

DIVISION FIVE  
SPECIAL PROVISIONS & TECHNICAL SPECIFICATIONS  
FOR  
DOLPHIN DRIVE AND SUMNER AVENUE MONITORING WELL SC-8

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## **SECTION 500. DESCRIPTION OF WORK**

The Contractor shall furnish, in accordance with the Soquel Creek Water District (SCWD) Standard Specifications and Standard Plans, these Special Provisions, and the Contract Documents, all labor, materials, tools, and equipment and perform all work required in:

- Mobilization and demobilization, drilling three (3) boreholes, geophysical logging, installing monitoring well casings and screens, placing filter packs and sanitary seals, well development, and wellhead completion. The District will coordinate with the Contractor to establish a mutually agreed upon Notice to Proceed date. The Contractor shall complete the Contract work within the specified time of completion, beginning on the Notice to Proceed date and continuing in consecutive days until the project Contract expires.

The work site is located in Aptos, Santa Cruz County, CA.

## **SECTION 501. SPECIFICATIONS & PLANS**

The Contractor shall perform the work specified herein in accordance with the SCWD Standard Specifications and Standard Plans adopted by the Board of Directors on August 2, 1994, Standard Specifications and Standard Plans of the California Department of Transportation and Standard Specifications & Standard Plans of the County of Santa Cruz, California.

SCWD Standard Specifications and Standard Plans are available for purchase at the SCWD Office for an additional \$25 per set. (For more information, please call 831-475-8500.)

In case of conflict between the SCWD Standard Specifications and Standard Plans and these special provisions, the special provisions shall take precedence and be used in lieu of such conflicting portions.

## **SECTION 502. CHECKLIST FOR BIDDERS**

- Bid Opening is scheduled for October 10, 2006 at 2:00 PM in the SCWD Board Room, 5180 Soquel Drive, Soquel, CA 95073.

- **DO NOT REMOVE BID DOCUMENTS FROM THESE BOUND SPECIFICATIONS.** Unbound bid documents will result in immediate disqualification.
- **SIGN & INCLUDE ALL ADDENDUM(S) WITH THE BID DOCUMENTS.** Bid Documents with missing addendums will result in immediate disqualification.
- Include a bidder's bond, certified check, or cashier's check for the amount equal to 10% of the bid amount.
- Complete and Fill-Out the Yellow Sheets and Proposal in the Bid Documents. The lowest competitive bidder shall complete the green sheets after the project has been awarded.

If you have any questions, please contact the Engineering Department at 831-475-8500.

## **SECTION 503. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES**

It is estimated that a maximum of 30 days shall pass from the date sealed bids are opened until the "Notice to Proceed" is issued.

The Contractor shall return the executed contract accompanied by bonds and insurance certificates following the award of the contract. The District shall issue a letter and Purchase Order authorizing the Contractor to begin construction. The Contractor shall begin work per the Start Date set on the "Notice to Proceed," unless the District has approved a time extension. The District may delay the start of work due to such factors as inclement weather, material availability, and other unforeseen factors.

### ***SECTION 503.1 CONTRACT TIME OF COMPLETION***

Contract Time of Completion shall be **45-working** days following the effective date of the Notice to Proceed.

The Contractor shall not perform work before 8:00 AM or after 5:00 PM each workday except for emergencies as defined in the SCWD Standard Specifications and Standard Plans. The Contractor shall not work on Saturdays, Sundays or holidays. For the purposes of this section the word "work" shall mean all noise producing activities including but not limited to starting of trucks or equipment, haulage, erection, construction, demolition, and transiting the access roads.

**SECTION 503.2 LIQUIDATED DAMAGES**

The District shall enforce Liquidated Damages per Section 108.09, “Assessment of Damages for Delay” of SCWD Standard Specifications if the Contractor fails to complete the in the time specified herewith.

<b>SCHEDULE OF LIQUIDATED DAMAGES</b>		
<b>ORIGINIAL AMOUNT OF CONTRACT</b>		<b>PER DIEM AMOUNT OF LIQUIDATED DAMAGES</b>
<b>FOR MORE THAN</b>	<b>UP TO AND INCLUDING</b>	
\$0.00	\$100,000.00	\$250.00
\$100,000.00	\$500,000.00	\$500.00
\$500,000.00	\$1,000,000.00	\$750.00
\$1,000,000.00	\$2,000,000.00	\$1,000.00
OVER \$2,000,000.00		AS SPECIFIED

The Contractor should refer to Division One, Sections 101-108, “General Conditions,” of the SCWD Specifications for additional provisions.

