2-4 Pump Station Rehabilitation

RFP No. PR 11912

Irvine Ranch Water District

May 3, 2022

→ The Power of Commitment



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May 3, 2022

GHD Proposal Number: 12578506
GHD DIR Number: 1000018754

Malcolm Cortez, PE
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612

**Re: Engineering Design Services for the Coastal Zone 1-2 and Zone 2-4 Pump Station Rehabilitation Project
(RFP No PR 11912)**

Dear Mr. Cortez and Members of the Selection Panel:

GHD submits this proposal to the Irvine Ranch Water District (IRWD) to provide engineering design services for the various improvements at the Coastal Zone 1-2 and 2-4 Pump Stations located in the Newport Coast area of the City of Newport Beach.

We understand the many facets of this Project and have assembled a strong team and approach that will meet your project objectives including a dedicated and experienced local project team with proven track records of successes in similar settings to address the challenges and aspects of this Project.

Strong project management helps in determining success of a project. The GHD Team will be led by Project Manager, Ulysses Fandino, PE, who will be the primary contact person for our firm and will be fully committed to helping ensure the success of the project. Ulysses is an experienced project and design manager with over 20 years of applicable professional experience and strong project delivery success. He has an aptitude for bringing together teams of diverse expertise to deliver cost-effective rehabilitation and design options, and to work collaboratively with personnel to understand their needs and incorporate their vital, hands-on knowledge. In addition, Ulysses is very familiar working with IRWD, the City of Newport Beach, and Caltrans since he led the delivery of the Newport Coast Lift Station (NCLS) Rehabilitation Project along Newport Coast Drive and also for a recent Orange County Sanitation District sewer rehabilitation project within Pacific Coast Highway.

Technical expertise in all facets of pump station rehabilitation. Working closely with Ulysses is our Principal-in-Charge, Greg Watanabe, PE, key Mechanical Lead, James Wang, PE (N2W), and key Electrical Lead, Mehdi Mardi, PE, who combined have over five decades in delivering numerous successful pump station projects throughout Southern California with innovative and cost-effective solutions. Greg, James, and Mehdi will leverage their unique technical expertise from dozens of pump station design and rehabilitation as an active participant in the delivery of this project.

In addition, the GHD Team brings IRWD licensed, accredited, and specialized engineers experienced in Condition Assessment, Geotechnical, Traffic Control, Cost Estimating, Risk Management, Operation and Maintenance, and 3D Model Renderings that will be directly applicable for this project.

Collaboration-Innovation-Sustainability. GHD's approach to addressing the project issues includes early collaboration and buy-in from IRWD. This will be accomplished through workshop settings to review operation and maintenance approaches to the pump stations; see first-hand the options for layouts and configurations; determine the feasibility of rehabilitating the switchgears, and to discuss construction options for the new surge tank. In these workshops, GHD's engineers will demonstrate the options available through the use of:

- 3D renderings, showing before and after options
- Aerial images to simulate the impact(s), if any, on the surrounding neighborhood,
- Sustainable and constructible features, and
- Manufacturer cut sheets.

The right team for the project. GHD believes that we are the right team for IRWD to successfully complete the Coastal Zone 1-2 and 2-4 Pump Station Rehabilitation. We are excited about the opportunity to work with IRWD on this project. Our strong, local presence, committed and exceptionally qualified project management and technical team, paired with our collaborative approach enables our team to provide incomparable project delivery. Our team is fully dedicated to delivering technically sound and cost-effective solutions focused on the rehabilitation of the Coastal Zone 1-2 and 2-4 Pump Stations.

We appreciate your consideration of our proposal. We welcome the opportunity to serving you on this project and hearing from you regarding the selection process. If you have any questions, please do not hesitate to contact Ulysses at 949-585-5203 or Ulysses.Fandino@ghd.com.

The below undersigned, have the authorization to bind GHD to this proposal and acknowledges that we have read and understand the RFP.

Regards,



Greg Watanabe, PE
Principal-in-Charge
562.206.7979
Greg.Watanabe@ghd.com



Ulysses Fandino, PE
Project Manager
949.585.5203
Ulysses.Fandino@ghd.com

A. Scope

Our mission is to help you lead through innovation and collaboration with sustainability of operations as the project outcome. The GHD team will collaborate with IRWD and spend time developing potential innovations.

Herein provides the GHD Team's detailed project understanding, project approach, scope of work and methodology that comprehensively define and describe the individual tasks for the project. This scope of work will be used as a basis for later contract negotiations. The scope of work is based upon, but not limited to, the information contained in Section II of the RFP.

GHD has also developed and included a comprehensive list of drawings in this section. Our drawing list includes the estimate sheet number, drawing number, and drawing title.

Background

The Coastal Zone (CZ) 1-2 and 2-4 Pump Stations are below-grade domestic water (DW) pump stations located along the east side of Newport Coast Drive in the City of Newport Beach. The stations supply Coastal Zones 2 and 4. Both pump stations were designed with similar configurations and were constructed in 1990. The pump stations use vertical turbine pumps. Hydraulic actuated ball valves are provided downstream of each pump for flow control purposes. The electrical cabinets for both stations are located below-grade next to the pumps and contain the motor starters and control cabinets. The switchgears are located outside each pump station along the sidewalk. The switchgear for the Coastal Zone 2-4 Pump Station is located across the street from the vault.

Shortly after the completion of CZ 1-2 and CZ 2-4 Pump Stations, the Coastal Zone 4 Pump Station at OC-63, on Bonita Canyon Drive, was constructed as a second source of supply to the area. This pump station, located in the City of Irvine on the east side of Bonita Canyon Drive north of the State Route 73, is the primary feed to the Newport Coast area. Because it is less expensive to deliver water to Newport Coast from Irvine, the CZ 1-2 and CZ 2-4 pump stations have not been used that often and have become inoperable with many obsolete components.

The purpose of the CZ 1-2 and 2-4 Pump Stations Rehabilitation Project is to rehabilitate both CZ 1-2 and CZ 2-4 so that they may be brought back into service. Prior to the development of the RFP, a surge and hydraulic model analysis were performed for the system. The surge analysis concluded that a sudden loss of power to CZ 2-4 will result in vapor pressure conditions and possible vapor cavity formation in parts of the distribution system. To prevent this from occurring, a minimum 1,000-gallon pressurized surge tank is required on the discharge side of the pump station. The hydraulic model analysis concluded that the existing CZ 1-2 and 2-4 pumps may be replaced in-kind to meet IRWD's planned operational strategy of operating both the Coastal Zone 4 Pump Station and the CZ 1-2 and 2-4 in unison.

The pressure relief system installed for CZ 2-4 in 2018 is in great condition and does not require replacement. This system will need to remain in service during construction. Power is fed to this vault from electrical gear within the CZ 2-4 pump station.

Our Team Understands the Scope of Work

As illustrated in these site photos, the existing pumps, electrical, and instrumentation equipment are required for complete replacement.

The GHD team brings proven pump station expertise and experience to make the project a success.



Figure 1: Existing pumps, electrical, and instrumentation at the CZ 2-4 lift station

Project Understanding

The following summarizes our understanding of the CZ 1-2 and CZ 2-4 scope of improvements based on the RFP, Question and Answer (Q&A) Comment Log, pre-proposal site meeting at CZ 2-4 pump station, and associated exhibits with the RFP that included record drawings, pump and motor shop drawings and photos, condition assessment report with photos, surge analysis report, hydraulic model analysis, and geotechnical reports:

- All pumps, valves, and ventilation equipment will require replacement.
- The hydraulic actuated ball valves will be replaced with check valves.
- The piping does not need to be replaced; however, all exposed piping will require re-coating.
- A new surge tank will be constructed adjacent to CZ 2-4. Location of the surge tank will be determined during the preliminary design phase.
- All electrical and instrumentation components for the pump stations will be replaced. These components include the switchboards (i.e., all electrical gear and enclosures), programmable logic controllers (PLCs), motor control centers (MCCs), lighting, flow meters, pressure transmitters, pressure switches, and level switches.
- A temporary power system for the CZ 2-4 pressure relief system will be included in the design so that the system may remain in service during the replacement of the pump station electrical equipment.
- All new equipment and controls will be integrated into IRWD's SCADA system. IRWD will contract directly with a third-party SCADA programmer for PLC programming.
- A condition assessment of the interior surface of the pump cans will be performed.
- Constructing the surge tank underground to CZ 2-4 will require an encroachment permit from the City of Newport Beach.
- If the slope down the canyon is affected, an encroachment permit will be required from the County of Orange Public Works Department, who owns the sloped land.
- Environmental permitting is required if any endangered species and/or biological habitat are impacted during construction.



Project Approach

The GHD team brings the unique combination of knowing what needs to be done, where to look for the needed information, and how to configure contract documents to limit risk, minimize problems and maximize potential for success.

Key to the pump station rehabilitation is a thorough evaluation of critical issues and solutions of the facilities to be replaced/upgraded. Based on the team's past and current designs of other pump stations, we have identified various critical issues and solutions for IRWD's consideration in [Table 1](#) below.

Table 1: Critical Issues and Solutions

Issue		Solution
1	Surge and Transient	✓ Pump selection and operation (VFD versus soft starter) ✓ Check valve selection (oil dashpot or air cushion) ✓ Sequence of operation (staging pump on and off) ✓ Existing pipeline condition assessment and pressure rating
2	System Redundancy	✓ Pump flow configuration (ADD versus MDD) ✓ Standard operation procedure ✓ Standard maintenance procedure
3	HVAC	✓ Separate AC unit mounted to the MCC and control panel to protect electronics ✓ Air-conditioned versus ventilated pump station
4	Accelerated Schedule	✓ Equipment pre-selection/procurement ✓ Early start on permitting and coordination with various agencies ✓ Contractor pre-screening
5	Reduced Construction Cost	✓ Performance based Equipment pre-selection/procurement ✓ High quality bid set and engineering specification ✓ Pre-screening contractor and secure bids ✓ Construction cost and cash flow projection ✓ Value engineering
6	Project Delivery/Risks	✓ Contractor prequalification ✓ Close coordination with agency for permits ✓ Detailed design and construction scheduling ✓ Alternative delivery
7	Electronic-Operation and Maintenance Manual (Optional)	✓ Platform with digitized document ✓ CMMS (predictive, preventive, and corrective maintenance)
8	3D laser scan (Optional)	✓ Laser Scan existing pump station ✓ Building process mechanical/structural/electrical depicted in 3D ✓ Record drawing using 3D ✓ EOM using 3D

System Hydraulics and Pump Configuration Selection

GHD and our subconsultant, N2W Engineering (N2W), will evaluate the existing pump operation based on historical records and frequency of start/stop of the pumps. Based on the result of our evaluation, we will investigate different pump flow configurations in comparison to frequency of pump start/stop as well as average and maximum day demand and the capacity of existing pump barrel and discharge. We will review previous hydraulic information on the mainline in various operating scenarios and tank water level to develop a system curve and single and multiple pump operation curves with variable frequency drive in comparison to single speed; for system flow coverage as well pump start/stop to accommodate the system flow demand or pressure change. This curve will then serve as the basis for evaluating various pump flow options and determine the use of variable frequency drive versus soft starter.

Design parameters: The best efficiency point (BEP), operational complexity and robustness, demonstrated success, and capital, operation, and maintenance costs are the main design parameters to evaluate for the selection of the replacement pumps at the CZ 1-2 and 2-4 pump stations. All these factors will be considered in our evaluation to determine pump selection and the configuration that will yield the most benefit to IRWD.

Pump Selection: The pump selection will be performed with a system curve for the pump stations. The associated reservoir water levels and various pipe roughness coefficients (80–140) for current and future operations will be plotted to generate the system curve. Once the system curve is set, N2W will select the correct pump and the pump curve will be plotted along with pump efficiency at different flow and head. N2W will evaluate the overall pump efficiency at different pumping scenarios and variable speed operation along with the full flow range (i.e., not just a single point close to the best efficiency point). The capital and operation cost of the selected pumping system will be analyzed for life cycle analysis, system robustness, and ease of operation for the final selection of pump and drive.



Process Selection Criteria and Rankings

The GHD team proposes to use a “paired comparison” process selection tool that can systematically rank alternatives available for any project.

Selection Criteria: Capital and O&M costs and performance of the pump alternatives are the main criteria in evaluating the options such as variable frequency drive versus soft starter and hydropneumatic tank versus bladder tank for CZ 2-4 pump station. However, there are other factors that may affect the District’s decision on the final selection including:

- Process robustness (sensitivity to critical parameter, ability to handle ADD and MDD, ability to expansion, etc.)
- Operability and flexibility (system startup/shutdown, flow range coverage, efficiency, ease of maintenance, and operation, etc.)
- Capital cost (pump, valve, electrical drive and panels, pre-cast versus cast in place for surge tank vault etc.)
- System footprint (pump size, drive size, vault size, etc.)
- Operation and maintenance cost (electricity cost, system replacement, HVAC, etc.)
- Environmental impact (drive noise, compressor noise, etc.)
- Constructability (design and construction schedule, flexibility, system tie-in, etc.)

Ranking alternatives: The GHD team proposes to use a “paired comparison” process selection tool that can systematically rank alternatives available for any project. This tool can be utilized throughout the project, and this approach is particularly beneficial in making group decisions when a number of decision makers are involved.

The benefit of this approach is documentation and justification of key decision making that is defensible to be presented to any group within and outside the District if needed.

Grouping criteria: Since there are many potential criteria that affect pump and drive selection, our team has consolidated them into several groups. Figure 2 summarizes these groups with individual criteria and descriptions within each group. The process selection criteria can be adjusted by the District as needed.

