ADDENDUM NO. 1
BID DOCUMENT CLARIFICATION AND RESPONSE TO CONTRACTOR'S QUESTIONS
DATE: January 30, 2025

OWNER: Marina Coast Water District
PROJECT NAME: Monitoring Wells Construction Project
PROJECT NUMBER: GA-2402

"Addendum Acknowledgment Receipt Shall Become a Part of the Contract Documents."

GENERAL:
This Addendum forms a part of the Contract Documents and modifies the Bid Documents as noted herewith. Acknowledgement of receipt of this addendum in the spaces provided in the Proposal is required. Failure to acknowledge an addendum may subject the bidder to disqualification.

MODIFICATIONS TO THE BID DOCUMENTS:
This addendum amends the bid documents for this project as follows

ADD 1-1. Plan Set Drawings C-1 through C-3. *Replace* with attached Drawings C-1 through C3. ADD 1-1 revisions are clouded.

ADD 1-2. Plan Set Well Design Profiles Figures 1 and 2. *Replace* with attached Well Design Profiles Figures 1 and 2. ADD 1-2 revisions are clouded.

ADD 1-3. Document 00 41 00 Bid Form *Replace* with attached Document 00 41 00 in Attachment 3. Revisions are made within Sections 5.01 and 5.02, as below.

Section 5.01 *Replace* with:

A. Base Bid Items
Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	Mobilization and Demobilization	LS	1		
2	Site Preparation, Clearing and Grubbing (both sites)	LS	1		
3	F Tank Site, Dual Nested Monitoring Well	LS	1		
4	4th Avenue Site, 470 ft Monitoring Well	LS	1		
5	4th Avenue Site, 960 ft Monitoring Well	LS	1		
6	4th Avenue Site, 1,450 ft Monitoring Well	LS	1		
7	Geophysical Logging (by Pacific Surveys) see section 5.03C	LS	1		
Total of All Base Bid Items (in numbers): $					
Total of All Base Bid Items (in words):					

ALW = Allowance, LF = Linear Feet, LS = Lump Sum, SY = Square Yards

B. Additive and Alternative Bid Items

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
A – Additive Bid Items					
A1	Additional Drilling	LF	100		
A2	Additional Well Construction	LF	100		
B – Alternative Bid Items					
B1	Install 3-inch Casing at F Tank Site, Dual Nested Monitoring Well	LS	1		

ALW = Allowance, LF = Linear Feet, LS = Lump Sum, SY = Square Yards

C. Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Section 5.02(B)(4) through (6) *Replace* with:

4. The Total of All Base Bid Items will be used to determine the lowest responsive and responsible bid. The acceptance or rejection of the additive and alternative bid items will not impact bid selection.
5. The addition or deduction shown herein for each additive bid item is the net addition or net deduction that is to be applied to the Total of All Base Bid Items of the undersigned if the bid additions are accepted by the Owner. If the Alternative Bid Item is selected, the Contract Price shall be adjusted by deducting the amount of the replaced Base Bid Item 3 and substituting the amount of the accepted Alternative Bid Item, as bid.
6. The acceptance or rejection of one or more bid alternates will not affect the conditions of this Bid or the price of other accepted bid alternates.

ADD 1-4. Section 02520 *Replace* with Section 02520 as Attachment 4. The section is revised for formatting errors as well as changes to Parts 2.04 and 3.02, as below.

Section 02520 Part 2.04 CONDUCTOR CASING (B) and (C) *Replace* with:

Part 2.04 (B) MATERIAL
The conductor casing shall be mild steel conforming to ASTM A589-89a standard. NSF-61 certification for conductor casing materials is not required.

Part 2.04 (C) DIAMETER
See well profile Figures 1 and 2 for the outside diameter of the conductor casing.

Section 02520 Part 2.05 WELL CASING (A) MATERIAL "… Schedule 40 copper-bearing stee in the vadose zone…" *Replace* with "… Schedule 40 copper-bearing, high-strength low-alloy (HSLA), or stainless steel in the vadose zone…"

Section 02520 Part 3.02 NOISE AND SOUNDWALLS *Replaced* with:

Contractor shall conform to all applicable local noise abatement ordinances, and shall measure and abate noise produced during drilling, well construction, well development, and well testing operations, including mobilization and demobilization.
At the 4th Avenue Site, installation of soundwalls around the worksite will be necessary to limit noise levels to 60 decibels (dB) or lower at the nearest residential property line (City of Marina Municipal Code Section 15.04.055). Contractor shall procure, install, maintain, and remove soundwalls at the worksite, as needed. The Contractor shall perform work within the permitted

work hours of 7 a.m. to 7 p.m. Monday through Saturday, or 10 a.m. to 7 p.m. during Sundays or Holidays. The permitted hours can be extended to 8 p.m. when daylight savings time is in effect (City of Marina Municipal Code Sections 9.24.040 and 15.04.055).

There are no residential properties in the vicinity of the F Tank Site. However, the contractor shall still comply with all applicable noise abatement ordinances.

ADD 1-5. Document 00 73 00 Supplementary Conditions *Add* the following section to Article 15

SC-15.03 Military Munitions Recognition and Safety Training

All field personnel are required to complete the mandatory Military Munitions Recognition and Safety Training provided by the Fort Ord Environmental Cleanup Program (FOECP) prior to performing any site activities. The training is available online at www.FortOrdSafety.com and must be completed by each crew member individually. Upon successful completion, each participant will receive a Certificate of Achievement, which must be submitted to the Owner for verification. Certificates shall be emailed to District point of contact Charly Liscomb at bliscomb@mcwd.org prior to the commencement of any fieldwork. No personnel shall be permitted on-site until their training has been verified and approved.

CONTRACTOR AND VENDOR QUESTIONS FROM THE PRE-BID MEETING:

1. **Question:** "Is Form 00 45 38 required?"
    - **Response:** During the pre-bid meeting, it was mistakenly stated that Form 00 45 38, Bidder's List, was not required. This was an error, and we apologize for any confusion**.** Form 00 45 38, Bidder's List**, is required** as part of the bid submission. All bidders must submit Form 00 45 38, Bidder's List**,** along with their bid. Failure to include this form will result in the disqualification of the bid. We apologize for the oversight and appreciate your understanding.

2. **Question:** "Will permits be quick?"
    - **Response:** The contractor is responsible for obtaining drilling and temporary encroachment permits for the work. The time required will be determined by Monterey County and the contractor.

3. **Question:** "How long after MCWD issues Notice of award, does MCWD issue notice to proceed to get permits going?"
    - **Response:** Depends on receipt of necessary documents as detailed in NOA.

4. **Question:** "How much time to approve the well design before installation (within bid set)?"
    - **Response**: As detailed in the Bid Set documents, Section 02520 Parts 1.05 and 1.06, Owner and Engineer will require a 48-hour selection period to finalize screen and filter pack design.

5. **Question**: "Are there any utilities underground at the site?"
    - **Response**: The contractor is responsible for conducting a utility survey through USA and potholing to identify any existing underground utilities at the site. Use of a private underground utility locator service may be helpful for efficient and accurate utility location.

6. **Question**: "The fence at 4th Ave, will a contractor or MCWD be responsible for installation?"
    - **Response**: The fence includes a driveway and gate opening on the north side that the contractor can use to enter and exit the property. The contractor is responsible for removing the temporary fencing currently blocking the gate and for installing a proper locking gate to prevent public access.

7. **Question**: "Can they work 24 hours?"
    - **Response:** The contractor shall conform to all applicable local ordinances related to construction activities, which include noise restrictions and operating hours (see ADD 1-4). It is important for contractors to check with the appropriate local authorities to ensure compliance with all relevant regulations. Additionally, it is the contractor's responsibility to obtain approval from the Owner (Document 00 72 00 Section 7.02(B) and Section 01500 Paragraph 1.06 (A)) and any necessary approvals or variances from the City or County if extended work hours are required.

8. **Question**: "Is there a need to put sound walls up at 4th Avenue site (will we put in bid)?"
    - **Response:** See ADD 1-4. Yes, soundwalls will be necessary at the 4th Avenue Site.

9. **Question**: "Can they use 4th Ave as a yard for both locations? (To store their equipment for F-tank since they are going to work on 4th Ave first)."
    - **Response**: Yes. Limited areas are available at the 4th Avenue worksite for equipment and materials storage. See Plan Set Drawing C-1 in ADD 1-1 for a site map showing allowed materials storage and laydown areas.

10. **Question**: "What areas can they use as laydown for storage and equipment at both sites?
    - **Response**: See Plan Drawings C-1 and C-2 in ADD 1-1. Contractor may use the designated areas at the 4th Avenue worksite for equipment and materials storage. Clear and grub work locations to allow drilling and well construction operations as needed. Grading shall be limited to dozing and stockpiling soil

and debris. Contractor shall confine stockpiles to the western portion of the site (near 4th Avenue). No materials shall be disposed of or hauled offsite. At the F-Tank worksite, the access road to the tank from Watkins Gate Road may be used for storage of equipment and materials, provided that the Operations Department maintains full access to the F-Tank site for heavy equipment and trucks. If Contractor determines that additional space is needed, Contractor may apply for a temporary encroachment permit from Monterey County for use of the Watkins Gate Road, as long as space is maintained for passage of emergency and service vehicles. Contractor shall be responsible for assessment of the need for and dimensions of encroachment, preparing the application, and ensuring compliance with all applicable regulations.

11. **Question**: "What/where are the water sources for both locations?"
    - **Response**: There are two hydrants located on California Drive, which are out of the way of traffic. The contractor can coordinate with MCWD to determine if these hydrants are suitable for use. Here's the link to the temporary water service application to apply for a water meter found on our website: https://mcwd.org/docs/engr_files/Appendix%2014%20Hydrant%20Meter.pdf

12. **Question:** "Will a water truck be required? Where will this water be stored?"
    - **Response**: Water trucks can be used, and the storage and delivery of water will be up to the contractor.

13. **Question:** "Where will the discharge go? Is this the contractor's issue?"
    - **Response:** Discharge locations are noted on Plan Drawings C-1 and C-2 in ADD 1-1. The contractor is responsible for the proper disposal of all drilling fluids and cuttings resulting from all drilling operations and all water resulting from well development pursuant to Section 02520 Part 1.07.

14. **Question:** "How much area will they be allowed at the F-tank site for all of their equipment?"
    - **Response**: See response to Question 10. The contractor will be allowed to use the side of the road for their equipment, provided that the Operations

Department maintains full access to the F-Tank site for heavy equipment and trucks.

15. **Question**: "Will brush/trees need to be removed from both sites by contractor?"
    - **Response**: Clearing and grubbing will be the contractor's responsibility. Contractor shall not remove any mature trees from either site. Clearing and grubbing will be the contractor's responsibility. Any trees that need to be removed at the F-Tank site must be coordinated by the contractor with the appropriate agencies to obtain the necessary permissions. Once the contractor has completed this process, they should notify us accordingly.

16. **Question:** "How to stop the foot traffic/mountain bikes at the F-tank site? Will the trail need to be closed?"
    - **Response:** The contractor will need to secure both worksites by providing temporary fencing and gates to prevent foot traffic and mountain bikes. If necessary, the contractor should coordinate with the appropriate agencies to temporarily close the trail during the construction process.

17. **Question:** "Can the space across Watkins Gate Rd. be used to store equipment/materials?"
    - **Response:** No legal access is available to land north of Watkins Gate Road, so that area cannot be used to or store equipment or materials. See Question 10 response regarding laydown areas.