**SECTION 503.3 PRECONSTRUCTION CONFERENCE**

The Contractor shall meet with the District at the District Office following award of contract, but prior to commencement of site work. The Contractor shall furnish to the District at the preconstruction meeting the following items:

- A list of names, titles, addresses and telephone numbers of the Contractor’s personnel related to the project. Emergency and after-hours telephone numbers are to be included.
- A construction schedule setting forth the sequence in which construction will proceed. The schedule shall be a time-scale critical path type. Refer to Section 106.06, “Schedule” of SCWD Standard Specifications.
- Material submittals (5 copies minimum) per Section 107.10, “Submittals” of SCWD Standard Specifications.
- A Traffic Control Plan per Section 203, “Traffic Control” of SCWD Standard Specifications and these Special Provisions.
- A general notice describing the project and the expected impact on nearby residences. The Contractor shall also outline the Contractors’ willingness to minimize inconveniences to local residences. The Contractor shall deliver (not mail) the notice to local businesses and residents in the area 5 days prior to the Start of Construction. The Contractor shall include on the notice the Contractor’s telephone number and the contact person’s name. The Contractor shall submit the notice to the District for approval prior to distribution.

### ***SECTION 503.4 PUBLIC MEETING***

The Contractor shall, if requested by the District, attend a public meeting prior to the start of the project. The time commitment for the public meeting shall be no more than 2 hours.

### ***SECTION 503.5 INSURANCE REQUIREMENTS***

The Contractor shall provide and maintain the following commercial general liability and automobile liability insurance:

#### **Coverage**

Coverage for commercial general liability and automobile liability insurance shall be at least as broad as the following:

1. Insurance Services Office (ISO) Commercial General Liability Coverage (Occurrence Form CG 0001)
2. Insurance Services Office (ISO) Business Auto Coverage (Form CA 0001), covering Symbol 1 (any auto)

#### **Limits**

The Contractor shall maintain limits no less than the following:

1. General Liability - One million dollars (\$1,000,000) per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit or products-completed operations aggregate limit is used, either the general aggregate limit shall apply separately to the project/location (with the ISO CG 2503, or ISO CG 2504, or insurer's equivalent endorsement provided to the Soquel Creek Water District) or the general aggregate limit and products-completed operations aggregate limit shall be twice the required occurrence limit.
2. Automobile Liability - One million dollars (\$1,000,000) for bodily injury and property damage each accident limit.

#### **Required Provisions**

The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

1. The Soquel Creek Water District, its directors, officers, employees, and authorized volunteers are to be given insured status (via ISO endorsement CG 2010, CG 2033, or insurer's equivalent for general liability coverage) as

respects: liability arising out of activities performed by or on behalf of the Contractors; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; and automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the Soquel Creek Water District, its directors, officers, employees, or authorized volunteers.

2. For any claims related to this project, the Contractor's insurance shall be primary insurance as respects the Soquel Creek Water District, its directors, officers, employees, or authorized volunteers. Any insurance, self-insurance, or other coverage maintained by the Soquel Creek Water District, its directors, officers, employees, or authorized volunteers shall not contribute to it.
3. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the Soquel Creek Water District, its directors, officers, employees, or authorized volunteers.
4. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
5. Each insurance policy required by this agreement shall state, or be endorsed to state, that the insurance carrier or the Contractor shall not cancel coverage, except after thirty (30) days (10 days for non-payment of premium) prior written notice by U.S. mail has been given to the Soquel Creek Water District.

Such liability insurance shall indemnify the Contractor and his/her sub-contractors against loss from liability imposed by law upon, or assumed under contract by, the Contractor or his/her sub-contractors for damages on account of such bodily injury (including death), property damage, personal injury, completed operations, and products liability.

The general liability policy shall cover bodily injury and property damage liability, owned and non-owned equipment, blanket contractual liability, completed operations liability, explosion, collapse, underground excavation, and removal of lateral support.

The automobile liability policy shall cover all owned, non-owned, and hired automobiles.

All of the insurance shall be provided on policy forms and through companies satisfactory to the Soquel Creek Water District.

#### **Deductibles and Self-Insured Retentions**

Any deductible or self-insured retention must be declared to and approved by the Soquel Creek Water District. At the option of the Soquel Creek Water District, the insurer shall either reduce or eliminate such deductibles or self-insured retentions.