Analysis Using the Paired Comparison Tool: After developing the process selection criteria groups, with the District’s input we will perform the paired comparison process selection tool. During this analysis, one criterion is judged to be more important than, less important than, or of equal importance to another criterion. **Comparing only two criteria at one time simplifies the evaluation and minimizes ambiguity in the weighting process.**

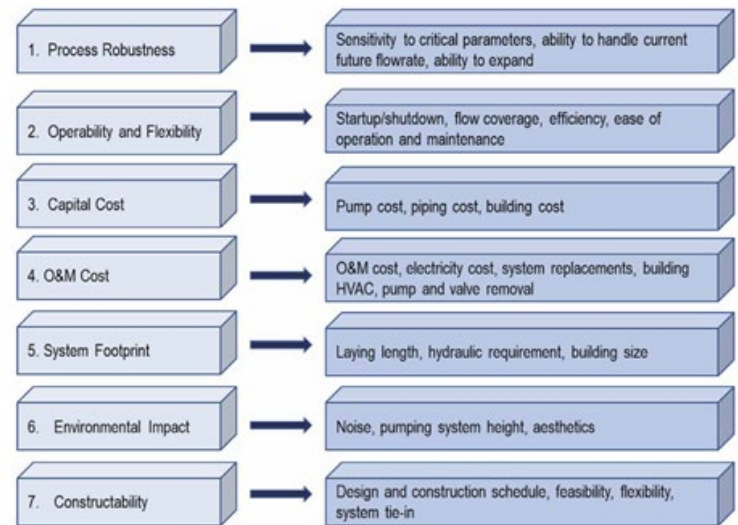


Figure 2: Consolidated Process Selection Criteria Groups

For example, criterion A (Process Robustness) is compared with criterion B (Operation and Flexibility), and if B is more important than A, then B is listed under the weighting table. Sometimes, it may be difficult to choose between the two criteria being evaluated. For that case, both can be listed in the table (e.g., A/B). A mathematical formula is then used to convert the paired comparison selections to a relative weight factor for each criterion rather than randomly assigning values. Figure 3 shows a comparison analysis and the relative weights of the criterion that our team has developed for this project. The example is presented here only to illustrate the capability and benefit of what a systematic approach tool can provide for the evaluation and selection.

Selecting the alternative: Each alternative is assigned an absolute score of 1 to 5 per criterion. These scores are multiplied by the relative weight of a given criterion and then summed for each process. Based on the total scores, the alternative with the highest summation will be recommended as the selected option for detailed design.

Once the District and GHD develop the alternatives recommended for the pump station, we will develop the paired comparison analysis together and determine the best option to meet the District’s goals.

Criteria	Priority							Weight
	A	B	C	D	E	F	G	
Process Robustness		A	A	A	A	A	A	29%
Operability and Flexibility			B	D	E	B	G	10%
Capital Cost				D	C	C	G	10%
Operation and Maintenance Cost					D	D	D	24%
System Footprint						E	E	14%
Environmental Impact							G	0%
Constructability								14%

Figure 3: Proposed process selection criteria paired comparison chart

Surge Tank Design and Siting

GHD fully understands the new surge tank is a top priority for the District, and we encourage the District Engineering and Operations staff's early involvement and discussion on the surge tank design and implementation.

Surge Tank Location: The new surge tank from the CZ 2-4 pump station would be constructed on the discharge side of the pump station which ideally is immediately north of the pump station. Upon the GHD team's further review of the record drawings and investigation of the existing conditions at CZ 2-4 pump station, **we have determined a more ideal location of the surge tank would be immediately south of the pump station and beneath the landscaped parkway along Newport Coast Drive.** We envision the new surge tank to be comprised of two identical 500 gallon vertical bladder tanks connected side-by-side within a concrete vault directly below grade beneath the parkway with access stairs under a hatch similar to the CZ 2-4 pump station. The existing 90-degree elbow on the discharge pipeline from Pump #1 will be replaced with a Tee to make the connection to the two bladder tanks.

The parallel alignments of the District's existing 24-inch water supply pipeline and 20-inch recycled waterline within Newport Coast Drive would be impacted if the surge tank vault is constructed in the street. **Constructing the vault in the parkway provides better access for operations and maintenance staff who can work more safely outside the travel lanes and minimize lane closures that will impact the vehicles traveling on Newport Coast Drive.**

The vault within the parkway still avoids impact to the slope down the canyon on the backside of the sidewalk, as well as potential environmental concerns to any protected habitat and plants along the slope. We will investigate any potential cost and/or schedule savings for the vault using a pre-cast system.

Our vision of the dual surge tanks and configuration within the vault that will be constructed below grade are further shown in the 3D renderings presented in [Figure 4](#).

Three Benefits of a Vertical Surge Tank



- **Significantly lowers operation, maintenance, and long-term costs** by eliminating the requirement of extra mechanical equipment such as the air compressor for the horizontal pneumatic surge tank
- **Eliminates corrosion of the steel exterior** of the surge tank when compared to directly burying the tank within the soil which is frequently irrigated for the existing parkway landscaping
- The existing aesthetics along Newport Coast Drive is **not disturbed**

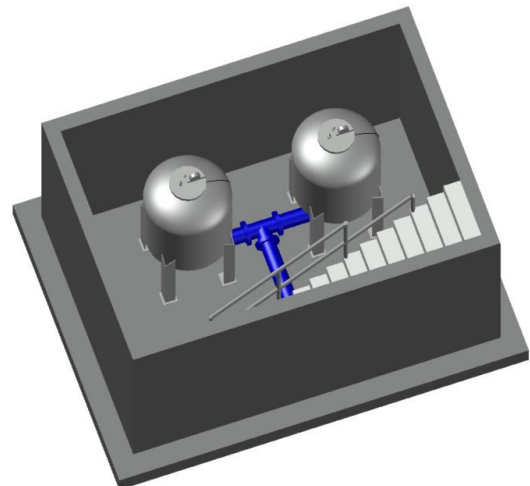
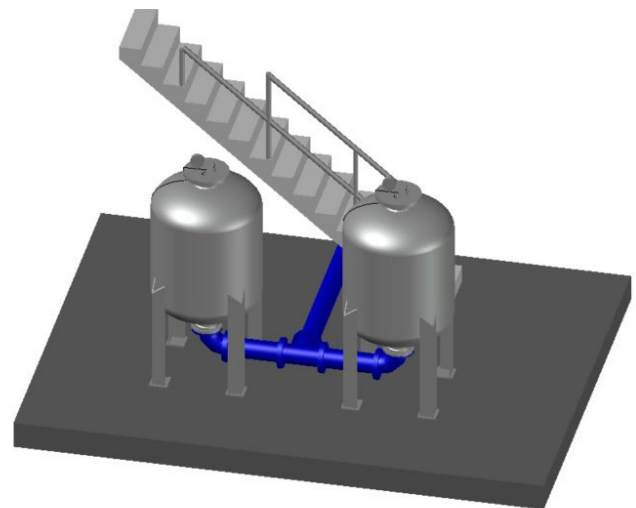


Figure 4: New Surge Tank 3D Renderings

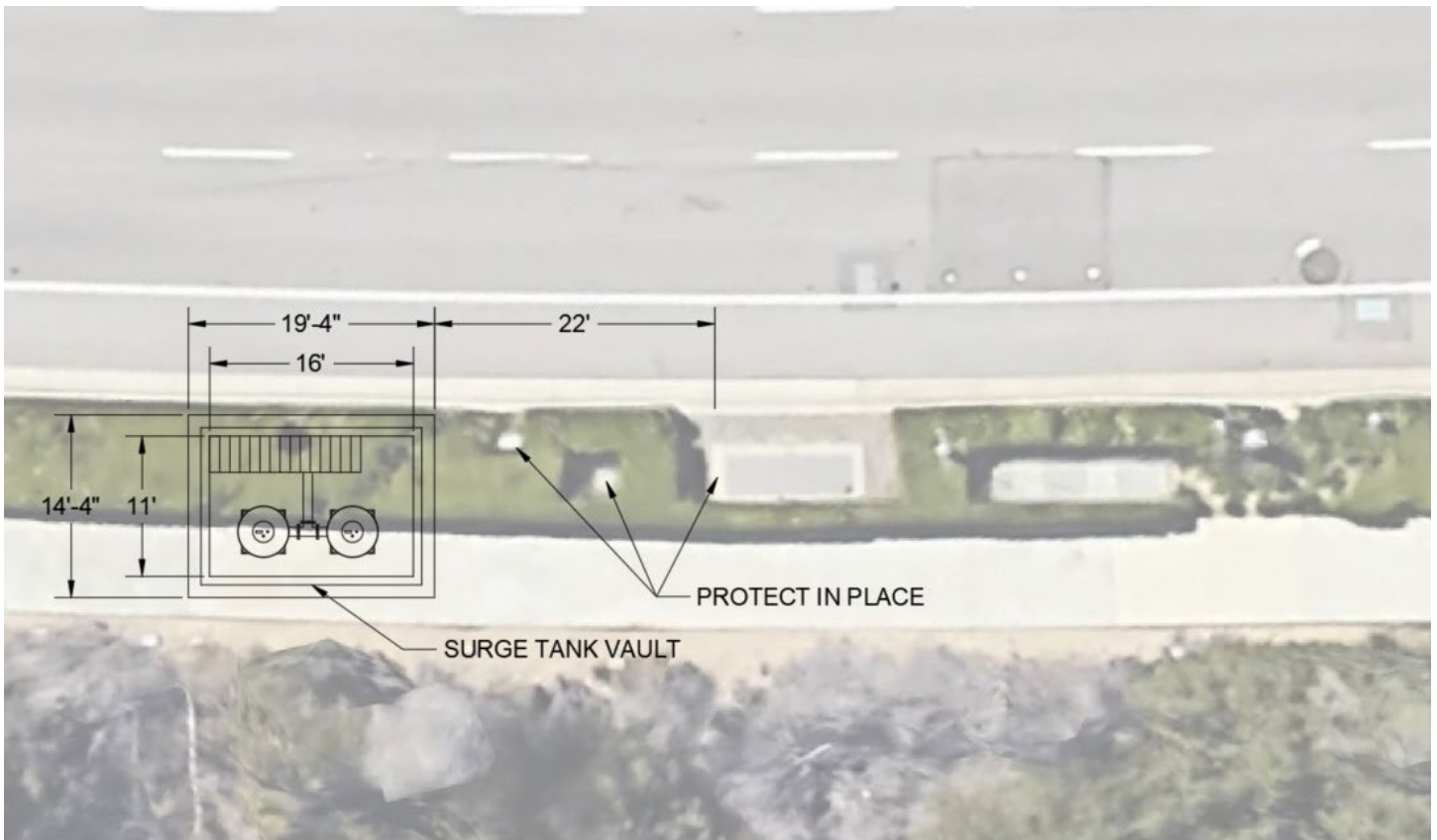
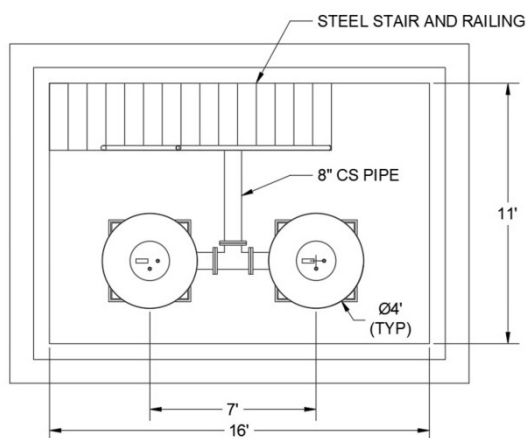
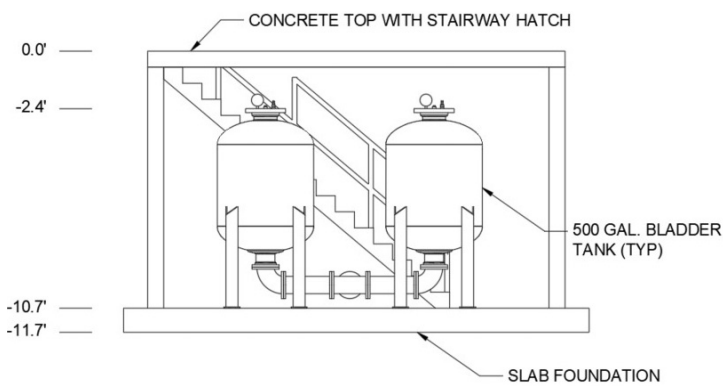


Figure 5: Above: Layout map showing proposed area where new surge tank vault would be. Left: 2D image of the proposed bladder tank



Electrical and Instrumentation

The GHD team has preliminarily reviewed the existing electrical system at each pump station with consideration of associated operation efficiency, flexibility, redundancy, and code compliance. At a minimum, the following will be performed for the electrical and instrumentation replacements:

- Provide detailed control logic via flow diagrams in addition to our Electrical and P&ID drawings and technical specifications.
- Prepare a Sequence of Operation to tie together the control logic diagrams and help minimize any programming by IRWD operations staff.
- Prepare a Pre-Commissioning Plan at the design phase.
 - To determine issues with start-up of the pumps, operating equipment, electrical system and control system, and verify the pump station will operate as desired.
- Replace the existing MCCs, PLCs, switchgears, and enclosures on the same pad as the existing.
 - An electrical system study for load, short circuit, and ArcFlash will be performed for the new system.
- Remove and replace the existing propeller flow meter at the CZ 1-2 pump station meter vault with a newer technology insertion type e-flow meter on the pressure reducing valve located inside the CZ 1-2 PRV vault.
 - The e-flow meter eliminates the need for a typical separate in-line meter and the significantly larger construction costs of the in-line meter.
 - The pressure relief system and equipment installed for the CZ 2-4 pump station PRV in 2018, including the flow transmitter, is in great condition and does not require replacement per the condition assessment report in the RFP.
- Provide a new power hookup that will allow for a temporary backup generator to be connected and keep the pump station operating in the event of a power outage from the main power source.

- Provide temporary power to the existing pressure relief system within the PRV vault for the CZ 2-4 pump station so that the pressure relief system can remain in service during construction.
 - A new PLC panel and DC batteries will be installed inside the existing PRV vault. We anticipate reusing the existing wires and parts from the existing PLC panel inside the pump station for the new PLC panel.

Within this effort, GHD's in-house electrical engineers will work with IRWD staff to establish suction and discharge pressure measurement and set points, pump start and stop, pump speed set point (min and max if equipped with VFD), high pressure alarms, flow measurement, gas detection and alarms, local pump controls, local lockout/stop safety features, etc.