18. **Question:** "Is May 30th a strict deadline for MCWD? Can an extension be granted?"
    - **Response:** The contractor shall substantially complete work within 90 calendar days after the Notice to Proceed.

19. **Question:** "What will the access situation be at 4th Ave and F-tank?"
    Response: The 4th Avenue site will be accessible through both the temporary access gate (to be installed by Contractor) and the Operations parking lot during normal business hours, but only personal vehicles will be allowed through the Operations parking lot. Additionally, every other Friday,

the Operations parking lot gate will be closed, but the contractor will still be permitted to work on the 4TH Avenue site through the temporary access gate. At the F-Tank, District staff or other officially designated staff must open the access gate to Watkins Gate Road.

20. **Question:** "Will there be any MEC training required?"
    - **Response:** Yes, see ADD 1-5. Both worksites are outside former Fort Ord munitions and explosives of concern (MEC) impact areas. However, to ensure personnel safety and minimize liability related to MEC or unexploded ordnance (UXO), all crew members must complete the free Military Munitions Recognition and Safety Training provided by the Fort Ord Environmental Cleanup Program (FOECP). The link to the training site: www.FortOrdSafety.com. Each crew member must complete the online training individually, not as a group. Successful completion results in a Certificate of Achievement, which must be submitted to the Marina Coast Water District and checked by Charly Liscomb at bliscomb@mcwd.org, before any site activities begin. This training is mandatory for all fieldwork personnel and must be finished prior to starting work. Non-compliance will lead to delays or suspension of work until the training is completed.

21. **Question:** "Can the monitoring well location be moved to the proposed alternate site on the opposite side of the roadway, or another nearby location within the user easement?"
    - **Response:** See Plan Drawing C-2 in ADD 1-1 for revised F Tank well location on the opposite (west) side of the access road to F Tank.

22. **Question:** Can the monitoring well location be moved across the street at Watkins Gate Road, even though it is not within the current user easement?
    - **Response:** No legal access is available to land north of Watkins Gate Road, so that area cannot be used to locate the well or store materials.

CONTRACTOR AND VENDOR QUESTIONS EMAILED:

23. **Question**: “Conductor Spec: Section 02520-1, Paragraph 2.04, Subparagraph B, NSF Certified. Will Stainless Steel be acceptable?”
    - **Response**: See ADD 1-2 and ADD 1-4. NSF certified materials are not needed for conductor casing, and lower-cost materials such as mild steel, copper-bearing steel or high-strength low-allow (HSLA) steel are encouraged. Stainless steel is acceptable, however.

24. **Question**: “Well Casing: Copper Bearing per Construction Drawing. 2-1/2" or 3" Copper Bearing pipe is not manufactured in these sizes. This is for the Tank Site in the Nested Monitoring Well. Will Stainless Steel be acceptable?”
    - **Response:** See ADD 1-2 and ADD 1-4. High-strength low-allow (HSLA) or stainless steel casing are both acceptable.

25. **Question**: “Listed in the contract it is stated 90 calendar days which does not account for holidays or weekends. Considering the one jobsite is in a neighborhood with concerns of affecting residents, is there a way we can possibly extend the project time frame or change it to 90 working days?”
    - **Response:** No.

26. **Question**: “Total footage and height of sound wall at the Fourth Avenue Site”
    - **Response:** The contractor is responsible for installing and maintaining the appropriate soundwall at the worksite to conform with local noise abatement ordinances. See ADD 1-4.

27. **Question**: “Is the Tank Site on Old Fort Ord Property, if so has it been cleared for old unused Military Ordnance.”
    - **Response:** Both worksites are outside former Fort Ord munitions and explosives of concern (MEC) impact areas. See Question 20 for training requirements.

28. **Question**: “Since we have to wait 48 hours after we set the conductor in first well, can we move to the next well location & set conductor?”
    - **Response:** As long as no activity is performed that will disturb the grout seal on the finished conductor casing until it has cured 48 hours, work can proceed on the next borehole.

29. **Question:** Section 5.02B #6 is confusing. Is the alternate bid item (B1) added to the total unit price bid which means Item 3 is kept in the bid? Is it double counting the price of the F Tank Well?
    - **Response:** See ADD 1-3. The total price now only includes the base bid items, with the alternative items requested as separate items. As noted in Section 01270 Part 1.02 (J), “[i]f selected, this Bid Item B1 would replace Bid Item 3”.

ADDENDUM No.1, ACKNOWLEDGEMENT
(To be Submitted with Contractor's Bid)

REQUEST FOR BID – MARINA COAST WATER DISTRICT MONITORING WELLS CONSTRUCTION PROJECT

Publication Date: 1/10/2025
Closing Date: 2/5/2025

Bidder acknowledges receipt of this addendum, which shall be attached to the bid. Acknowledgement of receipt of this addendum is required in the space provided below. Failure to acknowledge the addendum may subject the bidder to disqualification.

I, _____, representing _____ have carefully read this addendum, understand it, acknowledge receipt of it and will comply with its terms.

_____ _____
CONTRACTOR SIGNATURE **DATE**

Attachment 1
Addendum Item ADD 1-1

PLAN

0 10 20 40 60

SCALE: 1"=20'

ADDENDUM 1

CONSTRUCTION NOTES:

1. EXISTING SITE CONDITIONS ARE BASED ON INFORMATION PROVIDED BY MONTEREY COUNTY, CIVILGRID AND NEARMAP. THE OWNER, ENGINEER, AND DESIGN ENGINEER ARE NOT RESPONSIBLE FOR THE COMPLETENESS, LOCATIONS, OR SIZES SHOWN. CONTRACTOR SHALL POTHOLE TO IDENTIFY AND CONFIRM LOCATIONS OF UTILITIES.
2. CONTRACTOR SHALL CLEAR AND GRUB WORK LOCATIONS TO ALLOW DRILLING AND WELL CONSTRUCTION OPERATIONS, AS NEEDED. GRADING SHALL BE LIMITED TO AN AREA SUFFICIENT FOR NORMAL OPERATION OF THE DRILLING RIG, MUD SYSTEM, AND PIPE TRUCK, PLUS DRIVEWAYS AS NEEDED FOR CUTTINGS REMOVAL AND ANNULAR MATERIALS PLACEMENT. GRADING SHALL BE LIMITED TO DOZING AND STOCKPILING SURFICIAL MATERIALS. NO MATERIALS SHALL BE DISPOSED OR HAULED OFFSITE.
3. CONTRACTOR MAY TEMPORARILY REMOVE FENCES IN ORDER TO PERFORM WORK. CONTRACTOR SHALL SAFELY STORE FENCING FOR REINSTALLATION FOLLOWING COMPLETION OF WORK AT THE SITE. CONTRACTOR SHALL REPLACE ANY DAMAGED FENCING AT NO COST TO THE OWNER.
4. CONTRACTOR SHALL DISCHARGE DEVELOPMENT WATER IN CATCH BASIN. CONTRACTOR SHALL DISCHARGE IN ACCORDANCE TO SPECIFICATION SECTION 02520.
7. CONTRACTOR SHALL CONFINE STOCKPILES TO THE WESTERN PORTION OF THE SITE (NEAR 4TH AVENUE). STOCKPILES SHALL NOT EXCEED THE HEIGHT OF THE EXISTING EXTERNAL SITE FENCE.
8. CONTRACTOR IS EXPECTED TO CONTAIN ACTIVE DRILLING AND WELL CONSTRUCTION OPERATIONS WITHIN AN AREA OF APPROXIMATELY 150 FEET BY 100 FT. THIS LIMIT DOES NOT INCLUDE EQUIPMENT AND MATERIALS STORAGE, LAY-DOWN AREAS, DRIVEWAYS, AND DELIVERIES.
9. CONTRACTOR MAY TEMPORARILY USE AREAS OUTSIDE THE ACTIVE OPERATIONS AREA FOR EQUIPMENT AND MATERIALS STORAGE, LAY-DOWN, DRIVEWAYS, AND DELIVERIES. AT THE 4TH AVENUE WORKSITE, CONTRACTOR MAY USE AREAS NORTH OF THE PROPOSED WELL LOCATIONS NEAR THE HISTORICAL BUILDINGS, PLUS PART OF THE UNPAVED LOT EAST OF THE PROPOSED WELL LOCATIONS. CONTRACTOR SHALL NOT USE STREET FOR PARKING OR LAYDOWN.

DRAFT DESIGN SUBMITTAL

eki environment & water
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BURLINGAME, CALIFORNIA 94010
(650) 292-9100 • FAX (650) 552-9012

MONITORING WELLS CONSTRUCTION PROJECT
MARINA COAST WATER DISTRICT

SITE MAP - 4TH AVENUE MONITORING WELLS

1	ISSUED FOR BID	TW	JAN 25
2	ADDENDUM 1	TW	JAN 25

DATE:	JAN 2025
SCALE:	AS SHOWN
DRAWN:	AMK
DESIGNED:	TW
APPROVED:	TW
JOB NO.:	B60094.20

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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

SHEET NUMBER
C-1
4 OF 6

PLAN

0 20 40 80 120
SCALE: 1"=40'

ADDENDUM 1

CONSTRUCTION NOTES:

1. EXISTING SITE CONDITIONS ARE BASED ON INFORMATION PROVIDED BY MONTEREY COUNTY, CIVILGRID AND NEARMAP. THE OWNER, ENGINEER, AND DESIGN ENGINEER ARE NOT RESPONSIBLE FOR THE COMPLETENESS, LOCATIONS, OR SIZES SHOWN. CONTRACTOR SHALL POTHOLE TO IDENTIFY AND CONFIRM LOCATIONS OF UTILITIES.
2. CONTRACTOR SHALL CLEAR AND GRUB WORK LOCATIONS TO ALLOW DRILLING AND WELL CONSTRUCTION OPERATIONS, AS NEEDED. GRADING SHALL BE LIMITED TO AN AREA SUFFICIENT FOR NORMAL OPERATION OF THE DRILLING RIG, MUD SYSTEM, AND PIPE TRUCK, PLUS DRIVEWAYS AS NEEDED FOR CUTTINGS REMOVAL AND ANNULAR MATERIALS PLACEMENT. GRADING SHALL BE LIMITED TO DOZING AND STOCKPILING SURFICIAL MATERIALS. NO MATERIALS SHALL BE DISPOSED OR HAULED OFFSITE.
5. CONTRACTOR SHALL DISCHARGE DEVELOPMENT WATER IN SWALE. CONTRACTOR SHALL DISCHARGE IN ACCORDANCE TO SPECIFICATION SECTION 02520.
6. THE MONITORING WELL SHALL BE CONSTRUCTED WITHIN THE DESIGNATED 20-FOOT EASEMENT OF ACCESS ROAD. THE WELL SHOULD BE POSITIONED NEAR THE BOUNDARY OF THE EASEMENT TO ENSURE THAT IT DOES NOT INTERFERE WITH THE VEHICULAR TRAFFIC. THE USE OF THE EASEMENT SHALL BE COORDINATED WITH THE DISTRICT.
10. GRADING SHALL BE MINIMIZED TO THE EXTENT POSSIBLE, AND NO MATURE TREES SHALL BE REMOVED.
11. CONTRACTOR IS EXPECTED TO CONTAIN ACTIVE DRILLING AND WELL CONSTRUCTION OPERATIONS WITHIN AN AREA OF APPROXIMATELY 150 FEET BY 50 FT. THIS LIMIT DOES NOT INCLUDE EQUIPMENT AND MATERIALS STORAGE, LAY-DOWN AREAS, DRIVEWAYS, AND DELIVERIES.
12. CONTRACTOR MAY TEMPORARILY USE AREAS OUTSIDE THE ACTIVE OPERATIONS AREA FOR EQUIPMENT AND MATERIALS STORAGE, LAY-DOWN, DRIVEWAYS, AND DELIVERIES. AT THE F-TANK SITE, CONTRACTOR MAY USE THE ACCESS ROAD TO THE TANK FROM WATKINS GATE ROAD, , PROVIDED THAT THE OPERATIONS DEPARTMENT MAINTAINS FULL ACCESS TO THE F-TANK SITE FOR HEAVY EQUIPMENT AND TRUCKS. CONTRACTOR MAY ALSO OBTAIN THE NECESSARY PERMITS TO USE ROADSIDE AREAS OF THE TANK ACCESS ROAD, AS WELL AS AREAS ALONG THE SOUTH SIDE OF WATKINS GATE ROAD, WEST OF THE TANK ACCESS ROAD, UP TO AND INCLUDING ONE LANE OF THE ROAD, PROVIDED THAT A LANE OF WATKINS GATE ROAD IS MAINTAINED CLEAR FOR UTILITY AND/OR EMERGENCY VEHICLE PASSAGE AT ALL TIMES.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ASSESSMENT OF THE NEED FOR AND DIMENSIONS OF ENCROACHMENT, PREPARING THE APPLICATION, AND ENSURING COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