#### **Acceptability of Insurers**

Insurance is to be placed with insurers having a current A.M. Best rating of no less than A:VII or equivalent or as otherwise approved by the Soquel Creek Water District.

#### **Workers' Compensation and Employer's Liability Insurance**

The Contractor and all sub-contractors shall insure (or be a qualified self-insured) under the applicable laws relating to workers' compensation insurance, all of their employees working on or about the construction site, in accordance with the "Workers' Compensation and Insurance Act", Division IV of the Labor Code of the State of California and any Acts amendatory thereof. The Contractor shall provide employer's liability insurance with limits of no less than \$1,000,000 each accident, \$1,000,000 disease policy limit, and \$1,000,000 disease each employee.

#### **Responsibility for Work**

Until the completion and final acceptance by the Soquel Creek Water District of all the work under and implied by this agreement, the work shall be under the Contractor's responsible care and charge. The Contractor shall rebuild, repair, restore and make good all injuries, damages, re-erectments, and repairs occasioned or rendered necessary by causes of any nature whatsoever.

The Contractor shall provide and maintain builder's risk insurance (or installation floater) covering all risks of direct physical loss, damage or destruction to the work in the amount specified in the General Conditions, to insure against such losses until final acceptance of the work by the Soquel Creek Water District. Such insurance shall insure at least against the perils of fire and extended coverage, theft, vandalism and malicious mischief, and collapse. The Soquel Creek Water District, its directors, officers, employees, and authorized volunteers shall be named insured on any such policy. The making of progress payments to the Contractor shall not be construed as creating an insurable interest by or for the Soquel Creek Water District or be construed as relieving the Contractor or his/her subcontractors of responsibility

for loss from any direct physical loss, damage or destruction occurring prior to final acceptance of the work by the Soquel Creek Water District.

The Contractor shall waive all rights of subrogation against the Soquel Creek Water District, its directors, officers, employees, or authorized volunteers.

#### **Evidences of Insurance**

Prior to execution of the agreement, the Contractor shall file with the Soquel Creek Water District a certificate of insurance (Acord Form 25-S or equivalent) signed by the insurer's representative evidencing the coverage required by this agreement. Such evidence shall include an additional insured endorsement signed by the insurer's representative and evidence of waiver of rights of subrogation against the Soquel Creek Water District (if builder's risk insurance is applicable). Such evidence shall also include confirmation that coverage includes or has been modified to include Required Provisions 1-5.

The Contractor shall, upon demand of the Soquel Creek Water District, deliver to the Soquel Creek Water District such policy or policies of insurance and the receipts for payment of premiums thereon.

#### **Continuation of Coverage**

If any of the required coverages expire during the term of this agreement, the Contractor shall deliver the renewal certificate(s) including the general liability additional insured endorsement and evidence of waiver of rights of subrogation against the Soquel Creek Water District (if builder's risk insurance is applicable) to the Soquel Creek Water District at least ten (10) days prior to the expiration date.

#### **Sub-Contractors**

In the event that the Contractor employs other contractors (sub-contractors) as part of the work covered by this agreement, it shall be the Contractor's responsibility to require and confirm that each sub-contractor meets the minimum insurance requirements specified above.

#### ***SECTION 503.6 HOLD HARMLESS AND INDEMNIFICATION***

To the fullest extent permitted by law, Contractor shall indemnify and hold harmless and defend Soquel Creek Water District, its directors, officers, employees, or authorized volunteers, and each of them from and against:

- a. Any and all claims, demands, causes of action, damages, costs, expenses, losses or liabilities, in law or in equity, of every kind or nature whatsoever for, but not limited to, injury to or death of any person including Soquel Creek Water District and/or Contractor, or any directors, officers, employees, or authorized volunteers of Soquel Creek Water District or Contractor, and damages to or destruction of property of any person, including but not limited to, Soquel Creek Water District

and/or Contractor or their directors, officers, employees, or authorized volunteers, arising out of or in any manner directly or indirectly connected with the work to be performed under this agreement, however caused, regardless of any negligence of Soquel Creek Water District or its directors, officers, employees, or authorized volunteers, except the sole negligence or willful misconduct or active negligence of Soquel Creek Water District or its directors, officers, employees, or authorized volunteers;

- b. Any and all actions, proceedings, damages, costs, expenses, penalties or liabilities, in law or equity, of every kind or nature whatsoever, arising out of, resulting from, or on account of the violation of any governmental law or regulation, compliance with which is the responsibility of Contractor;
- c. Any and all losses, expenses, damages (including damages to the work itself), attorneys' fees, and other costs, including all costs of defense, which any of them may incur with respect to the failure, neglect, or refusal of Contractor to faithfully perform the work and all of the Contractor's obligations under the agreement. Such costs, expenses, and damages shall include all costs, including attorneys' fees, incurred by the indemnified parties in any lawsuit to which they are a party.