An Example of Successful Collaboration with IRWD

GHD successfully provided engineering services to address IRWD's desire to rehabilitate and upgrade their existing 500-GPM Newport Coast Lift Station along Newport Coast Drive in the City of Newport Beach. GHD prepared preliminary design alternatives, a comprehensive PDR documenting the design approach for the various improvements, and the submittal of 50%, 90%, 100%, and Final Design construction plans, technical specifications, Project Manual, a construction cost estimate, and a construction schedule for the proposed work. Our work included geotechnical, traffic control, surveying, and potholing; And we addressed the following lift station improvements: new Concrete Masonry Unity (CMU) block electrical building and stairwell, new MCC, PLC, lighting, and instrumentation modifications, dry well piping modifications, new flow and pressure monitoring devices on the dry well piping, dry well ventilation replacement, new ventilation for electrical building and stairwell, wet well lining rehabilitation, and 12-inch ductile iron force main rehabilitation. A comprehensive bypass pumping plan was also developed involving levels of redundancy, overflow piping back to the wet well, telemetry monitoring, and emergency response measures.



Geotechnical

Our geotechnical subconsultant, NMG Geotechnical (NMG), brings considerable knowledge and project experience of the overall geological conditions at the pump station sites, throughout the Newport Coast area, and with similar IRWD projects. They have direct knowledge of the project site conditions near the CZ 2-4 pump station. NMG's principal geologist, Terri Wright, was the primary author for the geotechnical report of Coastal 2 and 4 Reservoirs.

The subject pump station site lies in the northwest San Joaquin Hills, adjacent to the coastline. This roadway was graded (as Pelican Hill Road) between 1989 and 1990 and was the first major roadway at Newport Coast. The adjacent golf course and resorts followed in the 1990s through the 2000s.

CZ 1-2 Pump Station: The grading plan for Newport Coast Drive indicates the CZ 1-2 pump station is in a shallow cut area near roadway Station 13+00. A nearby boring drilled in 1988 encountered approximately 14 feet of marine terrace deposits overlying bedrock of the Monterey Formation. The terrace deposits consist of brown to light reddish-brown clayey and silty sand that is generally massive. The bedrock consists of thinly bedded olive gray to light gray, diatomaceous, clayey siltstone with interbedded sandstone and shale. The terrace bedrock contact is near a 147-foot elevation above mean sea level and this pump station is founded in the bedrock.

CZ 2-4 Pump Station: The CZ 2-4 pump station is located to the east of Newport Coast Drive Station 59+50 in a deep fill area. A large landslide was mapped at this location and during grading, a large buttress was constructed (210 feet wide, by 40 feet deep/below the rupture surface). This key construction resulted in nearly complete removal of the landslide materials under the roadway and resulted in 60 to 70 feet of compacted fill under the pump station. The fill consists of a mixture of sandy marine terrace deposits with siltstone and sandstone, and is underlain by bedrock of the Monterey Formation. The 2H:1V fill slope below this site is approximately 80 feet high and covered with thick coastal sage scrub vegetation.

Based on NMG's intimate knowledge of the project sites, which includes the time when Newport Coast Drive was previously constructed and originally named Pelican Hill Road, ***we do not anticipate the stability of the slope down the canyon behind CZ 2-4 pump station will be affected by the excavation of the new surge tank.*** The excavation will be properly shored to maintain the integrity of the existing surface and protection of the slope down the canyon.

Deliverables: *NMG will develop a geologic model for the area and the CZ 2-4 pump station for the 50% submittal. Geologic cross-sections will be prepared to depict the geologic conditions.*

Pump Cans Condition Assessment

A hallmark of many issues at pump stations is corrosion and coating and pump operation. GHD's in-house corrosion experts are second to none in corrosion science and engineering, and will provide IRWD with superior expertise in corrosion assessment and control, coatings, and materials science.

We will provide solutions for coatings, corrosion, and rehabilitation that address the challenges of the water environment specifically on the existing pump cans (1/4" wall thickness welded steel pipe barrel) that have epoxy lining and coating.

GHD's corrosion engineer's efforts will address the key impacts on the existing coatings and materials, and will provide the right recommendations for repairs, such as a splitter or basket strainer for the pump suction, and pump can preparation for fusion bond epoxy so that the rehabilitations are durable and low maintenance.

The small diameters of the steel pump cans (20-inches) may prove difficult for traditional man-entry for condition assessment. GHD's corrosion engineers may employ using a push-type camera system readily available in the industry in order to assess the interior surface of the pump cans.

Safety is a top priority. Prior to conducting the condition assessment, GHD will implement a safety and health plan during the engineering services such as a Job Hazard Analysis, Confined Space Entry, etc. Maintaining a safe and healthy environment at work when operating effectively, and working together to minimize risk, will significantly reduce the number of incidents in the workplace.

City of Newport Beach Permitting

The GHD Team is intimately familiar and experienced with the City of Newport Beach staff, traffic control, and permitting requirements for street closures within City of Newport Beach and Caltrans right-of-way through our previous IRWD project for the Newport Coast Lift Station Rehabilitation and most recently for a current Orange County Sanitation District project located within Pacific Coast Highway within the City Newport Beach.

The City of Newport Beach and Caltrans have a close relationship with permitting temporary traffic lane closures affecting Pacific Coast Highway within the City of Newport Beach. The most efficient approach is to meet with the City of Newport Beach regarding the temporary lane closures and obtain the City's permit first. With the City's permit in hand, the encroachment permit review from Caltrans is decreased from their traditional timeframe of 3 months review to approximately 4-6 weeks of review and approval.

For this project, GHD anticipates multiple permits through the City of Newport Beach and Caltrans during the preliminary design, final design, and construction phases of work defined as follows:

Preliminary Design Phase

IRWD's contractor (SS Mechanical) will be responsible for removing the existing pumps from the CZ 1-2 and 2-4 pump stations. The removal of the existing pumps at both pump stations will require a Temporary Street Use Permit and the supporting traffic control plans for temporary lane and

sidewalk closures to be reviewed and approved by the City of Newport Beach. With the proximity of the CZ 1-2 Pump Station near Pacific Coast Highway, an encroachment permit from Caltrans will also be required due to the impact of the Pacific Coast Highway turning lanes onto Newport Coast Drive. We will demonstrate to City of Newport Beach and Caltrans that the lane closures at CZ 1-2 pump station and Pacific Coast Highway will only take two working days since SS Mechanical will only need this timeframe to remove the pumps at CZ 1-2 pump station. SS Mechanical only needs another 2 working days at CZ 2-4 pump station.

Final Design Phase

Similarly, the soil borings for the geotechnical investigation along Newport Coast Drive at CZ 2-4 pump station and the potholing of existing utilities within the same vicinity of Newport Coast Drive will require a Temporary Street Use Permit and the supporting traffic control plans for approval by the City of Newport Beach.

Construction Phase

The construction phase will also require a City Temporary Street Use Permit and the supporting traffic control plans. However, the City will also require a separate Encroachment Permit due to the excavation required for the new surge tank during the construction phase in the City's right-of-way. While this will require the submission of the IRWD "Approved" plans, the City will not require any design reviews of the IRWD facilities. However, the City will request to review and approve any construction traffic control design plans.

Project Schedule

The GHD Team's compelling understanding of the current bidding environment and risk profiles allows for an optimized construction schedule.

Significant Lead Time: The pump stations employ very large capacity pumps. The lead time among pump vendors will be an important consideration to the construction schedule. **Potential solution:** We recommend pre-qualifying pump vendors and pre-purchasing the pumps that provide the highest value and efficient delivery to mitigate any delay risks to the construction schedule with the Contractor and IRWD's timeframe with starting up the pump stations.

Schedule conflict mitigations: Based on our previous lessons learned with pump stations, the recommended approaches to mitigate schedule conflict risks include:

- Obtain current data and cost from electrical and instrumentation vendors for their standard systems during design
- Determine cost implications and schedule for delivery between a cast-in-place vault or pre-cast vault for the new surge tank
- Obtain updated delivery times for all equipment during design (e.g., pumps, valves, instruments, etc.)

Our project team members have experience in all steps above to minimize the risk for IRWD and achieve project objectives while minimizing overall cost.

Understanding of Project Cost, Schedule, and Cash Flow Enhances Project Delivery

The GHD team has a track record of engineer’s construction cost estimate within the low and high construction bids from qualified bidders on various projects similar to the proposed project.

We will establish a detailed construction cost estimate for the District based on our project understanding and preliminary design. The construction cost estimate will include Construction Specifications Institute (CSI) Division 1 through Division 17 that include general requirements, site work, concrete, metal, thermal and moisture protection, finishes, specialties, equipment, mechanical, electrical, and instrumentations; with detailed quantity takeoffs, unit price, labor, and material for installation; and subtotal cost-based contingency, mobilization and demobilization, insurance, bonding, contractor profit, general condition, and escalation based on the projected construction schedule and local construction cost index history and trends.

Our approach includes detailed schedule and cash flow development as part of the PDR to assist the District in financial planning. Based on the schedule and the preliminary project cost estimate the GHD team can **perform a cash flow analysis**, an example shown in **Figure 6**, to include both design and construction phases with detailed task associated cost allocated in line with the detailed design and construction schedule herein for the District. This model will enable the District to secure funds, optimize the schedule, manage cash flow, avoid delay, minimize change orders, and mitigate risks. This model is also a value engineering tool such as comparing design components such as hydropneumatic versus bladder tank, pipeline material of ductile iron versus cement mortar lined and coated steel, variable frequency drive versus soft starter, etc. These different approaches will be reflected in real construction cost estimates and life cycle analysis which can also be performed using the cost estimate/cash flow development model.

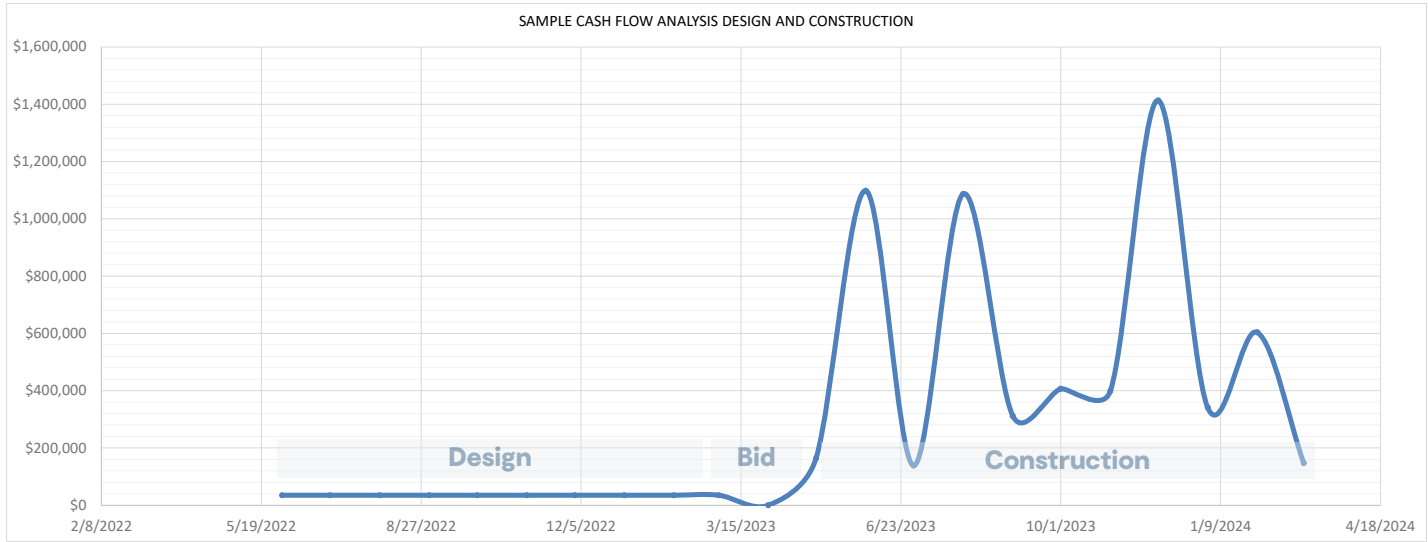


Figure 6: Sample Cash Flow Analysis – Design and Construction

Table 2: Preliminary Cost Estimate

Project:	Coastal Zone 1-2 and Zone 2-4 Pump Station Rehabilitation											
Client:	IRWD											
Location:	Newport, CA											
NO.	DESCRIPTION	QUANTITY	UNIT	UNIT COST	UNIT LABOR	UNIT LABOR COST	MATERIAL SUBTOTAL	MATERIAL TOTAL	LABOR SUBTOTAL	MATERIAL & INSTALLATION SUBTOTAL	MATERIAL & INSTALLATION TOTAL	
1	Division 01 - General Requirements											
2	See General Condition		LS									
3	Total											
4	Division 02 - Site Work											
5	Site Clearing		LS									
6	General Demolition		LS									
7	Site Subgrade Preparation		CY									
8	Shoring		SF									
9	Excavation		CY									
10	Soil Disposal		CY									
11	Total											
12	Division 03 - Concrete											
13	Pre-cast Valut for Surge Tank		CY									
14	Misc concrete		CY									
15	Total											
16	Division 04 - Masonry											
17	Not Used		SF									
18	Total											
19	Division 05 - Metals											
20	Pipe support		LS									
21	Hatches		SF									
22	Misc metal (ladder, handrail, etc)		LS									
23	Total											
24	Division 08 - Openings											
25	Wall penetration		LS									
26	Misc penetration		LS									
27	Total											
28	Division 09 - Finishes											
29	Painting and Coating		LS									
30	Total											
31	Division 10 - Specialties											
32	Identification Device		LS									
33	Signage		LS									
34	Total											
35	Division 11 - Equipment											
36	Water pumps		EA									
37	Surge Tank		EA									
38	Misc Equipment		LS									
39	Total											
40	Division 12 - Furnishings											
41	Not Used		LS									
42	Total											
43	Division 13 - Special Construction											
44	Pressure Transmitter		EA									
45	Pressure gauge		EA									
46	Pressure switch		EA									
47	Misc instrumentation		LS									
48	Pump Station SCADA and programming (master panel, PLC, HMI, LCU)		LS									
49	Pump Station HVAC SCADA and programming		LS									
50	Total											
51	Division 14 - Conveying Equipment											
52	Not Used		EA									
53												
54	Division 15 - Mechanical											
55	Pump Station fire distingguisher		EA									
56	Pump Station plumbing		LS									
57	Pump Station HVAC		LS									
58	Swing check valves		EA									
59	Ductile iron pipe		LF									
60	Stainless Steel pipe 316		LF									
61	Steel pipe (CML&C)		LF									
62	PVC piping		LF									
63	Pipe Fittings		LS									
64	Misc Valves and Piping		LS									
65	Total											
66	Division 16 - Electrical											
67	Electrical (MCC, Control Panel, Service Metering, Conduit/Wiring, Lighting, Grounding, VFD/Soft Starter, etc)		LS									
68	Total											
69	Construction Total											
70	Contingency		25%									
71										Subtotal 1		
72	Mobilization and Insurance (Percentage of Subtotal 1)		5%									
73										Subtotal 2		
74	General Conditions (Percentage of Subtotal 2)		9%									
75										Subtotal 3		
76	Contractor Profit (Percentage of Subtotal 3)		15%									
77										Subtotal 4		
78	Escalation to Mid-Point of Construction 2023 (Percentage of Subtotal 4)		3%									
79										Subtotal 5		

Project Management and QA/QC

Effective project management begins with effective communication between GHD's Project Manager, the GHD Team and IRWD staff.