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MONITORING WELLS CONSTRUCTION PROJECT
MARINA COAST WATER DISTRICT

SITE MAP - F TANK MONITORING WELL

REV	DESCRIPTION	APPRD	DATE
1	ISSUED FOR BID	TW	JAN 25
2	ADDENDUM 1	TW	JAN 25

DATE: JAN 2025
SCALE: AS SHOWN
DRAWN: AMK
DESIGNED: TW
APPROVED: TW
JOB NO.: B60094.20

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SHEET NUMBER
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5 OF 6

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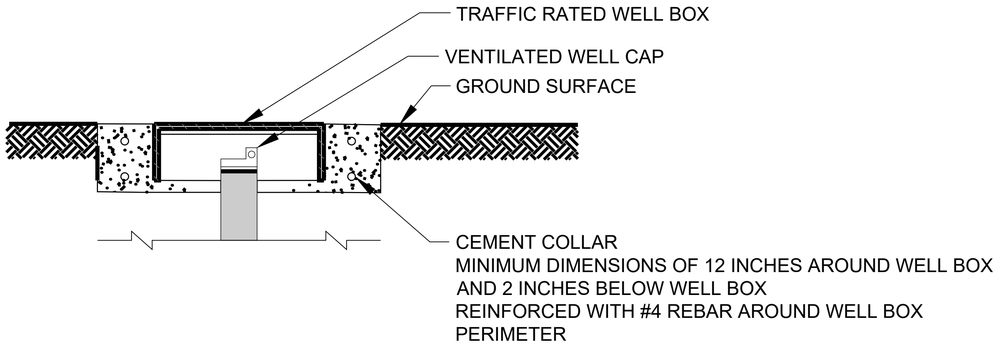
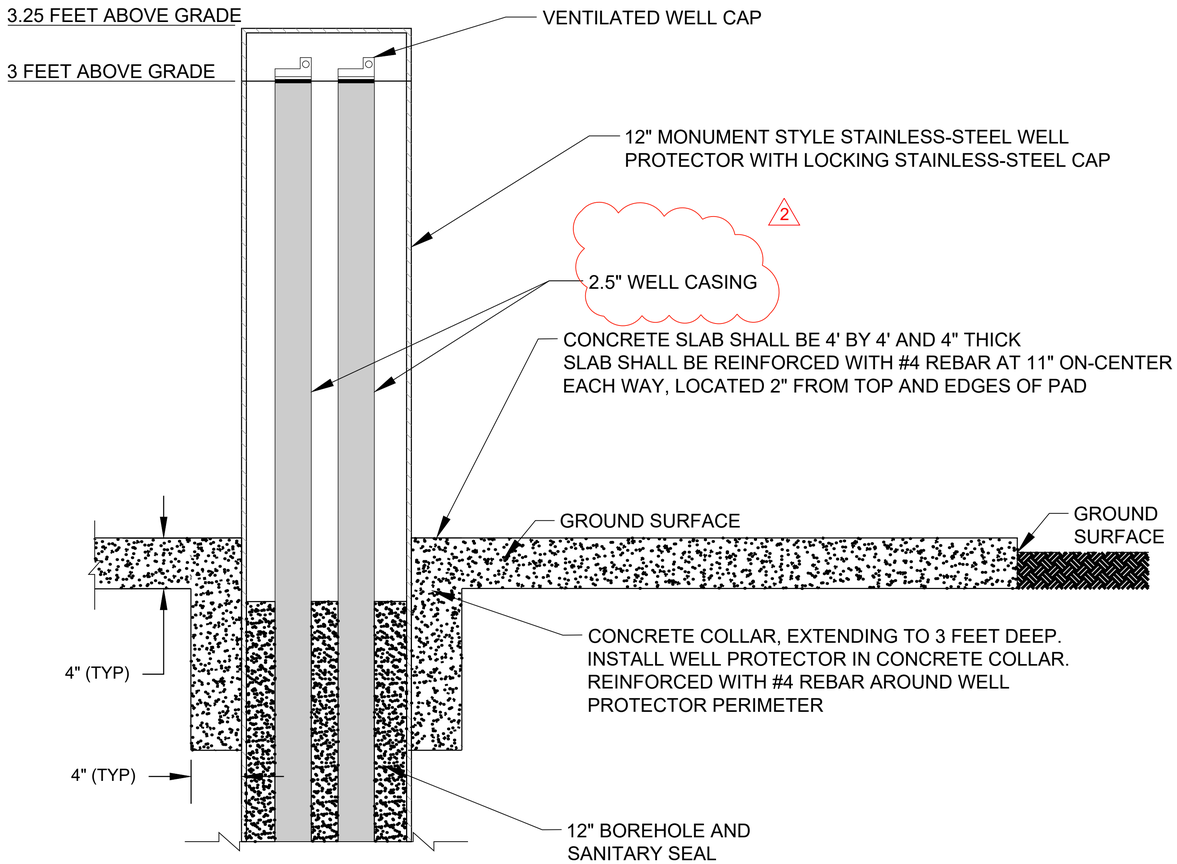


SEE WELL SPECIFICATION 02520 FOR WELL PROFILES

4TH AVENUE MONITORING WELL SURFACE COMPLETION

1 TYP

NOT TO SCALE



SEE WELL SPECIFICATION 02520 FOR WELL PROFILES

F TANK MONITORING WELL SURFACE COMPLETION

2 TYP

NOT TO SCALE

ADDENDUM 1

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MONITORING WELLS CONSTRUCTION PROJECT
MARINA COAST WATER DISTRICT

MONITORING WELL DETAILS

	DATE	DESCRIPTION	APPRD
1	JAN 25	ISSUED FOR BID	TW
2	JAN 25	ADDENDUM 1	TW

DATE: JAN 2025
SCALE: AS SHOWN
DRAWN: AMK
DESIGNED: TW
APPROVED: TW
JOB NO.: B60094.20

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SHEET NUMBER
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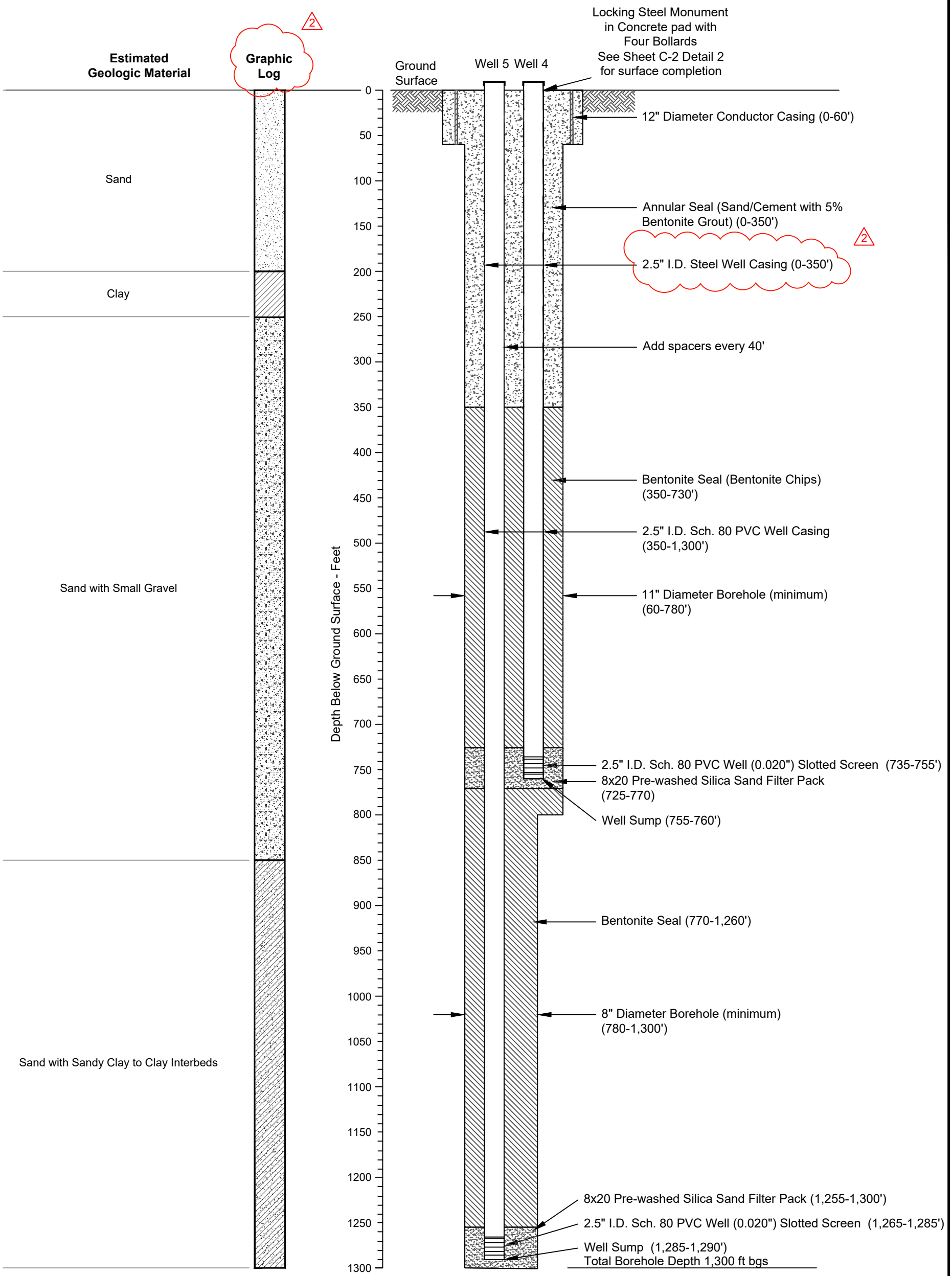
6 OF 6

Attachment 2
Addendum Item ADD 1-2



NOTES:

1. Well design profile is schematic only and not to scale.
2. Estimated Geologic Material is based on available well logs near proposed project site. Well design subject to modification based on actual site geologic conditions encountered.