Contractor shall defend, at Contractor's own cost, expense and risk, any and all such aforesaid suits, actions, or other legal proceedings of every kind that may be brought or instituted against Soquel Creek Water District or its directors, officers, employees, or authorized volunteers.

Contractor shall pay and satisfy any judgment, award or decree that may be rendered against Soquel Creek Water District or its directors, officers, employees, or authorized volunteers, in any and all such suits, actions, or other legal proceedings.

Contractor shall reimburse Soquel Creek Water District or its directors, officers, employees, or authorized volunteers, for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided.

Contractor's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by the Soquel Creek Water District, or its directors, officers, employees, or authorized volunteers.

## **SECTION 504. GENERAL CONSTRUCTION**

### ***SECTION 504.1 REFERENCED SPECIFICATIONS***

The Contractor shall perform the work specified herein in accordance with Soquel Creek Water District Standard Specifications and Plans, adopted by the Board of Directors on August 2, 1994, periodic updates that have been approved by the Chief Engineer and distributed to Specification holders, applicable provisions of the State of California Standard Specifications (CALTRANS) current edition, and the current edition of the County of Santa Cruz Design Criteria Manual when applicable.

### ***SECTION 504.2 ORDER OF WORK***

The District reserves the right to determine, in sequential order of priority, the manner in which the work shall progress.

### ***SECTION 504.3 EXISTING CONDITIONS***

Existing utilities, structures and natural features may be present in the proposed work site. The Contractor shall be responsible for determining and verifying the size and locations of all potential conflicts which might be encountered in the performance of the work.

The Contractor shall restore drainage patterns and facilities to pre-existing conditions.

### ***SECTION 504.4 COUNTY REQUIREMENTS***

The District is in the process of securing a County Encroachment Permit. The Contractor shall review said permits prior to construction and shall comply with all requirements as stated in the permits. The District shall pay all fees associated with necessary permits for this project.

The District may not accept the contract work until the Contractor has submitted a written statement (specifically referencing relative compaction and road surface restoration requirements) issued by the County of Santa Cruz, advising that the Contractor has complied with all County requirements and that the completed work is acceptable.

### ***SECTION 504.5 TRAFFIC CONTROL***

#### **Description**

The Contractor shall provide the District with a traffic control plan 5 days prior to the start of construction. The District and County of Santa Cruz shall approve the plan prior to beginning construction. The Contractor shall provide a plan in compliance with the State of California, Department of Transportation "Manual of Traffic Controls for Construction and

Maintenance Work Zones,” latest edition. The Contractor shall ensure the plan be in general conformance with the provisions of Standard Plan No. T12, “Traffic Control System for Lane Closure on Multilane Conventional Highways” and/or Standard Plan No. T13, “Traffic Control System for Lane Closure on Two Lane Conventional Highways” of the Cal-Trans Standard Plans.

The Contractor shall install “Construction Zone, Speed Limit 15 MPH” signs on semi-permanent posts prior to construction along the proposed construction area. The Contractor shall maintain the signs throughout construction of the project and shall not remove the signs until directed by the District. The Contractor shall cover other speed limit signs located in the project area. The Contractor shall ensure the covers remain until the “Construction Zone, Speed Limit 15 MPH” signs are removed.

The Contractor shall be responsible for furnishing, mounting, installing, and maintaining all signage during duration of the project. The District Inspector shall determine the exact sign locations in the field. The Contractor shall install signs prior to the start of construction, and ensure the signs remain posted during the entire duration of the project.

The Contractor shall inspect traffic control signs, barricades, and delineators and shall maintain them in accordance with the approved traffic control plan throughout each workday.

The Contractor shall post “No Parking” signs as required 72 hours prior to construction at 50’ maximum spacing. The Contractor shall check and maintain said signs on a daily basis. The Contractor shall ensure “No Parking” signs clearly state the enforced dates and shall update them as necessary.