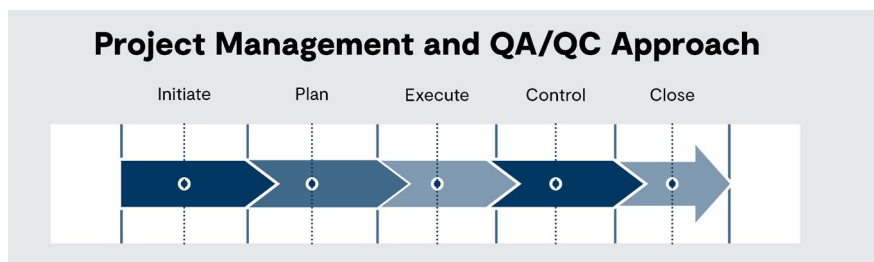


Figure 7: Successful project delivery is at the core of GHD's Project Management and QA/QC approach

GHD has formal standardized project management procedures and protocol in place to effectively manage all of our projects. Ulysses Fandino will provide overall contract management and maintain effective communications with IRWD's project staff throughout the duration of the project. Within the first five days of the contract award, GHD will prepare a Project Management Plan (PMP), which will include a detailed work plan that outlines our approach, schedule and identified deliverables, our Project Quality (QA/QC) Plan, and other pertinent information for the project team members. The PMP is distributed to the project team and IRWD staff.

Scope, Schedule, and Cost Management

Scope management begins with a detailed Work Breakdown Structure (WBS) that includes clearly defined deliverables, responsibilities, schedules, budgets, assumptions, and constraints. GHD's Project Manager, Ulysses Fandino, will act to prevent scope creep from all sources (internal and external). Should the need for scope change be identified, GHD will immediately notify IRWD's Project Manager and follow the change management protocol developed in the PMP. Scope impacts will be captured during regular progress meetings and documented in meeting notes and the Design Issues Log. The preparation and maintenance of a comprehensive schedule, consistent with the WBS, allows IRWD and the GHD Project Team to plan and monitor progress. A Critical Path Method (CPM) based schedule using Microsoft Project will include milestones, submittal preparation, in-house Quality Control reviews, and IRWD reviews. GHD's management team will review and update the project status in the detailed schedule on a bi-weekly basis to make certain that critical path activities are maintained on schedule. Monthly updates will also be prepared, analyzed, and incorporated into a monthly progress report.

Any potential risks to the schedule will be identified and added to the Risk Management Log to track and manage. The budget procedures, reports and the baseline budget fundamental to the management of the costs and will be included in the PMP. Earned value will be determined throughout the project based on physical percent complete at the activity level of the project schedule within the WBS established in the PMP. Ulysses will

review the progress of the project along with the earned value measurements to detect issues early and take corrective actions to reduce any variances.

This review will also help ensure that the billing does not exceed the estimated fee in the PMP for services rendered to date and that our fee is properly tracked with the progress of work.

Project Status Reporting

GHD will prepare monthly progress reports at the same time as monthly invoices to provide a clear, transparent summary of the project scope, budget, and schedule status. Activities required for the preparation of the Monthly Progress Report will include:

- Compile and analyze actual project expenditures
- Evaluate project progress using Microsoft Project by estimating the percent complete and earned value for each task
- Update project schedule and discuss status of critical path activities
- Identify potential risks to the project and proposed mitigation plans or schedule/cost impacts
- Update project logs tracking decisions, actions, and design issues

Quality Assurance/Quality Control

GHD's Quality Assurance/Quality Control (QA/QC) process is an ongoing activity throughout the project under the direction of the Project Manager, Ulysses Fandino, and the Quality Control Manager, Bill Roberts, with peer reviews being completed for each client submission including PDR, 50%, 90%, 100% and Final Design submittals. This process minimizes construction changes and project risks for GHD projects and clients.



The QA/QC plan will be submitted as part of the PMP and will comply with our mandatory peer reviews under our ISO 9001:2015 Quality System program. It will identify and schedule the QA/QC milestones for all project deliverables and will provide a series of project deliverable checks and reviews that will be completed by qualified and experienced senior personnel. A flow chart that delineates all of the major components of our QA/QC plan is provided in [Figure 7](#).

Typically, the QA/QC process is performed at two levels for the GHD Team. The first is through an independent technical review, consisting of an independent quality control check coordinated by Bill Roberts. This review is conducted at important stages of each project to review the technical direction of the project and to give input to criteria development and the evaluation of alternatives.

The second level of quality assurance is the detailed technical coordination review; performed by the discipline based Technical Leads at key submittal stages. These Technical Leads provide an essential role to the project as experts in their field. Their reviews will ensure clarity,

accuracy, completeness, constructability, consistency, and safety of the design, with an objective of identifying errors, omissions, and conflicts.

Proof of quality reviews for each design deliverable will be performed by the Technical Leads based on their respective discipline. Generally, the Quality Control Manager is responsible to review overall contents of the deliverable and consolidate discipline-based reviews. The following procedures are required for each discipline review comment:

- All comments must be categorized as minor, major, or preferential change, and implemented in accordance with the detailed review instructions.
- Major changes or changes influencing other disciplines must be itemized in a separate memorandum to the Project Manager.
- Minor changes must be marked directly on the check set in red ink.

Staffing Tasks Efficiently and Completing Projects On Time and within the Allocated Budget

GHD's approach to staffing tasks efficiently and completing projects on time and within the allocated budget is based upon developing a tailored solution given the conditions, opportunities, and constraints of the project. GHD offers outstanding resources to support the needs of our clients.

We are familiar with the project's goals, challenges, and opportunities, and can efficiently start project work on day one. We have assembled a comprehensive and talented group of specialists specifically chosen to meet the

project goal. GHD's Project Manager, Ulysses Fandino, will proactively manage the engineering and design tasks to stay on time and budget.

Ulysses will work with the design team to identify design gaps and resolution of potential constructability issues. Early agreement with IRWD staff on the content and the level of details for our deliverables would also simplify their reviews by IRWD and our QC staff.

Design Kickoff Meeting and Early Engagement of IRWD Engineering and Operation staff

Shortly after receiving Notice of Award, we will convene the Design Kickoff meeting to discuss the scope of work and project objectives with the project team. Since the initial parts of the project require significant involvement from IRWD's operations and maintenance staff to provide site access, insight to the existing pump station conditions, and schedule for field investigations, we recommend they be represented at this initial meeting.

Ulysses will lead the GHD team on briefing IRWD about the project and our initial plan and schedule, and gaining IRWD's concurrence on the project objectives and overall direction of the project. IRWD's O&M input will be critical to understand the existing problems that are experienced at the pump stations, and to begin the process of coordinating investigatory work at the facility. Key areas of operations for discussion at the design kickoff include general overview of concerns from operations perspective, pump and electrical system replacement, sequence of operation, system hydraulics, surge analysis and mitigation, etc. The future Surge Tank Workshop meeting will also be scheduled at the Design Kickoff.

Scope of Work

Task 1 – Project Management

We will conduct project management activities to ensure adherence to scope, schedule, and budget; promote efficient communication between IRWD and others as required; and implement an effective QA/QC program.

A. Meetings: Organize, attend, and conduct meetings as required. We will prepare and submit meeting agendas for IRWD review and concurrence at least five days prior to the meeting. We will submit meeting minutes to IRWD within one week after each meeting. We will provide meeting minutes following each meeting and maintain an action and decision log during design. For all design presentation meetings, the meeting will occur within two days following the submittal. For budgeting purposes, we will budget for the meetings listed in the table below at a minimum.

B. Quality Assurance/Quality Control (QA/QC): We will develop and implement proven QA/QC measures throughout the project to ensure ongoing and consistent quality control throughout all project phases for the successful project delivery by the GHD team. We will prepare and provide to IRWD our Project Management Plan (PMP) that contains our Work Plan, Project Quality (QA/QC) Plan, Change Management Plan, Design Issues Log, and Risk Management Log. We will also prepare our Project Status Reports monthly at the same time as our monthly invoices.

Table 3: *Project Meetings*

Meeting/Workshop	Description
Design Kickoff	One (1) one-hour meeting
Preliminary Design Site Visit	One (1) two-hour field visit
Surge Tank Workshop	One (1) one-hour meeting
Present the Draft Preliminary Design Report	One (1) two-hour meeting
Present the 50% design	One (1) two-hour meeting
Present the 90% design. Discuss significant IRWD comments, and discuss how the comments were addressed	One (1) one-hour meeting
Present the 100% design. Discuss significant IRWD comments, and discuss how the comments were addressed	One (1) one-hour meeting

Task 2 – Preliminary Design Report

The GHD Team will prepare a preliminary draft report (PDR) presenting the conceptual plan for all improvements. As a minimum, the report will address the following:

A. Utility Search: We will perform utility research to locate utilities or other physical features including all IRWD utilities and any other utilities owned by other agencies at each site. Utility research will include completing a desktop evaluation of available record drawings. We will determine the estimated number of potholes required for final design.

B. Survey: We will retain the services of our surveying subconsultant, Calvada, to complete required surveying work. The GHD Team will review the existing record drawings to determine the additional survey work required to complete final design. Calvada will survey the site areas at Coastal Zone 1-2 and 2-4 pump stations, including the above-ground switchgears for each pump station. Calvada will also determine the Caltrans right-of-way lines along Pacific Coast Highway for preparing of the traffic control plans necessary to obtain the permits from City of Newport Beach and Caltrans for the removal of the pumps, the field investigations, and ultimate construction of the pump station improvements.

C. Site Layout: We will prepare an overall site layout that show the pump stations, outdoor electrical equipment, major buried piping, and the surge tank. A site layout will be provided for each surge tank alternative.

D. Surge Tank: Our subconsultant, N2W, will design a surge tank at the Coastal Zone 2-4 Pump Station based on the surge analysis previously performed by IRWD's consultant, Scott Foster, as provided in the RFP. We will lead a one-hour focused meeting with IRWD staff to determine the alternatives used for the analysis in the report. The selected alternative will be included in final design. Analysis will consider both a horizontal tank with air compressor and a vertical bladder tank. Direct burial and placement inside of a vault will also both be considered.

E. Electrical: We will review the electric power available at the site and determine if there is sufficient power at each site to power any new equipment or if any electric power upgrades are required. Provide a preliminary layout showing the location of the new MCC, PLCs, and switchboards for each pump station.

F. Instrumentation: We will review the existing PLC and instrumentation conduits and determine what modifications and new construction will be required for the new equipment, alarms, and signals. They will provide control narratives that explain the methods of operation

for both pump stations and surge tank. Control narratives will include both local and remote operation.

G. Preliminary Geotechnical Analysis: Our subconsultant, NMG Geotechnical (NMG), will perform a preliminary analysis of the soil conditions based on existing geotechnical reports and other publicly available geological information. NMG will review the information to develop a preliminary understanding of the soil conditions for use in the surge tank alternative analysis. NMG will begin development of a geotechnical report for the selected surge tank site during preliminary design so that geotechnical field information may be incorporated into the 50% design submittal.

The preliminary geotechnical design scope of work will include the following subtasks:

- **Project Initiation and Background Review**
Includes geotechnical review of preliminary project information, prior geotechnical reports, and other geotechnical and groundwater data pertaining to the site. We will review and compile the site-specific geotechnical data combined with NMG's significant work experience in Newport Coast. We will develop a geologic model for the area and the CZ 2-4 pump station for the 50% submittal. This task will include site reconnaissance and field mapping to document the existing geotechnical conditions.
- **Preliminary Geotechnical Analysis and Design**
NMG will review preliminary project and design information provided by GHD. The prior data from the borings, laboratory testing, grading and construction will be utilized to develop the geotechnical design parameters and perform preliminary analysis. Geologic cross-sections will be prepared to depict the geologic conditions.
- **Preliminary Geotechnical Report**
A preliminary geotechnical design report will be prepared for the 50% submittal package. The report will provide a summary of the existing geotechnical information and the anticipated geotechnical constraints for the final design phase. The report will include a geotechnical map and cross-sections to present the compiled data.

H. Condition Assessment: GHD's corrosion engineers will perform a condition assessment of the interior surface of the pump cans. IRWD will remove the pumps and dewater the cans as required for entry. Results of the assessment will be documented in the report. The assessment will include structural recommendation for concrete rehabilitation. GHD's recommendations will be implemented during final design.

I. Right-of-Way/Easements: We will identify all easements required for work occurring off IRWD property. We will provide an AutoCAD drawing of the site to the IRWD Right-of-Way agent who will prepare the easement documents.

J. Permitting and Agency Coordination: We will identify all permits and their controlling agencies required during the construction phase, including but not limited to the City of Newport Beach, Caltrans, County of Orange, Orange County Fire Authority (OCFA), and Air Quality Management District (AQMD). We will prepare applications and secure permits with appropriate agencies. IRWD will reimburse GHD for actual permit

fees without surcharge. Agencies typically approve the final permits upon completion of the final design construction plans and specifications.

K. California Environmental Quality Act (CEQA)

Documentation: Per the Q&A Comment Log of the RFP, CEQA documentation assistance will not be required during preliminary design.

L. Construction Schedule: We will prepare an initial preliminary construction schedule for the project using Microsoft Project.

M. Preliminary Engineer's Estimate: Knowing the importance of estimating construction budgets, GHD will appropriately prepare an engineer's cost estimate using the guidelines established by the American Association for the Advancement of Cost Engineering (AACE) for the development of Opinion of Probable Construction Costs (OPCC). GHD will utilize an AACE Class 3 guideline for the Preliminary Design Report which stipulates an accuracy range between -15% to +20% and a typical contingency of 5% to 20%.