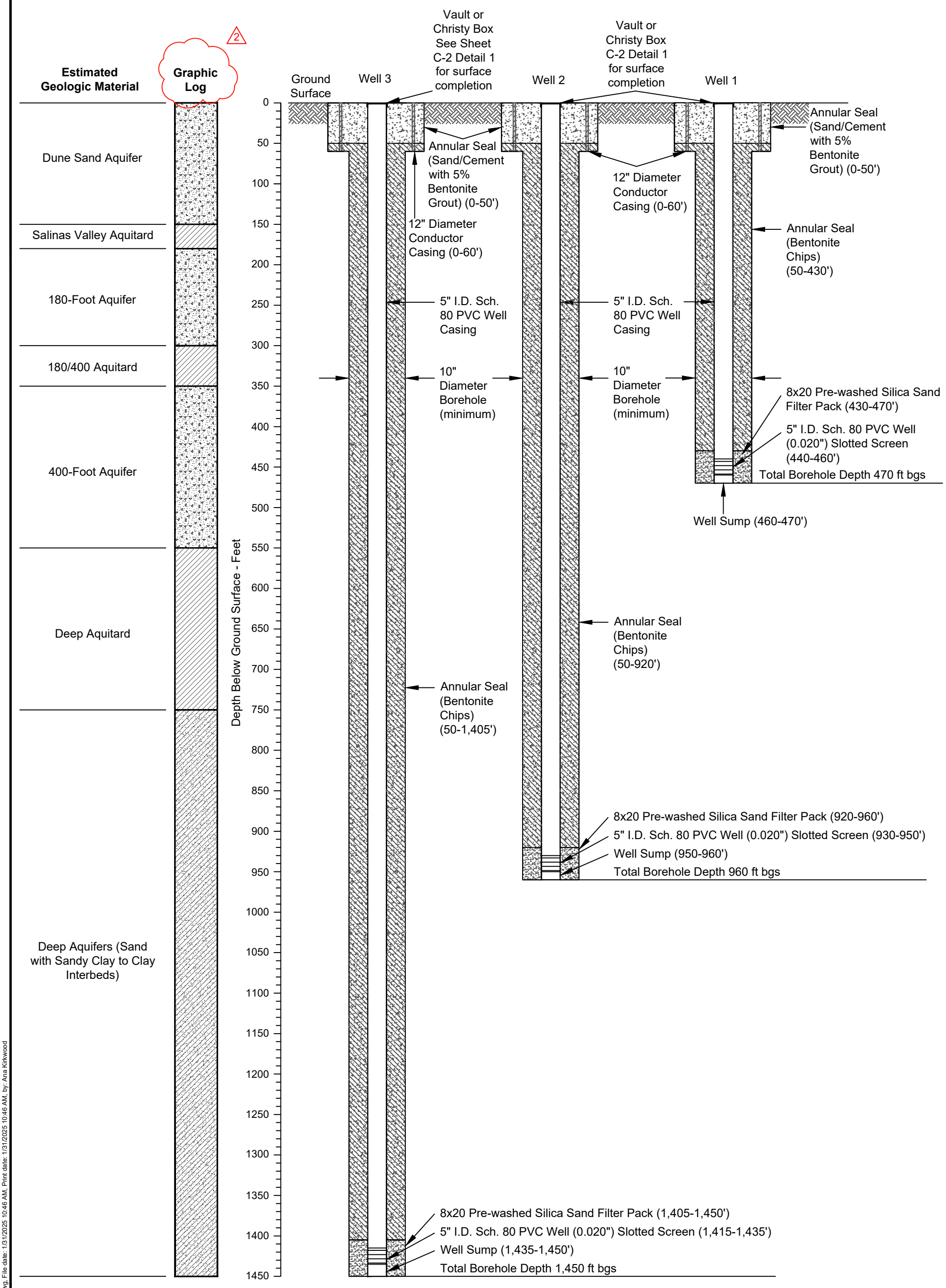
ABBREVIATIONS:

I.D.	= inside diameter
ft bgs	= feet below ground surface
PVC	= polyvinyl chloride
Sch.	= schedule

F Tank Monitoring Well Design Profile

Marina Coast Water District Monitoring Well Construction Project
Marina, CA
January 2025
EKI B60094.20

Figure 1



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2. Estimated Geologic Material is based on available well logs near proposed project site. Well design subject to modification based on actual site geologic conditions encountered.

ABBREVIATIONS:

I.D.	= inside diameter
ft bgs	= feet below ground surface
PVC	= polyvinyl chloride
Sch.	= schedule

4th Avenue Monitoring Wells Design Profile

Marina Coast Water District Monitoring Well Construction Project
Marina, CA
January 2025
EKI B60094.20

Figure 2

Attachment 3
Addendum Item ADD 1-3

BID FORM

CIP # GA-2402, MONITORING WELLS CONSTRUCTION PROJECT
NEW MONITORING WELLS

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Marina Coast Water District

920 Second Avenue, Ste A,

Marina, CA 93933

ATTN: Water Resource Manager

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 calendar after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum, Date**
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary

Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at

artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "Coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bid Items List

A. Base Bid Items

Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	Mobilization and Demobilization	LS	1		
2	Site Preparation, Clearing and Grubbing (both sites)	LS	1		
3	F Tank Site, Dual Nested Monitoring Well	LS	1		
4	4th Avenue Site, 470 ft Monitoring Well	LS	1		
5	4th Avenue Site, 960 ft Monitoring Well	LS	1		
6	4th Avenue Site 1,450 ft Monitoring Well	LS	1		
7	Geophysical Logging (by Pacific Surveys) see section 5.03C	LS	1		
Total of All Base Bid Items (in numbers): $					
Total of All Base Bid Items (in words):					

ALW = Allowance, LF = Linear Feet, LS = Lump Sum, SY = Square Yards

B. Additive and Alternative Bid Items

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
A - Additive Bid Items					
A1	Additional Drilling	LF	100		
A2	Additional Well Construction	LF	100		
B - Alternate Bid Items					
B1	Install 3-inch Casing at F Tank Site, Dual Nested Monitoring Well	LS	1		

ALW = Allowance, LF = Linear Feet, LS = Lump Sum, SY = Square Yards

C. Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

5.02 Bid Alternatives

A. Bidder offers to make, at the bid alternate prices following, the changes in the Work covered by the Unit Prices that are specified in the bid alternates priced below.

B. It is understood that:

1. All bid alternate prices must be filled in.
2. The acceptance or rejection of any or all of these bid alternates is at the option of the Owner.
3. Acceptance or rejection of bid alternates will not necessarily be made on the basis of price alone.
4. The Total of All Base Bid Items will be used to determine the lowest responsive and responsible bid. The acceptance or rejection of the additive and alternative bid items will not impact bid selection.
5. The addition or deduction shown herein for each additive bid item is the net addition or net deduction that is to be applied to the Total of All Base Bid Items of the undersigned if the bid additions are accepted by the Owner. If the Alternative Bid Item is selected, the Contract Price shall be adjusted by deducting the amount of the replaced Base Bid Item 3 and substituting the amount of the accepted Alternative Bid Item, as bid.
6. The acceptance or rejection of one or more bid alternates will not affect the conditions of this Bid or the price of other accepted bid alternates.

5.03 Engineer's Proposed Construction Cost

DIV NO.	ITEM DESCRIPTION	TOTAL	% OF TOTAL
	F Tank Site: Monitoring Well (Dual Nested)	$550,000	28.8%
	4th Avenue Site: 470 ft Monitoring Well	$190,000	9.9%
	4th Avenue Site: 960 ft Monitoring Well	$390,000	20.4%
	4th Avenue Site: 1,450 ft Monitoring Well	$590,000	30.9%
	Site Preparation, Clearing and Grubbing (both sites)	$17,200	0.9%
	Construction Contingency subtotal (10% of subtotal) 10%	$1,737,200 $173,720	90.9% 9.1%
	Total Engineer's Opinion of Probable Cost	**$1,911,000**	**100%**

A. Item costs include direct costs, mobilization/demobilization and contractor markups.

B. Assumes that geophysical logging will only occur on the monitoring well at the F Tank Site and the 1,450-foot monitoring well at the 4th Avenue site.

C. Contractor must retain the services of **Pacific Surveys LLC** for geophysical logging.

Pacific Surveys, LLC,
1785 West Arrow Route Bldg. D
Suite 3 & 4
Upland, CA 91786
(909) 625-6262

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The items listed in Document 00 43 93, Bid Submittal checklist, are submitted with and made a condition of this Bid.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

Bidder's License No.: _____
(where applicable)

Attachment 4
Addendum Item ADD 1-4

SECTION 02520

NEW MONITORING WELLS

PART 1 - GENERAL

1.01 SUMMARY OF WORK:

A. The following sections describe requirements for the drilling and well construction portion of the Project that includes three monitoring wells at the 4th Avenue site, and one dual-nested monitoring well at the "F" Tank site.

The scope of work includes drilling and installation of conductor casings with an outer annular seal; borehole drilling; geophysical surveying; assembly and installation of well casing and screen; emplacement of annular materials; construction of surface completion; and well development. Owner is also notifying Contractor that the ultimate planned use for this well is groundwater monitoring. The proposed well profiles are included in Figures 1 and 2 at the end of this specification section. Site plans showing proposed well locations are included in the Drawings. Exact well locations will be determined by Owner or Engineer based on site conditions.

B. MITIGATION MEASURES (NOT USED):

1.02 REFERENCES

A. American Water Works Association (AWWA) Standard No. A100-06

B. American Petroleum Institute Recommended Practice API RP-13B-1

C. American Society For Testing And Materials (ASTM) C150

D. ASTM A409 and A778

E. ASTM No. A606 Type 4

F. Department Of Water Resources (DWR) Bulletin Nos. 74-81 And 74-90

G. American Welding Society (AWS) Standards

H. National Sanitation Foundation (NSF 61)

I. Monterey County Code Of Ordinances Chapter 15.08 – Water Wells

J. State Water Resources Control Board Well Construction Requirements And Recommendations

1.03 SUBMITTALS

A. PRODUCT REVIEW SUBMITTALS:

1. DRILLING FLUID CONTROL PROGRAM:
   The Contractor shall be responsible for measuring and controlling drilling fluid properties including sampling requirements specified in Section 3.03 SAMPLING.

2. DRILLING FLUID SYSTEM:
   The Contractor shall provide with the submittal a detailed description of the drilling and fluid system to be used concurrently. This submittal must include information regarding the types of fluid to be used, intended drilling fluid weights, viscosities, sand and solids contents, water loss control, and the name of the supplier. The submittal shall also include the proposed layout of the drilling fluid system, including the arrangement of the tanks and recirculating equipment. The Contractor shall also submit an inventory of the materials and methods that the Contractor will use to recover operations in the event of hole stability problems and/or loss of circulation.

3. DRILLING FLUID ENGINEER:
   The name and qualifications of the “on-call” Drilling Fluid Engineer or Mud Expert that the Contractor intends to use must be submitted prior to the Owner’s Execution of the contract (after Notice of Award).

4. SEALING MATERIAL:
   The Contractor shall submit to the Owner or Engineer for approval a description of the sealing material to be used, detailing its source, composition, and preparation.

5. CONDUCTOR CASING:
   The Contractor shall submit a copy in PDF format, or three (3) complete copies if printed, of the conductor casing mill certificate to the Owner or Engineer for approval before delivering the conductor casing to the job site.

6. WELL CASING:
   The Contractor shall submit a copy in PDF format, or three (3) complete copies if printed, of the mill certificate and/or manufacturer cut sheet to the Owner or Engineer for approval before delivering casing to the job site.