#### **Measurement and Payment**

The Contractor shall include, in the contract unit or lump sum prices for other items of work, all costs associated with “Traffic Control.” The District will not consider any additional compensation.

#### ***SECTION 504.6 DUST SUPPRESSION***

The Contractor shall implement a dust suppression plan if requested by the District Engineer. If a mechanical broom sweeper is used, it shall be equipped with water nozzles to minimize dust. At the end of each workday, the Contractor shall clean construction debris from the roadway.

## **Measurement and Payment**

The Contractor shall include, in the contract unit or lump sum prices for other items of work, all costs associated with "Dust Suppression." The District will not consider any additional compensation.

## ***SECTION 504.7 PROTECTION OF PROPERTY & MATERIAL***

### **Description**

The Contractor shall contact each property and business owner having access along project corridor with a District approved letter (submitted to and approved by the District) and shall keep area residents informed of the plan of operation throughout the course of this contract.

The Contractor shall protect the road surface and shall restore said surface to an equivalent or better condition upon completion of all work. The Contractor shall make any interim repairs or maintenance that may be requested by the District Engineer or Inspector during the course of work.

The Contractor shall replace traffic striping and pavement markings destroyed or damaged during construction with temporary striping or markings acceptable to the District. The Contractor shall install temporary striping prior to reopening streets to traffic.

The Contractor shall permanently restore all traffic striping and pavement markings within seven days of final paving at the District's direction.

The Contractor shall protect in place or remove and replace all existing utilities and public or private improvements including but not limited to all berms, curbs, gutters, walkways, sidewalks, driveways, trail-ways, storm drains, landscaping materials, landscape irrigation, landscape electrical systems, walls and fences in place. The Contractor shall correct or replace any damaged utilities or improvements as part of the contract work. No additional compensation will be considered.

The Contractor shall not disturb existing survey monuments or benchmarks. The Contractor shall contact a registered civil engineer or land surveyor to remove or replace monuments. The Contractor shall ensure monument ties be established prior to removal.

The Contractor shall replace complete concrete panels or between existing concrete joints during replacement of any concrete work. The Contractor shall replace colored concrete with colored concrete to match when concrete is removed.

### **Measurement and Payment**

The Contractor shall include, in the contract unit or lump sum prices for other items of work, all costs associated with “Protection of Property and Materials.” The District will not consider any additional compensation.

### ***SECTION 504.8 SAFETY PLAN***

#### **Description**

In carrying out his/her work, the Contractor shall at all times exercise all necessary precautions for the safety of employees appropriate to the nature of the work and the conditions under which the work is to be performed, and be in compliance with all applicable federal, state and local statutory and regulatory requirements including California Department of Industrial Relations (Cal/OSHA) regulations; and the U.S. Department of Transportation Omnibus Transportation Employee Testing Act. The Contractor shall prepare a Safety Plan in accordance with the provisions of Section 202.03.02, "Safety Plan" of SCWD Standard Specifications. The Contractor shall include in the Safety Plan provisions for handling hazardous and toxic materials, and the protection of all persons having access, authorized or not, to the work site. Such plan shall be submitted to and accepted by SCWD prior to starting excavation.

### **Measurement and Payment**

The Contractor shall include, in the contract unit or lump sum prices for other items of work, all costs associated with “Safety Plan.” The District will not consider any additional compensation.

### ***SECTION 504.9 UTILITIES***

#### **Description**

The Contractor shall contact Underground Service Alert and nonmember companies or utilities at least two (2) working days prior to excavating any segment of the work. The Contractor shall be prepared to produce USA ticket number at the request of the District.

The Contractor shall provide utility offsets after the first marking has occurred. The Contractor shall deliver one copy of offset markings to the District no later than seven days after first marking occurred.

The Contractor shall excavate, expose, and determine (“Pothole”) the location and depth of each potential interference at least two (2) days in advance. Changes or delays caused by the Contractor’s failure to perform “Potholing” and interference location work shall not be eligible for extra work, compensation, or time extension.

The Contractor shall not interrupt or disturb any utility facility without authority from the utility or order from the District. The Contractor shall furnish and place the necessary protection around the utility when protection is called for, visible to the Contractor, or marked as such. The Contractor shall install the utility protection at no additional expense to the District.

## **SECTION 505. CONCRETE WORK**

### **Description**

The Contractor shall refer to Section 308, "Concrete Structures" of SCWD Specifications for direction of repaving areas within existing concrete surfaces.