N. Pump Removal Traffic Control Drawings and

Permitting: GHD's traffic control subconsultant, Traffic Control Engineering (TCE), will provide traffic control drawings (plans) for pump removal at the Coastal Zone 1-2 and Coastal Zone 2-4 Pump Stations within 3 weeks of the Notice of Award. We will immediately coordinate development of the traffic control plans with IRWD's Contractor (SS Mechanical), the City of Newport Beach, and Caltrans. A Caltrans encroachment permit will also be required due to Coastal Zone 1-2's proximity to Pacific Coast Highway. Coordination with the City of Newport Beach and Caltrans will include completing and submitting the respective permit applications, submitting traffic control plans, and addressing review comments. IRWD will reimburse GHD for actual permit fees without surcharge.

Upon Notice of Award, TCE's traffic engineers will appropriately perform a field review to determine the existing street system, driveways that may be affected, and existing traffic conditions. TCE will develop traffic control strategies and coordinate with GHD, City of Newport Beach, and Caltrans, to determine the most cost-effective plan. Due to a rigger crane to be used by SS Mechanical and the crane outriggers extended into the street lanes, traffic control plans are anticipated along Newport Coast Drive for the impact to the north-bound vehicle lanes (curb and middle) and bike lane at CZ 1-2 pump station; and the north-bound curb and middle lanes, bike lane and the Viewpoint parking lot driveway at CZ 2-4 pump station. Traffic control plans are anticipated along Pacific Coast Highway for the impact to the west- and east-bound lanes turning northerly into Newport Coast Drive.

TCE will prepare engineered traffic control plans consistent with the City's and Caltrans' standards including signing, legends, and other construction detour standards and ready for submission to the City and Caltrans for their respective reviews and approvals.

For this task, we anticipate to coordinate and conduct two (2) meetings with the City of Newport Beach and Caltrans. We will perform these additional meetings similar to our scope in Task 1A.

O. Preliminary Design Report: We will prepare a draft PDR incorporating the results of Tasks 2A through 2N and present findings and recommendations at a submittal meeting. The PDR will include the updated list

of proposed design plan sheets. IRWD comments will be incorporated into a final PDR and submitted to IRWD. The PDR will serve as the basis for final design.

Task 3 – Final Design

GHD will perform the following Final Design task items below for the preparation of Contract Documents that include construction specifications (Project Manual), construction plans, traffic control plans, a construction cost estimate, and a construction schedule.

A. Project Manual: We will prepare a Project Manual in standard IRWD format for the Contract Documents. IRWD's front end documents will be utilized, and we will assess IRWD's documents to determine any needed supplemental special provisions that should be added to comply with IRWD's general provisions and front-end requirements. The Project Manual will describe the allowable shutdown durations and sequencing associated with any connections and tie-ins to existing IRWD facilities. The Project Manual will also include the IRWD General Technical Specifications, modifications thereto, and any project specific technical specifications.

B. Construction Plans: We will prepare detailed construction drawings for each set of Contract Documents in the latest version of AutoCAD and using NCS V4.0 layering standards, on 24-inch x 36-inch sheets utilizing IRWD's standard border template. Separate sheets with sheet index/location map/legend, general notes, index map, construction notes, phasing, and detail connections will be included. Construction notes will be used (callouts on the plans are not allowed) on all construction drawings. Existing IRWD utilities will be identified on the plan view by as-built plan set number with the pipeline material and IRWD pressure zone labeled. The index map will include sheet legend, final alignment, valve locations, surrounding streets, and significant project site locations. Construction plans will be prepared using the NAVD 88 and NAD 83 survey standards.

Drawing List: Construction plans will include plan and profile sheet(s), pipeline connection details, and all details necessary for the construction of the pump station rehabilitation improvements. **Table 4**, at the end of this section, is our drawing list that is anticipated for the project.

Traffic Control Plans: GHD's traffic control subconsultant, TCE, will define the Traffic Control necessary for the construction of the pump station improvements and will design the engineered traffic control plans accordingly. Traffic control plans are anticipated along Newport Coast Drive for the impact to the north-bound curb and middle lanes and bike lane at CZ 1-2 pump station; curb and middle lanes, bike lane, and Viewpoint parking lot driveway at CZ 2-4 pump station, and south-bound curb and bike lanes at the CZ 2-4 Switchgear pad. Traffic control plans are anticipated along Pacific Coast Highway for the impact to the west- and east-bound lanes turning northerly into Newport Coast Drive.

C. Geotechnical Report: Our subconsultant, NMG Geotechnical, will conduct a geotechnical investigation for the selected surge tank site at CZ 2-4 pump station. Investigation will include two (2) borings to determine the subsurface conditions. The findings of the investigation will be documented in a geotechnical report. At minimum, the report will include a summary of the preliminary findings, a site overview, description of the subsurface and geological features, interpretation of collected field data, engineering recommendations for design and construction, and a copy of the boring logs. The geotechnical report will be included in the Project Manual as an appendix.

The final design geotechnical scope of work will include the following subtasks:

- **Initiation for Field Exploration and Permitting**
Includes site reconnaissance to mark boring locations and coordination with DigAlert for utility clearance. NMG will submit for the required permits from the City and County, as needed.
- **Geotechnical Field Exploration**
Drilling, sampling and logging of two hollow-stem auger borings, 15 to 30 feet deep. Undisturbed soil samples will be obtained from the borings at 2.5- to 5-foot intervals utilizing Modified California sampling methods, and bulk samples will be obtained from the near-surface. The borings will be backfilled with soil cuttings and tamped for compaction. Excess soil cuttings will be spread thinly across the site. We anticipate that the field work will be completed in one-half day. Assessment of contaminated soils or other environmental issues are not a part of our services.
- **Laboratory Testing**
Laboratory testing of selected soil samples for in-place moisture and density, general soil classification (grain size), including hydrometer and Atterberg limits, direct shear, consolidation, sand equivalent, and maximum density and optimum moisture content to determine relative compaction. Corrosivity testing will also be performed, including pH, resistivity, chloride, and sulfate.
- **Plan Review and Geotechnical Analysis**
NMG will coordinate with GHD to review the surge tank design plan and other related improvements. Data analysis and review will include preparation of boring logs, evaluation of laboratory test results, soil and groundwater conditions, lateral earth pressure, evaluation of the adjacent slope, slope stability related to trench excavation and temporary shoring, trench backfill and compaction requirements, pavement section thickness, and preparation of remedial recommendations, as warranted by the findings and proposed project.

Our recommendations will be provided in accordance with standard IRWD requirements and Greenbook standards and specifications for design and construction.

- **Final Report Preparation**

We will prepare a final report presenting our geotechnical findings, conclusions and recommendations for project design and construction. The geotechnical map data will be presented on base mapping files.

D. Pothole Investigation: GHD's potholing subconsultant, Underground Solutions (USI), will perform potholing services via vacuum excavation methods for ten (10) potholes, per the estimated number of potholes in the RFP. USI's potholing scope includes five (5) potholes ranging from 0 feet to 6 feet depth and five (5) potholes ranging from 6 feet to 10 feet depth. USI will prepare a "Subsurface Utility Report" with the pothole data, photos, and locations map.

USI will repair the existing asphalt pavement with hot-patch base pavement. It is anticipated traffic control will be conducted in accordance with the WATCH Manual based on experience from the GHD team.

Before the potholes are backfilled and hot-patched, Calvada will survey the locations of the exposed potholes for up to four (4) potholes per day for a total of three (3) days. The survey elevations will be tied to the existing topographic survey and site layout exhibits from the PDR. After the potholes are backfilled and hot-patched, USI will mark each location with PK nails and paint or with stake for any future survey.

If additional potholes are needed, they will be invoiced at the proposed unit price.

E. Project Schedule: We will maintain and consistently update the project schedule, which will include a detailed schedule for both design and construction activities. The schedule will be updated to include all critical factors impacting the project schedule including implementation, permitting, and coordination activities to ensure that the project is completed in accordance with the proposed schedule. We will continue to use Microsoft Project to update the project schedule.

F. Opinion of Probable Construction Cost: We will prepare a detailed and itemized opinion of probable construction cost (OPCC) for the proposed facilities, which will be updated and submitted with each of the design deliverables (50%, 90%, 100% and Final). The OPCC will be in the form of the Schedule of Work as included in the Bid Documents section of the Project Manual. We will provide the OPCC utilizing AACE guidelines similar to our services identified in Task 2M. However, based upon the advanced stage of the project in the Final Design phase, the AACE classification will be advanced accordingly. The table below summarizes GHD's anticipated level of accuracy and associated contingencies.

Submittal	AACE Class	Accuracy Range	Typical Contingency
50%	2	-10% to +15%	0% to 10%
90%	2	-10% to +15%	0% to 10%
100%	1*	+/- 5%	0% to 5%
Final Design	1*	+/- 5%	0% to 5%

**Class 1 estimates are reserved for actual contractor proposals from finalized bidding documents and addenda.*

G. Design Deliverables: GHD has adopted the detailed breakout of the 50%, 90%, 100% and Final Design Deliverables for this task as provided in the scope of work, and GHD has replicated the same task structure in the preliminary project schedule ([C. Schedule](#)).

H. California Environmental Quality Act (CEQA)

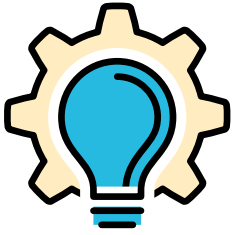
Documentation: This proposed project is subject to CEQA, and IRWD will prepare and file the CEQA environmental document. We will provide IRWD with data regarding construction activities that will impact the environment for IRWD to complete and file the final CEQA document. We have budgeted \$4,000 for this task as directed in the RFP.

I. Addenda Preparation and Pre-Bid Meeting: We will assist IRWD with providing information and clarification of bid documents to prospective bidders. This will include the preparation of up to three (3) addenda including revisions to the design plans and specifications and assistance with addressing bidder questions. The scope of work for this task will include the following subtasks:

- **Plan Revisions (3 Addenda):** For this task, we have budgeted sixteen (16) hours of appropriate staff time for plan revisions to the construction drawings.
- **Specification Revisions (3 Addenda):** For this task, we have budgeted sixteen (16) hours of appropriate staff time for revisions or additions to the project specifications.
- **Bidder Questions:** For this task, we have budgeted eight (8) hours of appropriate staff time to address and respond to bidder questions.
- **Pre-Bid Meeting:** During the bidding period, we will attend a two-hour pre-bid meeting. This will include a site visit with potential bidding contractors. IRWD will lead the pre-bid meeting. We have budgeted sixteen (16) hours of appropriate staff time for this task.

Project Assumptions

- The number of pumps at each pump station will remain unchanged.
- Modifications to pump piping will be limited to those required to accommodate changes for the new pumps, new check valve, and new surge tank.
- No changes (retrofits) to the existing pump station vaults or access hatches will be performed.
- Existing conduits will be reused where feasible.
- Existing MCC, PLC, and switchgear pads will be reused and unchanged.
- The project will not include any community outreach.
- Participation in any residential board meetings is not included in this scope of work.
- Any additional scope items required not specifically listed in GHD's scope of work can be provided as an amendment to the contract.



Innovative Scope Items (Optional)

GHD's team of experts bring an operation and maintenance focus.

We can provide tools such as Standard Operating Procedures and Electronic-Operation and Maintenance Manual to document how the station is designed to operate, enhancing communication across the IRWD organization. ***Through GHD team's experience, we know the repair and rehabilitation solutions that work to develop alternatives that provide lasting value, are cost-effective, and are within budget.*** We would be pleased to perform these optional items upon request by the District and mutual agreement and fee of the additional work.

Standard Operating Procedures

GHD can prepare standard operation procedures (SOP) to incorporate control descriptions and PLC programming.

Electronic-Operation and Maintenance Manual (EOM)

Documenting O&M requirements is a significant tool to establishing asset durability, which results in the most cost-effective and lowest life-cycle cost facility achievable. The GHD team brings unparalleled asset management skills and has documented these durability requirements for many projects. Establishing the Contractor's performance specification based on asset life and target life-cycle cost significantly reduces project risks associated with early equipment failures and unexpected maintenance costs.

3D Laser Scan

GHD can provide reality capture services for the existing pump station vaults. The vaults will be scanned by high fidelity LiDAR which will be translated into a Revit model. That Revit model would not only serve as the basis for the pump replacement design but will also function as an asset management model once the project is complete. This asset management model will allow IRWD to track each assets' maintenance schedule and planned end of life, allowing IRWD to procure proper parts and funding well in advance of the actual work.