7. WELL SCREEN:
   The Contractor shall submit well screen or perforated casing specifications including (as applicable) the name of the proposed screen manufacturer, type of screen, well screen dimensions, slot or aperture size, material, and strength specifications such as collapse strength, tensile strength, and supporting drawings. The Contractor also shall submit additional specifications for materials used including rod and wire dimensions for wire-wrap screen, and weld type for steel casing and screen, as applicable. The Contractor shall submit a copy in PDF format, or three (3) complete copies if printed, of the specifications to the Owner or Engineer for approval before delivering well screen materials to the job site.

8. FILTER PACK MATERIAL:
   The acceptability of artificial filter pack material shall be determined based upon certified laboratory test results and service records for the source of the material.

Prior to delivery to the project site, the Contractor shall submit the following to Owner and Engineer for approval:

a. Source of filter pack material.
b. Certified results from laboratory tests performed in accordance with ASTM C136 demonstrating that the filter pack material meets the material and gradation criteria specified herein.
c. A one (1) kilogram (2.2 pounds) sample of the material allowing the Owner, at Owner's discretion and expense, to conduct tests to independently determine the properties of the filter pack material.

9. TRANSITION SAND MATERIAL: Not Used.

10. FILTER PACK FEED PIPE: Not Used.

11. WELL DEVELOPMENT TOOL SHOP DRAWING:
The Contractor shall submit to the Owner or Engineer for approval a shop drawing or photograph with graphic scale of the tool(s) proposed for use during well development by air lift and swabbing.

12. DISCHARGE MEASUREMENT DEVICES OR METHODS:
The Contractor shall provide proof or demonstration of the accuracy of their pump discharge flow measurements upon request from the Owner or Engineer.

13. DRILLING WORK PLAN:
Contractor to submit a drilling work plan to the Owner for approval at least two (2) weeks prior to initiating well construction. Work Plan shall include the following:
    a. A preliminary detailed schedule specifying the anticipated phases and durations of well construction.
    b. Contractor point of contact.
    c. Maps of the work sites, for use in planning and communication between Contractor, Owner, and other parties, which includes the following, at a minimum:
        1) Include graphical scale and north arrow.
        2) Show locations and dimensions of existing facilities, storm drains, fences, gates, driveways, and public rights-of-way; proposed locations and dimensions of the drilling rig, shaker, tanks, discharge points, spoils piles or bins, materials storage and lay-down areas, and other pertinent equipment or features.
        3) Show distance and direction to the nearest residential property boundaries.
    d. Drilling and testing equipment information including drill rig make/model, proposed dimensions of drilling bits, stabilizers, rods, and other downhole equipment, test pump specifications, generator specifications, and information on other key equipment that will be used.
    e. A shop drawing or photograph with graphic scale of the tool(s) proposed for use during well development by air lift and swabbing.

1.04 QUALITY ASSURANCE

A. SEALING MATERIAL INSTALLATION VERIFICATION:
Contractor shall verify the proper placement of sealing material by demonstrating that the volume of sealing material placed in the annular space equals or exceeds the annulus volume over the seal depth interval.

B. FILTER PACK INSTALLATION VERIFICATION:
Contractor shall verify the proper placement of filter pack material by demonstrating that the volume of filter pack placed in the annular space equals or exceeds the annulus volume over the filter pack depth interval.

C. FINAL WELL PLUMBNESS
Contractor shall drill and construct monitoring wells which are suitable for their intended purpose, including free passage for installation of a 1.92-inch x 9-feet in length instrument, sampling pumps and pressure transducers, and access to the total cased depth for instruments such as well video cameras, and other geophysical tools.

1.05 SCHEDULING

A. NOTICE TO OWNER AND ENGINEER PRIOR TO ANNULAR SEAL INSTALLATION:
The Contractor shall notify the Owner and Engineer a minimum of 24 hours in advance of any planned sealing material placement.

B. NOTICE TO OWNER AND ENGINEER PRIOR TO GEOPHYSICAL TESTING
The Contractor shall provide the Owner and Engineer with 24-hour notice of the time for completing drilling of the pilot borehole to total depth as determined in the field, to enable the Owner or Engineer to observe geophysical testing, at Owner and Engineer's option.

C. WELL SEAL CURING PERIOD
Upon installation of the sealing material and unless approved otherwise by the Owner or Engineer, no further work shall be performed on the Monitoring Well until the seal has been allowed to cure for a minimum of 48 hours after emplacement. The 48-hour curing period shall not be regarded as standby time as defined in Section 1.05 SCHEDULING.

D. STANDBY TIME ORDERED BY OWNER:
Standby time shall be paid only for inactive periods approved by Owner. Idle time required for maintenance or failure of equipment shall not be measured as standby time. Idle time as a result of weather delays shall not be measured as standby time. Standby time shall be based on one work shift per day (8 hours) regardless of the Contractor's operating schedule. Standby time will not be paid for Saturdays, Sundays, or holidays on which work is not customarily performed, unless the Contractor has previously agreed to work on such days.

1.06 SELECTION PERIODS

A. SCREEN LENGTH AND APERTURE SELECTION PERIOD:
Owner and Engineer shall require a selection period to confirm the screen length and to determine the screen aperture using data from each well borehole.

1. The final selection of perforated casing (screen) aperture size will be provided by the Owner or Engineer at the end of the selection period based on formation samples collected and analyzed for grain size distribution, as described in Section 1.08 RECORDS and 3.03 SAMPLING.
2. The final length and depth of individual sections of well screen will be provided by the Owner or Engineer at the end of the selection period, based on data gathered during the borehole drilling and geophysical logging process. For purposes of bid

formulation, the Contractor shall assume the overall length of the well screen to be twenty (20) feet for each Monitoring Well.

3. The selection period shall begin at 9:00 AM on the first business day after all of the following have occurred for each Monitoring Well: (1) geophysical logging is complete and logs have been provided to Owner or Engineer, (2) formation samples have been accepted by Owner or Engineer, and (3) all preparation work required prior to well construction is complete. The selection period shall end when the Contractor is notified by the Owner or Engineer of the selected aperture size and length of the screen. Notification for the purpose of ending this selection period shall be conducted verbally either in person or by telephone and shall be confirmed in writing the same date as verbal notification is completed. Contractor may not charge standby time, as defined in Section 1.05 SCHEDULING, for the first 48 hours of the selection period.

B. FILTER PACK SELECTION PERIOD:
Owner and Engineer shall require a selection period to design the filter pack gradation. The selection period coincides with the selection period for Screen Length and Aperture Selection Period and the same conditions apply. The final selection of filter pack material shall be made during the filter pack gradation selection period.

1.07 DISPOSAL OF FLUIDS AND CUTTINGS

A. GENERAL:
The Contractor shall be responsible for properly disposing of all drilling fluids and cuttings resulting from all drilling operations and all water resulting from well development. All permits needed for water discharge to any facility shall be acquired by the Contractor from the appropriate authority. Costs of fluids, cuttings, and well disinfection water disposal shall be borne by the Contractor and payment shall be made based on the amount of such materials disposed and the unit prices stated on the Bid Form.

On behalf of the Owner, the Contractor shall obtain a discharge permit (i.e., the NPDES Permit for Drinking Water System Discharges to Waters of the United States [Order WQ 2014-0194-DWQ]) to discharge fluids (that meet the permit requirements) as directed by the Owner. Typical permit requirements include erosion control and making sure the discharge water turbidity is below 100 NTU.

B. DISPOSAL OF DRILLING FLUIDS AND CUTTINGS:
Unless approved otherwise by the Owner, all drilling fluids and cuttings must be contained onsite in above-ground storage containers for subsequent off-site disposal at a facility authorized to accept such material. The Owner or Engineer will designate a location on-site for the temporary containment of drilling mud and cuttings. No sub-grade mud pits may be used. The Contractor is responsible for arranging and paying for costs for off-site disposal of the drilling fluids and cuttings.

C. DISCHARGE OF WELL DEVELOPMENT AND OTHER PRODUCED GROUNDWATER:
Unless approved otherwise by the Owner, all discharge water resulting from well development shall first be directed into a settling tank for solids separation and then properly disposed. Decanted liquids that meet the NPDES discharge permit requirements shall be disposed of as discharge to the storm sewer, or as directed by the Owner. Decanted fluids that do not meet the discharge permit requirements shall be disposed of legally offsite by the Contractor at a facility authorized to accept such

material. The Contractor is responsible for arranging and paying for costs for off-site disposal of the settled solids resulting from well development.

1.08 RECORDS

A. DAILY REPORT:

1. The Contractor shall maintain and deliver upon request to the Owner or Engineer a detailed daily report (Daily Report) describing site activities. The Daily Report shall include the following information:
   a. Description, depth, and thickness of geologic units encountered;
   b. Number of feet drilled;
   c. Number and type of samples collected, including sample depths;
   d. Number of hours of active drilling and number of hours on the job;
   e. Bit type, size, and dimensions, including collar and stabilizer if used;
   f. Tooling changes with depth, date, and time of change;
   g. Mud additions or adjustments, with quantity, circulation depth (bit depth), date, and time of change;
   h. Any loss of circulation including date, time, duration, and methods and materials used to regain circulation;
   i. Length, diameter, and type of casing and/or screen installed;
   j. Emplacement method of any annular fill materials installed;
   k. Volume, type, and size gradation of any filter pack materials installed;
   l. Volume, type, and size gradation of any transition sand materials installed;
   m. Volume, type, hydration status, and component mix ratios of any bentonite, cement, bentonite-cement, or sand-cement seals installed;
   n. Duration and cause of any delays or shutdowns (whether or not the shutdown is under Contractor's control or other occurrence; see Section 1.05 SCHEDULING); and
   o. Other pertinent data, as requested by the Owner or Engineer.
2. The Contractor shall measure and record the fluid level in the borehole or casing daily prior to the start of work.

B. WELL COMPLETION REPORT:

Upon completion of the Work and in accordance with the California Water Code, the Contractor shall prepare a Well Completion Report for the wells and file the report with the DWR and the appropriate authorities within Monterey County. The Contractor shall provide copies of the Well Completion Reports to the Owner and Engineer. The Well Completion Report shall include as attachments copies of all logs from geophysical testing conducted in the borehole under Section 3.07 GEOPHYSICAL TESTING, as applicable.

C. DRILLER'S LOG:

1. In addition to the reporting requirements for the Well Completion Report, the Contractor shall maintain a complete log for each well, as applicable, setting forth the following items:
   a. The reference point and height above ground surface for all depth measurements
   b. The depth at which each change of formation occurs
   c. The depth and thickness of each aquifer
   d. The type of aquifers encountered
   e. The drilling bit types, dimensions, and depths of bit changes
   f. The depth of any borehole diameter changes
   g. The depth interval from which each formation sample was collected
   h. The total final depth and diameter of the borehole

i. The total final cased depth and diameter of the completed well
j. The type, manufacturer, and volume(s) of any drilling fluid additive(s) used, including date and time of addition to the drilling fluid or borehole
k. The depths of lost circulation zones and any method used to restore circulation, including materials added to the borehole or drilling fluid
l. The type, total installed volume and depth interval(s) of sealing material(s)
m. The depth and description of the well casing, perforated casing, bottom cap, sounding tube, and gravel fill pipe, including well screen type, dimensions, and depth installed in the well bore (as applicable)
n. Any and all other pertinent information required by these specifications.
o. Types and dimensions (diameter and length) of bits, collars, stabilizers, and rods used, and depth intervals drilled with each setup
p. Pumping rate and duration, drawdown, and specific capacity of the well based on development or well-acceptance test data
q. Final static water level in the well after recovery, with date and time of measurement.

2. The Contractor shall provide the Driller's Log to Engineer upon request.

D. GEOLOGIC LOG:
Engineer will prepare a geologic log based on the set of formation samples collected by the Contractor (see Section 3.03 SAMPLING), noting characteristics such as the depth, thickness, and type of encountered strata, and other pertinent information. The Contractor shall cooperate and provide assistance to the Engineer in collecting data for preparation of the geologic log.

E. BOREHOLE DESTRUCTION LOG:
If the borehole is abandoned per direction from the Owner and Engineer, the Contractor shall submit to the Owner and Engineer complete records of the entire destruction procedure to provide a record that the hole was properly sealed as specified in Section 3.11 BOREHOLE DESTRUCTION

F. WELL PLUMBNESS AND ALIGNMENT TESTING LOG (NOT USED)
If Contractor conducts or contracts a well plumbness and alignment test, or a borehole geometry and deviation survey, per Section 3.17 WELL PLUMBNESS AND ALIGNMENT TESTING, Contractor shall provide to Owner and Engineer all records of the testing or survey, including LAS-format digital files of borehole survey results, as applicable.

G. WELL DESTRUCTION LOG:
If the well is destroyed per direction from the Owner and Engineer, per Section 3.11 BOREHOLE DESTRUCTION, the Contractor shall provide to the Owner and Engineer complete records of the entire destruction procedure to provide a record that the well was properly destroyed. The records shall include the type and quantity of sealing material, the depth at which the sealing materials were placed. Records shall include documentation of approval of well destruction by the permitting agency, and a Well Destruction Report in compliance with California DWR standards and regulations.

H. WELL DEVELOPMENT RECORDS:
Complete records of all development work shall be maintained by the Contractor and provided to the Owner and Engineer upon request. The records shall include the following items and the date and time of measurement:

1. Quantity and description of any material placed into the Monitoring Well.
2. Initial, final, and pumping water levels.
3. Methods of measurement.
4. Duration of each operation.
5. Pumping rates, durations, and final specific capacity.
6. Sand content observations at different production rates and times.
7. NOT USED (Quantity of filter pack material added during development.)
8. All other pertinent information.

PART 2 - PRODUCTS

2.01 DRILLING FLUIDS

A. GENERAL:
All drilling fluids shall be acceptable for water well drilling in accordance with AWWA Standard No. A100 06 and shall be approved by the Engineer prior to use. The proposed drilling fluid program must include information regarding the types of fluid to be used, intended drilling fluid weights, viscosities, sand and solids contents, water loss control, and the name of the drilling fluid supplier. Any drilling fluids proposed for use shall be noted on the bid sheet questionnaire. No additives shall be added to the drilling fluid unless the Contractor obtains prior written approval from the Engineer. All drilling fluids shall be especially compounded for water well construction, designed for minimum aquifer penetration, adequately maintain the walls of the hole to prevent caving of the hole as drilling progresses, permit recovery of representative samples of cuttings, and shall not damage the potential capacity, efficiency, or quality of the well. The drilling fluid shall possess such characteristics that it can be readily removed from the hole during the placement of the filter pack and during development of the well. Should a conflict arise between drilling fluid requirements for ease in drilling and requirements for aquifer protection, then the ruling requirements shall be those for aquifer protection.

B. DRILLING FLUID PROPERTIES:
Unless approved otherwise by the Engineer, drilling fluid properties shall be maintained within the following limits using test procedures conforming to American Petroleum Institute Recommended Practice RP-13B-1 "Recommended Practice for Field Testing Water-based Drilling Fluids " (“API RP-13B-1”):

1. Direct Mud Rotary Drilling Fluid Properties:
   a. Weight (fluid density): 8.5 - 10.5 pounds per gallon (lb/gal), i.e., 64 - 79 pounds per cubic foot (lb/ft^3), ideally 9 lb/gal or less.
   b. Marsh Funnel Viscosity: 28 - 40 seconds per quart.
   c. Filtration (wall cake and filtration loss): maximum thickness of 3/32 inches with maximum 30-minute water loss of 10 cubic centimeters (cc).
   d. Sand content (solids larger than 200 mesh): maximum of two percent (2%) by volume.

2. Direct Air-Rotary Drilling (as applicable):
   a. Dry air with uphole velocity of 3,500 feet per minute (fpm), or air with water or water containing foaming polymer additives to increase viscosity sufficient to ensure all cuttings are removed from the borehole.

3. Reverse Mud Rotary Drilling Fluid Properties:
   a. Weight (fluid density): 8.5 - 9.1 lb/gal, i.e., 64 - 68 lb/ft^3.
   b. Marsh Funnel Viscosity: 26 - 34 seconds per quart.

c. Sand content (solids larger than 200 mesh): maximum of two percent (2%) by volume.

2.02 SEALING MATERIALS

A. GENERAL:
Sealing material shall consist of neat cement or sand cement grout. Used driller's mud or cuttings from drilling shall not be used as sealing material. Water used to prepare sealing mixtures generally shall be of drinking water quality and shall be free of petroleum products, suspended material, and other deleterious substances. All sealing materials will be certified for use in drinking water wells in accordance with National Sanitation Foundation (NSF) standard NSF 61.

B. NEAT CEMENT:
Neat cement shall consist of ASTM C150 Type I or II Portland cement at a ratio of five (5) to six (6) gallons of water per 94-pound sack of cement.

C. SAND-CEMENT GROUT:
Sand-cement grout shall consist of a mixture of ASTM C150 Type II Portland cement, sand, and water in the proportion of not more than 3 cubic feet of sand and 1 cubic foot (one sack) of Portland cement to 5 to 7 gallons (0.67 to 0.90 cubic feet) of clean water, or what is required by the drilling permit. This mixture is typically considered to be a 10-sack Portland cement sand slurry mix when ordered from batching plants. Bentonite shall be used to up to a total of 5 percent (5%) of the volume of the cement to make the mix more fluid, reduce shrinkage, and slow the curing process to reduce heat. With the use of 5 percent bentonite, water content can be increased to 8.2 gallons per sack of cement. The Contractor shall take the necessary measures, as approved by the Engineer, to prevent damage to the well due to the heat of hydration of the curing process.

2.03 BENTONITE SEAL

A. GENERAL:
Bentonite seals composed of granular bentonite or bentonite chips shall be emplaced at the depth intervals shown on Figure 1 for the F Tank Monitoring Wells and as Figure 2 for the 4th Ave Wells. Contractor shall emplace bentonite seals using a tremie pipe and a method (e.g., thinned drilling mud tremie-wash) which rapidly conducts bentonite granules or chips to the emplacement depth before they are fully hydrated, allowing final hydration and expansion of bentonite in-place to complete the seal.

2.04 CONDUCTOR CASING

A. GENERAL:
A permanent conductor casing shall be installed as shown on Figure 1 and 2 to prevent shallow unstable hole conditions and to isolate the boreholes from shallow groundwater during the drilling and construction of the Monitoring Wells.

B. MATERIAL:
The conductor casing shall be mild steel conforming to ASTM A589-89a standard.

C. DIAMETER:
See well profile Figures 1 and 2 for the outside diameter of the conductor casing.

D. THICKNESS:
The conductor casing shall be at least 0.25 inch (1/4-inch) in thickness.

2.05 WELL CASING

A. MATERIAL:
Well casing material at the 4th. Ave Site shall be new Schedule 80 Polyvinyl Chloride (PVC) piping, with flush threaded joints. Well casing material at the F Tank Site (Nested) shall be new Schedule 40 copper-bearing, high-strength low-alloy (HSLA), or stainless steel in the vadose zone (0-350 ft bgs) and new threaded flush-joint Schedule 80 PVC in the saturated zone (below 350 ft). The two casing types shall be connected securely with a threaded flush-joint Schedule 40 to 80 adaptor, or equivalent.

B. DIAMETER AND NOMINAL CASING SIZE:
The well casing shall be round in cross-section and have a nominal inner diameter shown on Figures 1 and 2.

C. THICKNESS:
Well casing wall thickness at the 4th Avenue site shall conform to Schedule 80 dimensions. The well casing wall thickness at the F Tank site shall conform to Schedule 80 dimensions for PVC casing, and Schedule 40 dimensions for steel casing.

D. LENGTH:
The final total length and the length and depth of individual sections of well casing will be determined by Owner and Engineer based on data gathered during the Monitoring Well drilling and geophysical logging process. Proposed design for wells at the F Tank site are shown on Figure 1. Proposed design for wells at the 4th Avenue site are shown on Figure 2.

Unless approved otherwise by the Owner or Engineer and except for end pieces and casing to be connected to well screen sections, all sections of well casing shall be a minimum length of ten (10) feet and a preferred length of twenty (20) feet.

2.06 WELL SCREEN

A. CONSTRUCTION:
Actual lengths will be determined by the Owner or Engineer in the field. The proposed dimensions for the F Tank Monitoring Well are shown on Figure 1. The proposed dimensions for the 4th Avenue Monitoring Well are shown on Figure 2.

B. MATERIAL:
All well screens shall be new and fabricated with Schedule 80 PVC. The wells shall be constructed with a casing and factory-slotted screen. The nominal diameter of the wells is shown on Figure 1 and 2. For bid preparation purposes, screen aperture shall be 0.020-inches. Engineer may modify this aperture based on conditions encountered or data collected in the field, at Engineer's option.

C. BOTTOM SUMP AND END FITTINGS:
Each well casing will be completed at the bottom with a 5-foot sump of blank PVC casing, closed with a threaded flush-joint plug. The sump and end fittings shall be new and fabricated from the same material as the well casing (see 2.05 WELL CASING).

D. STRENGTH:
The well screen shall have sufficient strength to withstand anticipated tensile, formation, hydrostatic, and dynamic pressures imposed on the screen during installation, well development, and use. The minimum screen tensile strength must

exceed at least twice the total weight of the screen and any standard wall blank casing suspended below the top screen joint.

2.07 CENTRALIZERS AND SPACERS

A. CENTRALIZERS:
Centralizers shall be new and fabricated of PVC or steel to fit the well casing and well screen. The contractor shall attach centralizers at the top and bottom of the well screen to ensure adequate annular spacing (i.e., at least 2 inches) around the screen, and to help the well casing align with the center of the borehole in the area of the screen.

B. SPACERS FOR NESTED WELLS:
At the F-Tank site, Contractor shall construct and attach a spacer every forty (40) feet to bind the two casing strings together with at least one (1) inch separation, to avoid formation of vertical channels in the grout seal where casing is side-by-side. Construction of the nested well thus will require running in both casing strings simultaneously.

2.08 FILTER PACK

A. GENERAL:
The acceptability of artificial filter pack material shall be determined based upon certified laboratory test results and service records for the source of the material. Prior to delivery to the project site, the Contractor shall submit results and records as specified in Section 1.03 SUBMITTALS.
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B. MATERIALS:
All gravel or coarse-grained sand for packing shall be graded clean silica sand, free of silt, fine sand, clay, and foreign matter. Crushed gravel will not be accepted. Filter pack materials shall be graded as specified, and well-rounded with high sphericity. Not more than two percent, by weight, of the gravel shall be flat or elongated. The filter pack shall be manufactured by Lonestar, or equivalent, and subject to the approval of the Engineer prior to delivery. Prior to filter pack placement, the Engineer may have a certified testing laboratory perform a sieve analysis of the materials that are onsite to verify conformance with approved sample. Failure to meet gradation of the approved sample may be grounds for rejection. The filter pack, if stockpiled at the well site, shall be protected and kept free of all foreign matter.