Table 4: GHD's proposed Drawing List

Sheet	Sheet No.	Drawing Title
G-1	1	Title Sheet
G-2	2	Sheet Index, Location Map, Legend, and Survey Control
G-3	3	General and Contractor Notes
G-4	4	Coastal Zone 1-2 P.S. Overall Site Plan and Staging Plan
G-5	5	Coastal Zone 2-4 P.S. Overall Site Plan and Staging Plan
D-1	6	Coastal Zone 1-2 P.S. Demolition Plan
D-2	7	Coastal Zone 1-2 P.S. Demolition Details and Photos I
D-3	8	Coastal Zone 1-2 P.S. Demolition Details and Photos II
D-4	9	Coastal Zone 2-4 P.S. Demolition Plan
D-5	10	Coastal Zone 2-4 P.S. Demolition Details and Photos I
D-6	11	Coastal Zone 2-4 P.S. Demolition Details and Photos II
C-1	12	Coastal Zone 1-2 P.S. Civil Plan
C-2	13	Coastal Zone 1-2 P.S. Civil Details
C-3	14	Coastal Zone 2-4 P.S. Civil Plan
C-4	15	Coastal Zone 2-4 P.S. Civil Details
M-1	16	Mechanical Notes and Symbols
M-2	17	Coastal Zone 1-2 P.S. Mechanical Plan
M-3	18	Coastal Zone 1-2 P.S. Mechanical Section and Details
M-4	19	Coastal Zone 2-4 P.S. Mechanical Plan
M-5	20	Coastal Zone 2-4 P.S. Surge Tank Mechanical Plan
M-6	21	Coastal Zone 2-4 P.S. Mechanical Section and Details
H-1	22	Ventilation Notes and Symbols
H-2	23	Coastal Zone 1-2 P.S. Ventilation Plan and Details
H-3	24	Coastal Zone 1-2 P.S. Ventilation Plan and Details
S-1	25	Structural Notes and Symbols
S-2	26	Coastal Zone 2-4 P.S. Surge Tank Vault Foundation and Roof Plan
S-3	27	Coastal Zone 2-4 P.S. Surge Tank Vault Structural Sections
S-4	28	Coastal Zone 2-4 P.S. Surge Tank Vault Structural Details
S-5	29	Coastal Zone 2-4 P.S. Surge Tank Vault Access Stairs & Guardrail Details
E-1	30	Electrical Notes and Symbols
E-2	31	Coastal Zone 1-2 P.S. Electrical Site Plan
E-3	32	Coastal Zone 1-2 P.S. Single Line Diagrams and Load Calculations
E-4	33	Coastal Zone 1-2 P.S. Control Panel Elevations and Diagrams
E-5	34	Coastal Zone 1-2 P.S. Power Plan
E-6	35	Coastal Zone 1-2 P.S. Control Plan
E-7	36	Coastal Zone 1-2 P.S. Lighting and Grounding Plan
E-8	37	Coastal Zone 1-2 P.S. Schematics
E-9	38	Coastal Zone 1-2 P.S. Conduit and Wire Schedules
E-10	39	Coastal Zone 2-4 P.S. Electrical Site Plan

Sheet	Sheet No.	Drawing Title
E-11	40	Coastal Zone 2-4 P.S. Single Line Diagrams and Load Calculations
E-12	41	Coastal Zone 2-4 P.S. Control Panel Elevations and Diagrams
E-13	42	Coastal Zone 2-4 P.S. Power Plan
E-14	43	Coastal Zone 2-4 P.S. Control Plan
E-15	44	Coastal Zone 2-4 P.S. Lighting and Grounding Plan
E-16	45	Coastal Zone 2-4 P.S. Schematics
E-17	46	Coastal Zone 2-4 P.S. Conduit and Wire Schedules
E-18	47	Electrical Details I
E-19	48	Electrical Details II
E-20	49	Coastal Zone 2-4 P.S. PRV Suggested Temporary Power Plan I
E-21	50	Coastal Zone 2-4 P.S. PRV Suggested Temporary Power Single Line Diagram
E-22	51	Coastal Zone 2-4 P.S. PRV Suggested Temporary Power Details I
E-23	52	Coastal Zone 2-4 P.S. PRV Suggested Temporary Power Details II
I-1	53	Instrumentation Notes and Symbols I
I-2	54	Instrumentation Notes and Symbols II
I-3	55	Communication Block Diagram
I-4	56	Coastal Zone 1-2 P.S. P&ID
I-5	57	Coastal Zone 2-4 P.S. P&ID
T-1	58	Traffic Control Plan General Notes and Vicinity Map
T-2	59	Coastal Zone 1-2 P.S. Traffic Control Plan Newport Coast Drive Northbound
T-3	60	Coastal Zone 1-2 P.S. Traffic Control Plan Pacific Coast Highway Eastbound
T-4	61	Coastal Zone 1-2 P.S. Traffic Control Plan Pacific Coast Highway Westbound
T-5	62	Coastal Zone 2-4 P.S. Traffic Control Plan Newport Coast Drive Northbound
T-6	63	Coastal Zone 2-4 P.S. Traffic Control Plan Newport Coast Drive Northbound
T-7	64	Coastal Zone 2-4 P.S. Traffic Control Plan Newport Coast Drive Northbound
T-8	65	Coastal Zone 2-4 P.S. Traffic Control Plan Newport Coast Drive Southbound
T-9	66	Coastal Zone 2-4 P.S. Traffic Control Plan Newport Coast Drive Southbound
T-10	67	Coastal Zone 2-4 P.S. Traffic Control Plan Newport Coast Drive Southbound

B. Team

GHD team members have been specifically selected for their ability to collaborate and to provide innovative and sustainable solutions for IRWD.

GHD presents a team of local, experienced professionals, dedicated to providing a high quality pump station rehabilitation project to increase the overall system operation reliability and redundancy, while preserving the aesthetics of the City of Newport Beach Newport Coast community.

Team Organization

The GHD Team is led by Project Manager, Ulysses Fandino, PE, and Principal-in-Charge, Greg Watanabe, PE from GHD's Irvine office. They are supported by technical specialists whose specific role and responsibilities are outlined in their bios. GHD is fulfilling these roles and responsibilities to deliver a high quality design to IRWD, on time and within the project budget. **Figure 9** is our organization chart.

As Project Manager, Ulysses will assume responsibility for schedule and budget control, overall project management, and the coordination and preparation of deliverables. He brings a proven record of committed client service, and will effectively communicate input from IRWD to the GHD Team to achieve desired results. Ulysses will leverage the team's technical and subconsultant expertise to bring forward innovative solutions for this project.

Subconsultants

GHD has assembled a team with an overall emphasis on efficiency, centrally located in Orange County, and bringing the **"right people"** to the project. The GHD Team is dedicated to completing the project by integrating seamlessly and collaborating closely with IRWD staff. This team of professionals will be dedicated throughout the life of the project and no staffing changes will occur without prior approval from IRWD. **Increased efficiency through project team continuity is just one benefit of our team.**

GHD's role as the Prime is to lead all engineering services, meetings, permitting, bidding support, and to coordinate with our specialty teaming partners. Specific roles and responsibilities of individual GHD Team members were provided in above including our key subconsultants/teamingpartners. We have chosen to supplement our core design team with specialist in mechanical, cost estimating, coatings and corrosion protection, survey, utility locating, traffic engineering, and geotechnical engineering.

GHD's Teaming Partners include:

- N2W – Mechanical, I&C, and Cost Estimating
- NMG Geotechnical, Inc. – Geotechnical Engineering
- Traffic Control Engineering – Traffic Engineering
- Calvada – Surveying
- Underground Solutions Inc. – Utility Locating/Potholing

The GHD Team are committed to provide a successful project to IRWD. Our key staff have a long, successful history of working together. Our experience, capabilities, commitment, and enthusiasm of our Team are key components to a successful project.

Value to IRWD

- Experienced and proven project manager who will oversee the multidisciplinary team
- Dedicated Project Principal and Quality Control Manager whose role it is to deliver high quality submittals on-time and to IRWD's standards
- A team of highly-skilled professionals who will draw upon their relevant experience and expertise to expeditiously produce and deliver this important project for IRWD
- Able to reach out to our 430+ staff in California and/or 4,000+ staff in North America to provide additional specialty personnel if required
- Clear reporting lines of communication within the GHD Team and with IRWD



Figure 8: IRWD's Newport Coast Lift Station – Collaboration in Action. The GHD Team led by Greg Watanabe, our Principal-in-Charge, recently completed the design and construction of the abovenoted pump station. This is also a good example of collaboration with our subconsultants USI and TCE.

**Subconsultant, Role,
DIR**

Value to IRWD



DIR Number: 1000868761
Role: Mechanical/ I&C /
Cost Estimating

- ✓ Full-service environmental engineering consultant and contractor that services the water and wastewater sec
- ✓ Long-term successful collaboration with GHD on several projects, including IEUA RP-1 Intermediate Pump Station Improvements, Oceanside Pure Water Program Lift Station and Pipelines, OMUC Well No. 50 IX Treatment Facility Final Design, and OMUC Well Nos. 37, 39, 50 IX Treatment Facilities, LBWD Sodium Hypochlorite Ammonia Upgrades and WVWD WTP Expansion
- ✓ Work with their clients to adapt a seamless approach to the project forming a relationship that results in quicker assessment and problem solving, while also minimizing expense



NMG
Geotechnical, Inc.

DIR Number: 1000012946
Role: Geotechnical
Engineering

- ✓ Long-term service provider to IRWD - over 25 years - including for on-call services
- ✓ Extensive knowledge of the overall project development and existing geologic conditions of the project area, having provided geotechnical services in the Newport Coast area since the 1980s
- ✓ Project experience includes grading and construction for the IRWD tank site, the roadway and utility infrastructure, the golf courses, numerous residential developments, and the Pelican Hill Resort



TRAFFIC CONTROL ENGINEERING, INC.

DIR Number: 1000018146
Role: Traffic Engineering

- ✓ On-going contracts with IRWD, City of Newport Beach, Orange County Sanitation District, Orange County Water District, Costa Mesa Sanitary District, Long Beach Water Department, City of Chino, Los Angeles County Sanitation District, and LA City Bureau of Engineering for providing as-needed traffic control design.



SURVEYING, INC.

DIR Number: 1000007149
Role: Surveying

- ✓ Performed numerous land surveys within the Northern and Southern California regions
- ✓ Long-term relationship with GHD having collaborated on numerous projects
- ✓ Known for their communication, coordination and quality of deliverables, enabling their clients, like GHD, be on time and on budget with the project



POSITIVEID

DIR Number: 1000007851
Role: Utility Locating /
Potholing

- ✓ Providing locating and vacuum excavation utility potholing services to their clients for almost 20 years
- ✓ Uses air/vacuum excavation for positive utility identification which has minimal impact to the infrastructure and surrounding environment

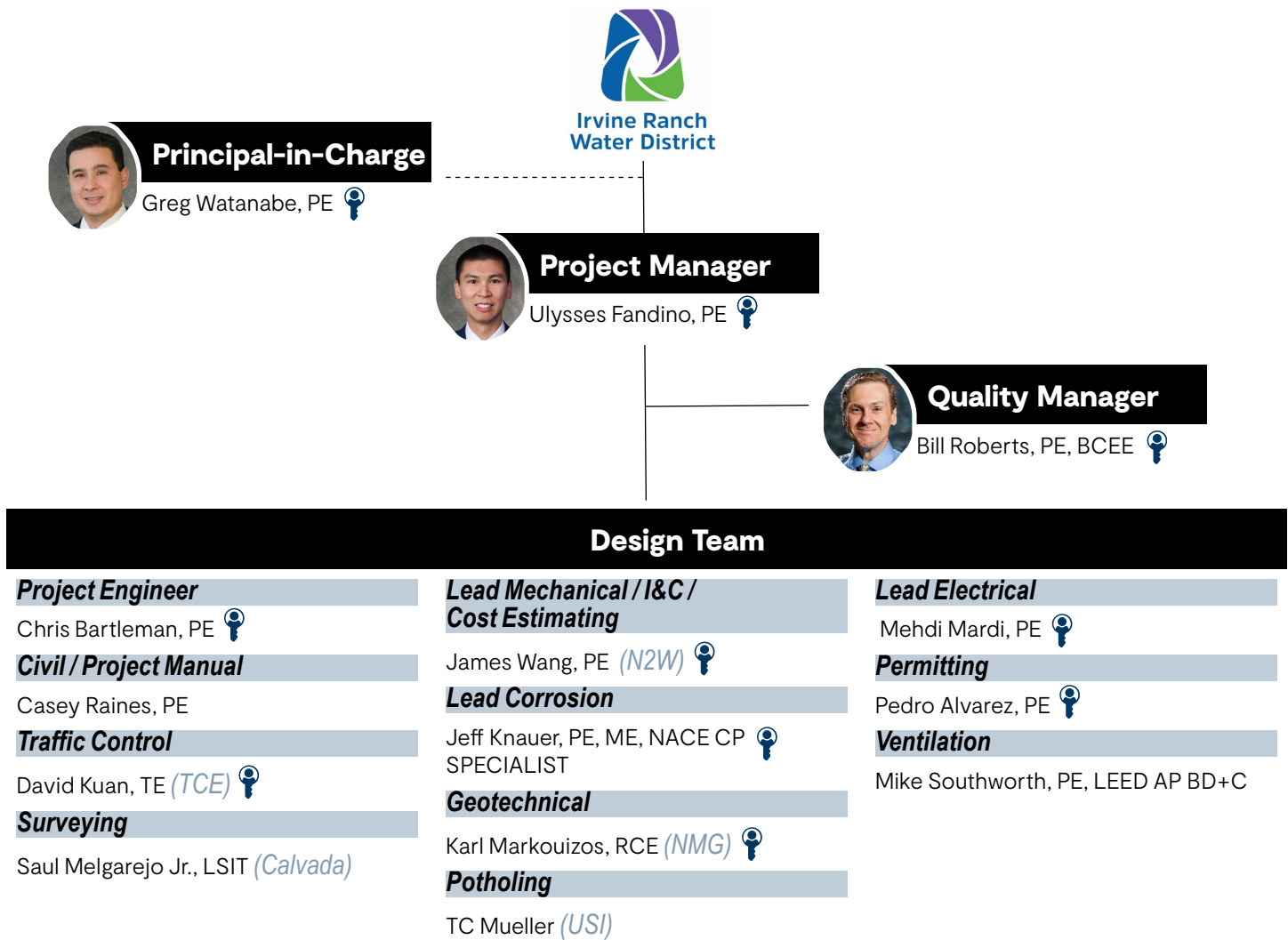


Figure 9: Organization Chart

Proposed Line-of-Communication between IRWD, Prime Team Members & Subconsultants

The GHD Team members lines of communication and reporting authority are shown in our Organizational Chart. Subconsultant/Teaming Partners are also denoted in the Organizational Chart. Ulysses will directly report to IRWD, but all submittals will require internal review/coordination by the Quality Manager, Bill Roberts. Subconsultants will directly report to our Project Manager, Ulysses and collaborate seamlessly as one cohesive project team.

Bios

The GHD Team brings over 200 years of combined experience from our Project Manager, Principal-in-Charge, Technical Leaders and specialty teaming partners. We have assembled a team with local, Southern California experience – and that is primarily located in Southern California. We have provided a brief bio of each key proposed team member and their respective resumes are provided in the Appendix. Each of our proposed key personnel are located in California, are licensed and accredited professionals with experience in the improvement and rehabilitation of pump stations, similar to the Coast Zone 1-2 and Zone 2-4 Pump Station Rehabilitation project.



About Ulysses

- ✓ Extensive project management experience
- ✓ Record of success in rehabilitation design and construction for IRWD
- ✓ Efficiently manages multi-disciplinary teams and subconsultants



About Greg

- ✓ 20 years of experience in designing complex projects
- ✓ Extensive pump station rehabilitation design and construction experience

Leadership & Accountability

The GHD team brings proven experience in delivering projects for IRWD and other agencies, specifically on pump station rehabilitation.

Project Manager

Ulysses Fandino, PE

Ulysses brings more than 20 years of total experience as project manager and project engineer. Throughout his career he has specialized in facilitating capital improvement programs and project management, with an emphasis in the planning, analysis, and design of pipeline systems throughout California. This work entails design and construction for both new and modified facilities including the retrofit and rehabilitation of the IRWD Newport Coast Lift Station and other numerous public utility, municipal, and federal clients throughout the States of California and Arizona. He has demonstrated his ability to effectively communicate input from client staff to diverse design teams to achieve desired results. Ulysses has a proven record of managing multi-disciplinary teams to provide on-time, on-budget deliverables, while providing desired performance, forwarding innovative solutions, and maintaining regulatory compliance.

Principal-in-Charge

Greg Watanabe, PE

Greg leads GHD's pipelines, tunneling, and trenchless business practice in the Western US and has over 20 years of experience in the design and management of complex multi-discipline water/wastewater projects as large as \$1 billion (CapEx). Greg has previously served as Project Principal, Project Manager, or Project Engineer on over two dozen pumping station projects ranging from 600 to 4.3 million gallons per day (GPD) with working pressures exceeding 460 psi. Greg has the unique qualifications to oversee this project and had the ability to combine his technical excellence with his experience as a proven leader as both a consulting engineer and an owner. His owner experience originates from previously managing the engineering department for a California municipality, which included the oversight of a \$90 million capital improvement program.



Years Experience: 27

Bill Roberts, PE, BCEE

Quality Manager

Why Bill?

- ✓ Served as the Quality Manager on more than 55 booster pump station modifications, upgrades, rehabilitation, and replacement projects

Bill offers more than 27 years of planning, designing, and constructing water improvements for municipalities and utilities. He has sealed more than 1,200 engineering documents and served as the Quality Control Manager on more than 55 booster station modifications, upgrades, rehabilitation, and replacement projects. Bill's project experience includes water models, waterlines, wells, disinfection improvements, water facility upgrades and modifications, PRVs, and large diameter meter replacements. Bill is regarded as GHD's regional technical expert in water pumping, storage, and transmission systems. In addition to ensuring technical accuracy, Bill applies his vast experience to identify and correct constructibility, potential change orders, and construction cost concerns during the quality control process.



Years Experience: 18

Chris Bartleman, PE

Project Engineer

Why Chris?

- ✓ Experience delivering complex projects in Southern California
- ✓ Served as project engineer on many complex, high profile projects benefiting several major public works clients

Chris brings 18 years of design, planning, and construction management experience in wastewater treatment and water treatment plants, adsorption treatment facilities for wellheads, water reservoirs, pumping plants, deep gravity sewer, trenchless installations, high pressure transmission pipelines, sewer lift stations, chemical feed and injection, and metered pressure reducing facilities. He also has experience in inspection, construction administration, shop drawing review, and change order negotiations.



Years Experience: 24

James Wang, PE

Lead Mechanical, I&C, Cost Estimating

Why James?

- ✓ Known for delivering innovative and cost-effective solutions
- ✓ Successfully delivered IRWD's California-MWRP Emergency Discharge project

James has civil and environmental engineering experience spanning back to 1997; working as project manager, design manager, design lead, and project engineer. He has completed nearly 100 projects in water and wastewater treatment plant, recycling and desalination facility, bio-solid and bio-gas, pump station and pipeline, hydraulic modeling, and SCADA system. His areas of expertise include: studies, planning, design, cost estimate, construction management, operation and maintenance of treatment plant, water distribution and sewage collection system, water quality testing and modeling, and AutoCAD. James is proficient in innovative and cost-effective design. He is also experienced in electrical, process, and instrumentation, mechanical, structural, and architectural design.



Years Experience: 27

Mehdi Mardi, PE

Lead Electrical

Why Mehdi?

- ✓ Extensive experience in electrical design of water infrastructure
- ✓ Extensive medium- and low-voltage design experience

Mehdi is a professional electrical engineer with over 27 years of experience in electrical and I&C serving various industries and disciplines including municipal water. He has been involved specifically in construction and commissioning for Water and Wastewater treatment facility, pump stations, desalination, industrial gas production, hydropower generation, land field gas, and oil and gas field projects. Additionally, his experience covers medium- and low-voltage motor controls and distribution, as well as control, automation, Supervisory Control and Data Acquisition (SCADA), and instrumentation design.



Years Experience: 22

Jeff Knauer, PE, ME, NACE CP SPECIALIST

Lead Corrosion

Why Jeff?

- ✓ Specializes in condition assessment and corrosion control
- ✓ Subject matter expert in all forms of corrosion assessment and engineering

Jeff has over 22 years of hands-on experience with condition assessment of welded steel pipe and reinforced concrete water and wastewater infrastructure for municipal, private, and federal infrastructure. Jeff has served as the corrosion engineer for condition assessment and rehabilitation projects throughout the Western United States and the Pacific Islands. He is licensed in civil engineering, mechanical engineering, and is a Certified NACE CP Specialist. Jeff also has experience with the design of corrosion control solutions in challenging environments and is an accomplished task leader for large-scale corrosion assessment and rehabilitation projects and provides expert witness services.



Years Experience: 10

Pedro Alvarez, PE

Permitting

Why Pedro?

- ✓ Site/civil engineering services for design, planning, and rehab of water/wastewater/stormwater, infrastructure projects

Pedro is a versatile engineer with 10 years of experience in the design, planning, and rehabilitation of municipal, water, wastewater, stormwater, and infrastructure projects. Pedro is responsible for project engineering tasks that require interdepartmental coordination, utility research, design, and construction support for Capital Improvement Program (CIP) projects. |



Years Experience: 38

David Kuan, TE

Traffic Control

Why David?

- ✓ Unprecedented Knowledge of city, state, federal regulations and a comprehensive understanding of transportation planning, analysis and studies, and traffic control design from previous work as traffic engineer for both the City of Orange and OC San

David brings a unique perspective, having worked for the City of Orange as City Transportation Engineer for nearly 40 years and RWD and City of Newport Beach for 15. He has a keen understanding of formulating and implementing traffic reduction measures for the community and a background in State and Federal funding programs. He provides RWD and City of Newport Beach traffic engineering and transportation expertise with related projects.

David is a subject matter expert in all forms of traffic/transportation engineering including impact analysis, traffic reduction measures, access studies, parking studies, traffic signal coordination, circulation master plan and general plan throughout Southern California.



Years Experience: 33+

Karl Markouizos, RCE

Geotechnical

Why Karl?

- ✓ Extensive experience in field exploration and monitoring, grading and earthwork, slope stability analysis, design of shallow and deep foundations, liquefaction and settlement analysis

Karl has over 33 years of geotechnical experience on numerous public works, residential and commercial projects in Southern California. He has worked with the IRWD, County of Orange, County of Riverside, and other local county and city agencies and utility companies. He has considerable experience with field exploration and monitoring, field and laboratory soil testing, grading and earthwork, slope stability analysis, design of shallow and deep foundations, liquefaction and settlement analysis, structural pavement design, and flood control and utility improvements.

Prior projects include the development of hillside and flatland sites up to 4,000 acres; infrastructure projects have included large buried and above ground tanks, channel improvements, basin construction, and cistern construction. Karl has also provided design support of temporary and permanent shoring for large excavations, retaining walls, bridges and parking structures.

C. Schedule

The GHD team has collaborated to prepare a task-by-task schedule ([Figure 10](#)) in concert with the Scope and Approach presented in this proposal. The schedule, like the plan, is organized to be as sequential as possible, providing for increased project delivery efficiency.

D. Budget

Per the instructions received in the Q&A Comment log, we have submitted our Fee Proposal as a separate PDF file. GHD has prepared a detailed budget proposal including our fee schedule and breakdown of the fee by task. We've also included our standard rates.

E. Conflict of Interest

GHD is committed to IRWD and confirms that personal or organizational conflicts of interest prohibited by law do not exist.

F. Joint Venture

GHD is not proposing any joint venture, but is subcontracting the following firms for this project:

- N2W Engineering — Mechanical/ I&C/ Cost Estimating
- NMG Geotechnical, Inc. — Geotechnical Engineering
- Traffic Control Engineering, Inc. — Traffic Control Engineering
- Underground Solutions Inc.. — Potholing
- Calvada Surveying Inc.. — Surveying

G. Contract

GHD has reviewed the Professional Services Agreement, attached as Exhibit "I" in the RFP, and we take no exception to the Agreement.

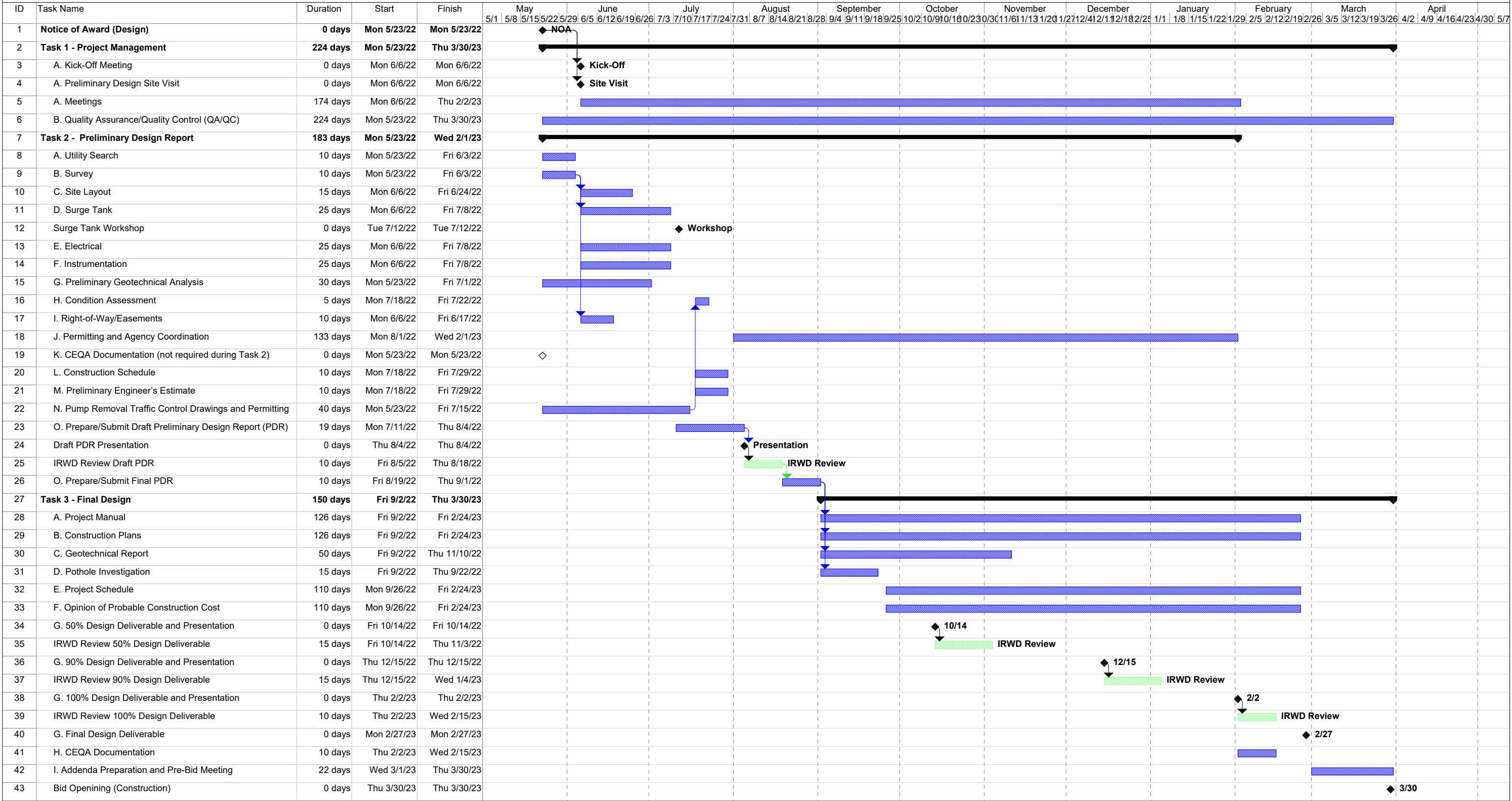
H. Insurance

In Appendix B, GHD has included evidence of our professional liability coverage and worker's compensation.

I. Public Work Requirement

GHD's DIR number is presented in the cover letter of this proposal document. In Section B, we introduce our subconsultants and have included their DIR number in the table.