2.09 SURFACE COMPLETION

A. GENERAL:

1. The F Tank Monitoring Well surface completion shall be a monument-style, locking steel well protector with four bollards as shown on the Drawings. The monument is to be 36-in high, set in a concrete slab (minimum slab dimensions 3-ft x 3-ft x 6-in thick). The bollards shall be 4-in diameter x 72-in long, set in concrete to 36-in depth, completed to 36-in above ground, concrete-filled & painted yellow. The bollards shall be set outside the slab, at the centerpoint of each side of the square.

2. The 4th Avenue Monitoring Well surface completions shall be minimum 12-inch diameter vaults or Christy-type concrete utility boxes. Vaults or utility boxes shall be vehicle-traffic rated.

PART 3 - EXECUTION

3.01 MOBILIZATION AND DEMOBILIZATION

A. GENERAL:

Mobilization and demobilization include the assembly and transportation of all necessary tools, equipment, personnel, and materials to and from the project site to perform all of the Work required under these specifications. It also includes the site work and preparation necessary to accommodate the well drilling, development, testing, and final cleanup work on the grounds occupied by the Contractor required under these specifications.

3.02 NOISE AND SOUNDWALLS

Contractor shall conform to all applicable local noise abatement ordinances, and shall measure and abate noise produced during drilling, well construction, well development, and well testing operations, including mobilization and demobilization.

At the 4th Avenue Site, installation of soundwalls around the worksite will be necessary to limit noise levels to 60 decibels (dB) or lower at the nearest residential property line (City of Marina Municipal Code Section 15.04.055). Contractor shall procure, install, maintain, and remove soundwalls at the worksite, as needed. The Contractor shall perform work within the permitted work hours of 7 a.m. to 7 p.m. Monday through Saturday, or 10 a.m. to 7 p.m. during Sundays or Holidays. The permitted hours can be extended to 8 p.m. when daylight savings time is in effect (City of Marina Municipal Code Sections 9.24.040 and 15.04.055).

There are no residential properties in the vicinity of the F Tank Site. However, the contractor shall still comply with all applicable noise abatement ordinances.

3.03 SAMPLING

A. FORMATION SAMPLING:

1. FREQUENCY OF SAMPLING:

During drilling of the conductor casing borehole and the pilot borehole, unless approved otherwise by the Owner, Contractor shall collect formation samples under the direction of the Engineer. Formation samples shall be collected every ten (10) feet (or as directed by the Engineer) and at each change in drilling conditions. Unless otherwise directed by the Engineer, samples shall be collected in individual fabric soil sample bags or other containers (e.g., heavy-duty Zip-Loc freezer bags) approved by the Engineer with at least one (1) gallon capacity for each interval. Samples shall consist of at least 500 - 1,000 grams (approximately 1 - 2 lb) of drilled formation material, not including drilling fluid. Containers or bags shall be plainly marked using an indelible marker with (a) the well ID, (b) the depth interval from which the sample was collected, and (c) the date and time of collection. Contractor shall keep all samples protected from damage or mixing, and shall keep samples organized in depth order. The Contractor shall be responsible for the safe and orderly storage of formation samples until acceptance by the Owner or Engineer.

2. SAMPLING METHOD:

Unless approved otherwise by the Engineer, the formation sampling method shall be as follows. A return flow sample shall be collected by removing from the discharge fluid a representative sample of the formation by a means acceptable to the Engineer

such as collecting the sample in a cuttings sample box or catching it in a bucket and allowing the sample to settle out.

Particular care shall be used during collection of formation samples from depth intervals designated for grain size distribution (GSD) analysis by Engineer. Contractor shall keep GSD samples separate from ordinary cuttings samples. For these sample intervals, the penetration of the bit shall stop when it advances to the top of the sampling interval. Circulation shall be maintained until all cuttings from the last drilled section of the hole are conveyed to the surface. Once the borehole is cleared, the Contractor shall clean all drilled materials from the sample catching device, cuttings box, return ditch, or cyclone and hopper (as applicable). The Contractor then shall drill to the bottom of the sampling interval and circulate fluid until all cuttings from the sampling interval are conveyed from the borehole and ensure that representative cuttings from the sampling interval are being collected in the sampling device. The Contractor shall then carefully collect a representative minimum 1-kg (2.2 lbs) cuttings sample from the sampling device.

B. WATER SAMPLING:
The Contractor shall coordinate with and provide necessary information to the Engineer for collection of any water samples during development of the Monitoring Well.

C. DRILLING FLUID SAMPLING:
The Contractor shall collect and test samples of drilling fluids at the rig pump suction with sufficient care to ensure a true and representative sample. It is the Contractor's responsibility to provide and maintain all necessary equipment for measuring fluid properties. Unless approved otherwise by the Engineer, the drilling fluid tests shall be conducted: 1) every 50 feet of depth; or 2) every four (4) circulating hours, whichever is more frequent. The tests also shall be conducted whenever conditions appear to have changed, problems arise, or whenever requested by the Owner or Engineer.

The Contractor shall conduct all tests and shall maintain a log showing the drilling fluid properties set forth herein including date, time, depth, viscosity, drilling fluid weight, sand content, and any other tests requested by Engineer.

3.04 CONDUCTOR CASING INSTALLATION

A. GENERAL:
A permanent conductor casing shall be installed to prevent shallow unstable hole conditions and to isolate the pilot borehole from shallow groundwater during the drilling and reaming of the pilot borehole and construction of the Monitoring Well. The conductor casing for the Monitoring Well shall be installed in a borehole at least four (4) inches larger in diameter than the outer diameter of the conductor casing.

B. DRILLING FLUID:
The requirements for drilling fluids set forth in Section 2.01 DRILLING FLUIDS shall apply to conductor casing installation, unless otherwise approved by Engineer.

3.05 OUTER ANNULAR (SANITARY) SEAL INSTALLATION

A. GENERAL:
Within the annular space between the conductor casing and the borehole wall, a minimum two (2) inch thick annular surface seal shall be emplaced to the depth of the conductor casing, as shown on Figures 1 and 2, by tremie pipe or other method approved by Engineer in accordance with requirements specified in DWR Bulletin Nos.

74-81 and 74-90 and any other local requirements. The outer annular seal shall be constructed of the materials set forth in Section 2.02 SEALING MATERIALS. Unless directed otherwise by the Owner or Engineer, all sealing material shall be installed in the presence of the Owner or Engineer. The Contractor shall notify all required authorities, including but not limited to the Monterey County Environmental Health Department, in advance of the planned sealing material placement, as required by the well drilling permit and all applicable regulations.

3.06 PILOT BOREHOLE DRILLING

A. GENERAL:
The Contractor shall employ approved drilling methods and equipment and properly install the materials described herein so that the finished Monitoring Well conforms to the design illustrated in Figures 1 and 2, and conforms to these specifications. The Contractor shall manage and dispose of drilling fluids and cuttings from drilling the pilot borehole in accordance with the requirements set forth in Section 1.07 DISPOSAL OF FLUIDS AND CUTTINGS.

B. METHODS:
After the conductor casing has been installed, the Contractor shall allow the outer annular seal to cure for the greater of 48 hours or another duration as directed by Owner or Engineer. Following the curing period, the Contractor shall drill a maximum 8-inch diameter pilot borehole from the bottom of the conductor casing borehole to the total depth shown on Figures 1 and 2, as directed by the Owner or Engineer, using the direct mud rotary drilling method.

C. DRILLING FLUID:
The requirements for drilling fluids set forth in Section 2.01 DRILLING FLUIDS shall apply to pilot borehole drilling. The Contractor shall collect and test samples of drilling fluids as applicable using the methods and frequency described in Section 3.03 SAMPLING. Drilling fluid data shall be provided to the Owner and Engineer.

3.07 GEOPHYSICAL TESTING - PILOT BOREHOLE

A. GENERAL:The Contractor shall arrange for a geophysical-services provider to conduct borehole geophysical testing for each borehole. The geophysical suite shall consist of spontaneous potential, natural gamma, short-normal and long-normal resistivity, fluid resistivity and temperature measurements. Owner or Engineer may specify other borehole geophysical tests to be conducted, at Owner or Engineer's option.

Upon drilling to the total depth as directed by the Owner or Engineer, the Contractor shall continue to circulate borehole fluids until all drill cuttings have been removed from the borehole, the drilling fluid in the hole is uniform, and the geophysical services technician is onsite or nearby and en-route to the jobsite, as approved by Engineer. With approval from the Owner or Engineer, the Contractor shall remove the drill string from the hole and shall remain on site, to assist as required, until the Owner releases the geophysical testing service provider from the site. The time after completely removing the drill pipe, stabilizer, and bit from the hole until the geophysical testing service provider is released from the site shall be regarded as standby time in accordance with Section 1.05 SCHEDULING.

In the event that geophysical testing cannot be performed over the total depth drilled, as recorded in the Contractor's Driller's Log, the Owner shall receive a credit from the

Contractor in the form of a reduction in the total feet charged for borehole drilling equal to the difference between the total depth drilled minus the total depth available for geophysical testing.

Contractor shall ensure that the geophysical services contractor provides digital format files in both PDF and LAS format to Engineer for review via email, before releasing the geophysical services contractor from the jobsite.

3.08 BOREHOLE REAMING TO FINAL DIAMETER

A. GENERAL:
The Contractor shall employ approved drilling methods and equipment and properly install the materials described herein so that the finished Monitoring Well conforms to the design illustrated in Figures 1 and 2, and conforms to these specifications. The Contractor shall manage and dispose of drilling fluids and cuttings from reaming of the pilot borehole in accordance with the requirements set forth in Section 1.07 DISPOSAL OF FLUIDS AND CUTTINGS.

B. METHODS:
Contractor shall ream the pilot borehole out to its final design diameter(s) from the bottom of the conductor casing borehole to the specified depth(s) shown on Figures 1 and 2, as directed by the Owner or Engineer, using the mud rotary drilling method.

C. DRILLING FLUID:
The requirements for drilling fluids set forth in Section 2.01 DRILLING FLUIDS shall apply to reaming of the pilot borehole if drilled using the direct rotary method. If the flooded-reverse rotary method is employed, a less viscous mud may be used. The Contractor shall collect and test samples of drilling fluids as applicable using the methods and frequency described in Section 3.03 SAMPLING. Drilling fluid data shall be provided to the Owner and Engineer.

3.09 GEOPHYSICAL TESTING - REAMED BOREHOLE

A. GENERAL:
After the borehole is reamed to its final design diameter, Contractor shall arrange for caliper testing by the geophysical services provider, to provide measured final borehole diameter(s) and volume(s) for accurate emplacement of annular fill materials. Owner or Engineer may specify other borehole geophysical tests to be conducted, at Owner or Engineer's option.

Upon completion of reaming, drilling to the total design depth as directed by the Owner or Engineer, the Contractor shall continue to circulate borehole fluids until all drill cuttings have been removed from the borehole, the drilling fluid in the hole is uniform, and the geophysical services technician is onsite, or nearby and en-route to the jobsite, as approved by Engineer. With approval from the Owner or Engineer, the Contractor shall remove the drill string from the hole and shall remain on site, to assist as required, until the Owner releases the geophysical testing service provider from the site. The time after completely removing the drill pipe, stabilizer, and bit from the hole until the geophysical testing service provider is released from the site shall be regarded as standby time in accordance with Section 1.05 SCHEDULING.

In the event that geophysical testing cannot be performed over the total depth drilled, as recorded in the Contractor's Driller's Log, the Owner shall receive a credit from the Contractor in the form of a reduction in the total feet charged for borehole drilling equal

to the difference between the total depth drilled minus the total depth available for geophysical testing.

Contractor shall ensure that the geophysical services contractor provides digital format files in both PDF and LAS format to Engineer for review via email, before releasing the geophysical services contractor from the jobsite.