Irvine Ranch Water District
Coastal Zone 1-2 and 2-4 Pump Station Rehabilitation Project
PROPOSED SCHEDULE



Appendix B

Proof of Insurance



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
11/16/2021

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Willis Towers Watson Northeast, Inc. c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 372305191 USA	CONTACT NAME: Willis Towers Watson Certificate Center PHONE (A/C No. Ext): 1-877-945-7378 FAX (A/C No): 1-888-467-2378 E-MAIL ADDRESS: certificates@willis.com														
INSURED GHD Services Inc. 2055 Niagara Falls Blvd., Suite 3 Niagara Falls, NY 14304	<table border="1"> <thead> <tr> <th data-bbox="820 430 1429 451">INSURER(S) AFFORDING COVERAGE</th> <th data-bbox="1429 430 1572 451">NAIC #</th> </tr> </thead> <tbody> <tr> <td data-bbox="820 451 1429 472">INSURER A: Allied World Assurance Company US Inc</td> <td data-bbox="1429 451 1572 472">19489</td> </tr> <tr> <td data-bbox="820 483 1429 504">INSURER B: Zurich American Insurance Company</td> <td data-bbox="1429 483 1572 504">16535</td> </tr> <tr> <td data-bbox="820 514 1429 535">INSURER C: Beazley Insurance Company Inc</td> <td data-bbox="1429 514 1572 535">37540</td> </tr> <tr> <td data-bbox="820 546 1429 567">INSURER D: Lloyd's Syndicate 2623 (Beazley Furlong Li</td> <td data-bbox="1429 546 1572 567">C2166</td> </tr> <tr> <td data-bbox="820 577 1429 598">INSURER E:</td> <td data-bbox="1429 577 1572 598"></td> </tr> <tr> <td data-bbox="820 609 1429 630">INSURER F:</td> <td data-bbox="1429 609 1572 630"></td> </tr> </tbody> </table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A: Allied World Assurance Company US Inc	19489	INSURER B: Zurich American Insurance Company	16535	INSURER C: Beazley Insurance Company Inc	37540	INSURER D: Lloyd's Syndicate 2623 (Beazley Furlong Li	C2166	INSURER E:		INSURER F:	
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INSURER C: Beazley Insurance Company Inc	37540														
INSURER D: Lloyd's Syndicate 2623 (Beazley Furlong Li	C2166														
INSURER E:															
INSURER F:															

COVERAGES

CERTIFICATE NUMBER: W22873157

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSD WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	☒ COMMERCIAL GENERAL LIABILITY		0310-4497	12/01/2021	12/01/2022	EACH OCCURRENCE \$ 1,000,000
	☐ CLAIMS-MADE ☒ OCCUR					DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000
						MED EXP (Any one person) \$ 25,000
	GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PRO-JECT ☐ LOC OTHER:					PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
B	AUTOMOBILE LIABILITY		BAP 3757423-06	07/01/2021	07/01/2022	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000
	☒ ANY AUTO					BODILY INJURY (Per person) \$
	☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS					BODILY INJURY (Per accident) \$
	☒ HIRED AUTOS ONLY ☒ NON-OWNED AUTOS ONLY Coll Ded: \$500 Comp Ded: \$250					PROPERTY DAMAGE (Per accident) \$
A	☒ UMBRELLA LIAB ☒ OCCUR		0310-4498	12/01/2021	12/01/2022	Hired Physical Damag \$ 100000
	☐ EXCESS LIAB ☐ CLAIMS-MADE					EACH OCCURRENCE \$ 1,000,000
	DED ☐ RETENTION \$					AGGREGATE \$ 1,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY		WC 0380936-06	07/01/2021	07/01/2022	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	Y / N ☒ No				☒ PER STATUTE ☐ OTH-ER
	If yes, describe under DESCRIPTION OF OPERATIONS below	N / A				E.L. EACH ACCIDENT \$ 1,000,000
						E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
C	Professional Liability		V29594200301	12/01/2021	12/01/2022	Each Claim: \$2,000,000 Aggregate: \$2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

SEE ATTACHED

CERTIFICATE HOLDER

CANCELLATION

To Whom It May Concern-GHD Services Inc.	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE 

AGENCY CUSTOMER ID: _____

LOC #: _____



ADDITIONAL REMARKS SCHEDULE

Page 2 of 2

AGENCY Willis Towers Watson Northeast, Inc.		NAMED INSURED GHD Services Inc. 2055 Niagara Falls Blvd., Suite 3 Niagara Falls, NY 14304	
POLICY NUMBER See Page 1		EFFECTIVE DATE: See Page 1	
CARRIER See Page 1	NAIC CODE See Page 1		

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 FORM TITLE: Certificate of Liability Insurance

Excess Liability follows form over General Liability, Auto Liability and Employers Liability policies.

INSURER AFFORDING COVERAGE: Lloyd's Syndicate 2623 (Beazley Furlong Limited)
 POLICY NUMBER: W29657200301 EFF DATE: 12/01/2021 EXP DATE: 12/01/2022

NAIC#: C2166

TYPE OF INSURANCE:	LIMIT DESCRIPTION:	LIMIT AMOUNT:
Pollution Liability	Each Occurrence:	\$2,000,000
	Aggregate:	\$2,000,000

July 1, 2021

RE: GHD Services Inc.

Workers' Compensation Experience Modification (EMR)

To Whom It May Concern:

Effective July, 1 2021 – below is the five (5) year experience modification ratings (EMR) for the GHD Services Inc. workers' compensation insurance program:

<u>Year</u>	<u>EMR</u>
2021-2022	.77
2020-2021	.72
2019-2020	.71
2018-2019	.61
2017-2018	.72

Please let me know if you have any questions or concerns.

Sincerely,



Jeffrey Bakowski, CRIS
Associate Director
Willis Towers Watson Northeast, Inc
75 Arlington Street | Floor 10 | Boston, MA 02116
T 800-843-5404 x45311 | D 860-756-7311 | F 860-278-5776

→ Fee Proposal

320 Goddard Way, Suite 200
Irvine, CA 92618
USA
www.ghd.com



June 27, 2022

Malcolm Cortez, PE
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612

Re: Revised Fee Proposal for Engineering Design Services for the Coastal Zone 1-2 and Zone 2-4 Pump Station Rehabilitation Project (RFP No. PR 11912)

Dear Mr. Cortez and Members of the Selection Panel:

Enclosed for your consideration is GHD's fee proposal to provide engineering design services for the Coastal Zone 1-2 and Zone 2-4 Pump Station Rehabilitation Project. We are very excited about this project and look forward to working with IRWD on this important endeavor. Our fee proposal outlines the project tasks, team member hours, hourly rates, subconsultant costs, and reimbursable expenses associated with our approach and scope to accomplish IRWD's goals. GHD will bill these services monthly at a "time and materials" basis with a maximum not-to-exceed amount of \$446,243 as shown in the attached Fee Proposal.

As a professional service provider, GHD is always willing to work with our clients to arrive at a scope of work that meets budget goals. We thank you for your consideration of this proposal. Please feel free to contact myself, or Ulysses Fandino, our Project Manager, with questions regarding our proposal, accompanying fees, and level of effort estimate.

Respectfully Submitted,

A handwritten signature in blue ink, appearing to read "Greg Watanabe".

Greg Watanabe, PE
Principal-in-Charge
562.206.7979
Greg.Watanabe@ghd.com

A handwritten signature in blue ink, appearing to read "Ulysses Fandino".

Ulysses Fandino, PE
Project Manager
949.585.5203
Ulysses.Fandino@ghd.com

→ The Power of Commitment



FEE PROPOSAL for Irvine Ranch Water District
Coastal Zone 1-2 and Zone 2-4 Pump Station Rehabilitation
Revised June 27, 2022

Description		Principal In Charge	QA/QC	Project Manager	Project Engineer	Lead Electrical Engineer	Lead Corrosion Engineer	Civil/ Project Manual	Ventilation	Corrosion Engineer	N2W (Sub) Mechanical / I&C/ Cost Estimating	N2W (Sub) Senior Engineer	N2W (Sub) Staff Engineer	N2W (Sub) CAD Designer	Permitting	Electrical Engineer	Staff Electrical Engineer	CAD Designer	Admin	Total Hours	Labor Total	TCE (Traffic Control)	USI (Potholing)	Calvada (Surveying/RO W)	Subs Markup	Total Subs	Disb.	Total Disb.	Estimated Project Total
		Greg Watanabe	Bill Roberts	Ulysses Fandino	Chris Bartleman	Mehdi Mardi	Jeff Knauer	Casey Raines	Mike Southworth		James Wang				Pedro Alvarez														
		\$284	\$261	\$237	\$219	\$219	\$237	\$237	\$196	\$162	\$242	\$207	\$190	\$155	\$196	\$169	\$169	\$143	\$128										
Task1		4	4	51	10	10	0	0	0	0	10	10	0	0	0	0	0	0	8	107	\$24,156	\$0	\$0	\$0	\$0	\$0	\$172	\$172	\$24,328
Subtask 1.1	Meetings	4	0	32	10	10	0	0	0	0	10	10	0	0	0	0	0	0	0	76	\$17,585	\$0	\$0	\$0	\$0	\$0	\$172	\$172	\$17,757
Subtask 1.2	QA/QC	0	4	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	31	\$6,571	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,571
Task2		2	2	16	50	20	8	12	2	32	20	38	9	0	44	24	4	36	12	331	\$64,972	\$29,000	\$0	\$11,875	\$6,131	\$47,006	\$1,000	\$1,000	\$112,978
Subtask 2.1	Utility Search	0	0	1	2	4	0	2	0	0	2	2	0	0	0	8	0	0	0	21	\$4,274	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,274
Subtask 2.2	Survey	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	\$675	\$0	\$0	\$11,875	\$1,781	\$13,656	\$0	\$0	\$14,331
Subtask 2.3	Site Layout	0	0	0	2	0	0	4	0	0	0	0	0	0	0	0	0	12	0	18	\$3,102	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,102
Subtask 2.5	Electrical	0	0	0	0	4	0	0	0	0	0	0	0	0	0	8	2	0	0	14	\$2,566	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,566
Subtask 2.6	Instrumentation	0	0	0	0	4	0	0	0	0	0	0	0	0	0	8	2	0	0	14	\$2,566	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,566
Subtask 2.8	Condition Assessment	0	0	0	0	0	2	0	0	16	0	0	0	0	0	0	0	0	0	18	\$3,066	\$0	\$0	\$0	\$0	\$0	\$1,000	\$1,000	\$4,066
Subtask 2.9	Right-of-Way/Easements	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	8	0	12	\$2,056	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,056
Subtask 2.10	Permitting and Agency Coordination	0	0	0	8	0	0	0	0	0	0	0	0	0	24	0	0	0	8	40	\$7,480	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,480
Subtask 2.11	Construction Schedule	0	0	2	8	0	0	0	0	0	2	8	0	0	0	0	0	0	0	20	\$4,365	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,365
Subtask 2.12	Preliminary Engineer's Estimate	0	0	2	2	0	0	0	0	0	8	12	9	0	0	0	0	0	0	33	\$7,036	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,036
Subtask 2.13	Pump Removal TC Drawings and Permitting	0	0	2	8	0	0	0	0	0	0	0	0	0	12	0	0	0	2	24	\$4,834	\$29,000	\$0	\$0	\$4,350	\$33,350	\$0	\$0	\$38,184
Subtask 2.14	Preliminary Design Report	2	2	8	16	8	6	4	2	16	8	16	0	0	8	0	0	16	2	114	\$22,952	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$22,952
Task3		4	54	53	136	68	0	52	26	16	61	138	216	78	0	140	220	183	15	1460	\$277,801	\$11,000	\$12,775	\$3,150	\$4,039	\$30,964	\$172	\$172	\$308,937
Subtask 3.1	Project Manual	0	6	6	24	0	0	32	0	0	12	16	16	0	0	0	0	0	4	116	\$25,586	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,586
Subtask 3.2	Construction Plans	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	\$3,648	\$11,000	\$0	\$0	\$1,650	\$12,650	\$0	\$0	\$16,298
Subtask 3.4	Pothole Investigation (10 potholes)	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	8	1	12	\$1,947	\$0	\$12,775	\$3,150	\$2,389	\$18,314	\$0	\$0	\$20,261
Subtask 3.6	Project Schedule	0	0	2	8	0	0	0	0	0	2	8	0	0	0	0	0	0	0	20	\$4,365	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,365
Subtask 3.7	Probable Construction Cost	0	0	2	8	0	0	0	0	0	16	24	0	0	0	0	0	0	0	50	\$11,058	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$11,058
Subtask 3.8	50% Design Deliverable	1	20	8	24	20	0	8	12	8	8	32	70	27	0	40	80	53	2	413	\$76,725	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$76,725
Subtask 3.9	90% Design Deliverable	1	16	8	16	20	0	6	8	4	6	26	60	27	0	40	60	53	2	353	\$65,021	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$65,021
Subtask 3.10	100% Design Deliverable	1	8	4	8	16	0	4	4	2	6	20	40	16	0	40	40	32	2	243	\$44,647	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$44,647
Subtask 3.11	Final Design Deliverable	1	4	4	8	8	0	2	2	2	4	8	30	8	0	20	40	16	2	159	\$29,211	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$29,211
Subtask 3.12	CEQA Documentation	0	0	3	8	0	0	0	0	0	0	0	0	0	0	0	0	9	2	22	\$4,006	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,006
Subtask 3.13	Plan Revisions (3 Addenda)	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	12	0	16	\$2,610	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,610
Subtask 3.14	Specification Revisions (3 Addenda)	0	0	1	12	0	0	0	0	0	1	2	0	0	0	0	0	0	0	16	\$3,521	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,521
Subtask 3.15	Bidder Questions (8 hours)	0	0	1	3	0	0	0	0	0	2	2	0	0	0	0	0	0	0	8	\$1,791	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,791
Subtask 3.16	Pre-Bid Meeting (1 Meeting)	0	0	4	4	4	0	0	0	0	4	0	0	0	0	0	0	0	0	16	\$3,666	\$0	\$0	\$0	\$0	\$0	\$172	\$172	\$3,838
Total Labor Hours		10	60	120	196	98	8	64	28	48	91	186	225	78	44	164	224	219	35	1898	\$366,929	\$40,000	\$12,775	\$15,025	\$10,170	\$77,970	\$1,344	\$1,344	\$446,243
Estimated Project Total		\$2,840	\$15,660	\$28,440	\$42,924	\$21,462	\$1,896	\$15,168	\$5,488	\$7,776	\$21,977	\$38,502	\$42,694	\$12,110	\$8,624	\$27,716	\$37,856	\$31,317	\$4,480	1898	\$366,929	\$40,000	\$12,775	\$15,025	\$10,170	\$77,970	\$1,344	\$1,344	\$446,243



FY2022 US West Region Fee Schedule *

Finance Class Code Name	Fee Range		
Technical Director	\$ 217.00	-	\$ 315.00
Professional	\$ 127.00	-	\$ 200.00
Design Technician	\$ 169.00	-	\$ 290.00
Drafting/Design	\$ 105.00	-	\$ 153.00
Business Services Manager	\$ 220.00	-	\$ 315.00
Admin Officer	\$ 75.00	-	\$ 243.00
Construction Manager	\$ 245.00	-	\$ 290.00
Engineer/Supervisor	\$ 150.00	-	\$ 217.00
Inspector/Specialist	\$ 80.00	-	\$ 169.00
Operator/Labourer	\$ 95.00	-	\$ 125.00

- 1 Rates are for employees of all GHD companies.
- 2 All travel cost will be invoiced at coach class rates. Lodging and meal expenses will be at cost unless per diem rate is negotiated.
- 3 Reimbursement for direct expenses incurred for proposed services, including sub-consultant services, will be billed at cost plus 15%.
- 4 Reimbursement for vehicles used for proposed services will be at the federally approved mileage rates or at a negotiated monthly rate.
- 5 Overtime for non-exempt employees will be charged at 1.5 times the hourly billing rate.
- 6 If prevailing wage are applicable, the above billing rates will be adjusted proportionate to the increase in labor cost.
- 7 The Rate Schedule is subject to change annually (July 1st each year).

Note: This page is intentionally left blank.