3.10 ZONE TESTING (NOT USED)

3.11 BOREHOLE DESTRUCTION

A. GENERAL:
If the borehole requires destruction, the Contractor shall furnish all material, equipment, and necessary permits and perform all labor to properly destroy the borehole in accordance with guidelines provided by DWR Bulletin Nos. 74-81 and 74-90, applicable Monterey County Codes, regulations, and ordinances, the specific terms of the drilling permit, and as specified herein. The goal of destruction is to restore the hydrogeologic conditions that existed before the hole was drilled.

B. METHOD:Unless approved otherwise in writing by Owner or Engineer, and in addition to other requirements specified above, the entire borehole will be filled with neat cement, sand/cement grout or concrete placed from the bottom upward by a tremie method that avoids segregation or dilution of grout material.

C. RECORDS:The Contractor shall submit to the Owner or Engineer complete records of the entire destruction procedure to provide documentation that the hole was properly sealed. The records shall include the type and quantity of sealing material, the method of emplacement, the depth intervals at which the sealing materials were placed, and measurements of the water or fluid level before borehole destruction.

Contractor shall be responsible for contacting and coordinating with the grout inspector for the permitting agency, as required in the drilling permit.

3.12 WELL CASING AND SCREEN INSTALLATION

Well casing and screen shall be installed in conformance with dimensions and specifications shown on Figures 1 and 2, and as detailed in Sections 2.05 WELL CASING and 2.06 WELL SCREEN. Contractor shall run in well casing for nested wells concurrently, using spacers between the multiple casing strings to maintain a grout envelope around each completion over the total cased depth of the well(s), as described in Section 2.07 CENTRALIZERS AND SPACERS. Contractor shall maintain casing in suspension at all times to enhance plumbness and avoid deviation of the casing from straight and vertical.

3.13 FILTER PACK EMPLACEMENT

A. DELIVERY AND STORAGE:
The filter pack materials shall be delivered to the project site upon approval by the Owner or Engineer. The material may be delivered in bags, “supersacks” or in bulk. Contractor shall protect filter pack material from contact with the ground, contamination with foreign materials of any kind, and weather until installed. Materials delivered in bulk shall be stored on a surface covered with new, clean heavy (6-mil or greater) plastic sheeting. Filter pack materials shall be covered to prevent contamination with debris and other substances. Material for the filter pack that comes

in contact with the ground or contaminated material shall not be used, and Contractor shall protect all materials from contamination until installation.

B. INSTALLATION:
Unless otherwise approved by the Owner or Engineer, the Contractor shall install filter pack materials using a tremie wash method, not by freefall. The material shall be placed to ensure continuity of the filter pack without bridging, voids, or segregation. Contractor shall tremie-wash in the filter pack evenly around the casing, withdrawing the tremie pipe as backfilling progresses, to ensure the tremie remains above the top of filter pack at all times.

Contractor shall emplace filter pack sand over the screened intervals for each well or well completion, as detailed in Figures 1 and 2. Contractor shall demonstrate that the amount of filter pack materials emplaced is at least as much as the calculated borehole volume over the intended interval as indicated by the caliper testing data (Section 3.09 GEOPHYSICAL TESTING - REAMED BOREHOLE). For well screens less than 1,000 feet deep, Contractor shall attempt to measure the depth to the top of filter pack at several locations around the casing, using a weighted tape, weighted hip-chain thread, or tag line, to ensure it fills the annular space evenly and completely up to the specified depth. Contractor shall notify Owner or Engineer when filter pack emplacement is complete and shall allow Owner or Engineer to confirm the top of filter pack depth using Engineer's own equipment at Engineer's option.

3.14 FILTER PACK FEED PIPE AND SOUNDING TUBE INSTALLATION (NOT USED)

3.15 GROUT SEAL EMPLACEMENT

A. DELIVERY AND STORAGE:
The grout seal materials shall be delivered to the project site upon approval by the Owner or Engineer. Contractor shall protect grout material from the weather and any contact with moisture, the ground, or contamination with foreign materials of any kind, until installed. Materials delivered shall be stored covered using new, clean heavy (6-mil or greater) plastic sheeting to prevent wetting by rain or contamination with debris or other substances. Material for the grout that comes in contact with the ground or contaminated material shall not be used, and Contractor shall protect all materials from contamination until installation.

B. INSTALLATION:
Unless otherwise approved by the Owner or Engineer, the Contractor shall install grout materials using a tremie method, not by freefall. The material shall be placed to ensure continuity of the grout seal without bridging, voids, or segregation. Contractor shall tremie the grout in evenly around the casing, withdrawing the tremie pipe as backfilling progresses, to ensure the tremie remains below the top of grout at all times, to avoid dilution.

Contractor shall emplace grout between the filter pack intervals for each well or well completion, and above the uppermost filter pack interval, as detailed in Figures 1 and 2. Contractor shall demonstrate that the amount of grout materials emplaced is at least as much as the calculated borehole volume over the intended interval as indicated by the caliper testing data (Section 3.09 GEOPHYSICAL TESTING - REAMED BOREHOLE). Contractor shall notify Owner or Engineer when grout emplacement is complete.

3.16 WELL DEVELOPMENT

A. GENERAL:

The work described in this section consists of furnishing all necessary pumps, surge blocks, jets, bailers, air equipment, measurement equipment, other material, and other equipment and performing all labor for well development in accordance with these specifications. The Monitoring Well shall be developed by a combination of bailing, airlift pumping, swabbing/surging and overpumping, unless other methods are deemed necessary and approved by the Owner or Engineer.

B. METHODS:

1. AIRLIFTING AND SWABBING:

The Contractor shall develop the newly constructed well using a dual-swab air-development setup, if sufficient water depth is available in the well. If water depth is insufficient, Contractor shall notify Engineer and proceed with bailing, swabbing, and overpumping.

Initially, Contractor shall remove major sediment in the casing (sand or mud) by bailing. Contractor shall notify Engineer immediately if filter pack sand is noted to be present inside the casing. After bailing, air-lift development shall proceed without swabs initially to remove mud and fine sediment from inside the well casing. After the casing has been cleared to its total depth, the Contractor shall use a dual-swab air-lift apparatus to concentrate development energy within the filter pack over short intervals of well screen, moving the swab up and down over short intervals in order to sequentially develop all well screens over their entire lengths. The Contractor shall airlift and swab, moving the dual-swab apparatus with repetitive strokes from the top to the bottom of each screened interval, until the development water is visibly cleared of drilling fluid and fine sand.

2. SURGING:

After airlifting and swabbing, development shall include surging the Monitoring Well using a flanged or valved surge block. The surging shall be conducted from top to bottom of each screened interval with strokes of no more than five (5) feet. Fine sand and silt drawn into the Monitoring Well by surging shall be removed periodically by pumping or bailing. Surging or swabbing shall be continued for up to 20 minutes total per foot of well screen, or until the fines entering the Monitoring Well are decreased to acceptable levels as described under Section 3.16 WELL DEVELOPMENT. After each round of surging, the Monitoring Well shall be bailed or airlift-pumped clean of all mud, sand, and sediment.

3. OVERPUMPING:

Upon completion of the surging process, development shall include a series of short periods (approximately 10 minutes) of overpumping followed by an equal time for recovery. Contractor shall pump the wells with no check valve or foot valve present. Unless determined otherwise by the Owner or Engineer, Contractor shall use a pump capable of inducing a screen entrance velocity of at least 0.15 feet per second, i.e., at least 90 gpm for the 4th Avenue wells, and 45 gpm for the F-Tank wells. If a pump with this capacity is not available, Contractor shall bail the well at a rate sufficient to induce an instantaneous screen entrance velocity of at least 0.15 feet per second for each overpumping cycle.

Contractor shall measure and record water quality parameters at the end of each overpumping cycle, including temperature, pH, electrical conductivity, and turbidity. Contractor also shall determine specific capacity (gallons per minute per food of

drawdown after of the well after each overpumping or bailing cycle. Pumping (or bailing, as appropriate) shall continue at the above rates until acceptable water quality standards are attained, as specified in Section 3.16 WELL DEVELOPMENT, Part D, COMPLETION OF WELL DEVELOPMENT:, below.

C. INSTALLATION OF PUMP FOR DEVELOPMENT:
The Contractor shall furnish, install, operate, and remove an acceptable pump for developing the Monitoring Well. The pump shall have its intake set at a sufficient depth to conduct the well development specified herein, accounting for drawdown, as estimated based on well behavior during initial development. The pumping unit shall be complete with an ample power source, controls, and appurtenances and shall be capable of being operated without interruption for a period of at least 12 hours. The Contractor shall furnish and install discharge piping for the pumping unit of sufficient size and length to conduct well development water to the locations specified in Section 1.07 DISPOSAL OF FLUIDS AND CUTTINGS.

D. COMPLETION OF WELL DEVELOPMENT:
Unless determined otherwise by the Owner or Engineer, well development shall be considered complete upon satisfaction of all of the following conditions:

1. The turbidity of the produced water shall be less than or equal to 5 NTUs.
2. The sand content of the discharge water shall average not more than five (5) mg/L.
3. There shall be no increase in specific capacity during at least three (3) cycles of overpumping or bailing.

Upon completion of development, the Contractor shall remove any sand, sediment, or other debris accumulated in the bottom of the well casing.

E. MEASUREMENTS DURING DEVELOPMENT:

The Contractor shall record all of the following during development:

1. Time, measured to the nearest minute.
2. Flow rate, measured to the nearest 10 gallons per minute.
3. Pumping water levels before surges (as applicable), measured to the nearest 0.01 foot.
4. Start and stop time, and duration of each swabbing, surging, or pumping cycle.
5. Any observation of unusual or changed conditions, including changes in rate of drawdown, changes in pump behavior or operation, unusual odors, gases, color, turbidity, or sediment load changes in produced water, or other conditions.

F. DISCHARGE WATER:
Well development discharge water shall be disposed of in accordance with Section 1.07 DISPOSAL OF FLUIDS AND CUTTINGS.

G. RECORDS:
Complete records of all development work shall be maintained by the Contractor and provided to the Owner and Engineer upon request. See Section 1.08 RECORDS.

3.17 WELL PLUMBNESS AND ALIGNMENT TESTING (NOT USED)

3.18 WELL DESTRUCTION

A. GENERAL:
Upon determination that the well should be destroyed for failure to meet the plumbness and alignment requirements set forth in Section 1.04 QUALITY ASSURANCE, the Contractor shall furnish all material, equipment, and necessary permits, and shall perform all labor to properly plug and destroy the monitoring well in accordance with guidelines provided by DWR Bulletin Nos. 74-81 and 74-90 and as specified herein. The goal of destruction is to restore the hydrogeologic conditions that existed before the well was drilled.

B. METHOD:
Unless otherwise required under the terms of the well destruction permit, and in addition to other requirements specified in DWR Bulletin Nos. 74-81 and 74-90, the Contractor shall destroy the entire well by pressure grouting, emplacing neat cement by tremie within the well screen and casing assembly from the bottom upwards, using a method that will avoid segregation or dilution of cement.

C. RECORDS:
The Contractor shall provide to the OTR complete records of the entire destruction procedure to provide a record that the well was properly destroyed. The records shall include the type and quantity of sealing material, the depth at which the sealing materials were placed. Records shall include documentation of approval of well destruction by the permitting agency.

D. PAYMENT:
No payment shall be made for monitoring well destruction that is necessary due to the Contractor's failure to construct a monitoring well in accordance with the plumbness requirements set forth in Section 1.04 QUALITY ASSURANCE.

END OF SECTION