### **Measurement and Payment**

The Contractor shall include, in the contract unit or lump sum prices for other items of work, all costs associated with "Concrete Work." The District will not consider any additional compensation.

## **SECTION 506. SPECIAL PROVISIONS**

### ***SECTION 506.1 SUMMARY OF WORK***

The purpose of this project is to construct a cluster of three monitoring wells in separate boreholes to expand the Soquel Creek Water District's (District) monitoring well network. The primary purpose of the monitoring well cluster is to monitor seawater intrusion into water bearing zones between the District's production wells and Monterey Bay. The monitoring well cluster will be installed in the City of Aptos near the intersection of Dolphin Drive and Sumner Avenue as shown in Figure 1

All work under this contract shall be completed within forty-five (45) working days from the Notice-to-Proceed effective date. The District shall assess liquidated damages for delays in completion of the Project, as provided in the Contract Documents.

### ***SECTION 506.2 CONTRACTOR LICENSE REQUIREMENT***

In accordance with the provisions of California Public Contract Code Section 3300, the District has determined that the Contractor shall possess a valid Class C-57 contractor's License at the time of the bid opening. Failure to

possess the specified license shall render the bid as non-responsive, and shall act as a bar to award the Contract to any bidder not possessing said license at the time of the bid opening. Contractor shall also include in his/her cost the costs to secure a Business License.

### ***SECTION 506.3 SCHEDULE OF EVENTS***

The following is a schedule of events for this Project:

- a. Shortly after the Bid Opening, the District issues the Notification of Award and executes the Contract Agreement with the Contractor.
- b. District will issue Notice to Proceed to Contractor no later than ten (10) working days after contract execution.
- c. Contractor shall then prosecute the work to completion, including all necessary corrections as determined by the District, within forty-five (45) working days from the Notice-to-Proceed effective date.
- d. Upon completion of the project, and the provision of a 2-year Guaranty and Maintenance Bond by the Contractor, the District will prepare project closeout documents and the release of payment retention.

### ***SECTION 506.4 HOURS OF WORK***

The Contractor shall conduct construction operations on a 12-hour per day basis, 8am to 8pm, until initial development is complete. Wells shall be installed sequentially as part of the same mobilization.

### ***SECTION 506.5 UTILITY REQUIREMENTS***

- Contractor is responsible for knowing the location of all buried and overhead utilities at the site. The Contractor shall field verify all underground utilities prior to any excavation.
- The Contractor shall take great care not to damage or disturb any underground utilities in the area. Any underground utilities damaged or disturbed by the Contractor shall be replaced and/or repaired in kind to the satisfaction of the Utility.

## ***SECTION 506.6 SAFETY***

The Contractor shall take all necessary measures and observe all applicable laws and regulations of any public body having jurisdiction over the construction work to avoid injury to personnel, equipment, or existing surface and underground utility facilities. Errors or omissions on these specifications shall not be construed to relieve the Contractor from the responsibility to protect all surfaces, underground pipes, conduits, cables, or other structures. The Contractor shall adhere to a Health and Safety Plan to be approved by the District prior to the commencement of any construction work. The Health and Safety Plan shall cover the equipment and procedures used for this project, but need not be site-specific. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the construction work.

Every effort shall be made by the Contractor to minimize public disturbance and ensure the safety of the general public, District employees, and Contractor staff.

## ***SECTION 506.7 FINAL CLEANUP***

Before final acceptance, the well sites and all grounds occupied by the Contractor in connection with the construction work shall be cleaned of all rubbish, excess materials, and equipment, left in a condition free of rocks, cobbles and clods and graded to pre-construction lines and grades. Paved surfaces will be repaired using like materials. The site shall be cleaned and restored to the satisfaction of the Engineer.

# **SECTION 507. MEASUREMENT & PAYMENT**

## ***SECTION 507.1 GENERAL***

- a. The total Bid Price shall cover all work necessary for the proper and successful completion of the Contract. All work not specifically set forth as a pay item in the Bidder's Bid Proposal, but necessary to meet the requirements of this Contract, shall be considered a subsidiary obligation of the Contractor, and all costs in connection therewith shall be included in the prices Bid.

- b. All estimated quantities stipulated in the Bid form are to be used only as a basis for estimating the probable cost of the work and/or for the purpose of comparing the Bids submitted for the work. Contractor agrees to make no claim for damages of anticipated profits or otherwise on account of any difference in the amounts of work actually performed.
- c. Damage by the Contractor to any features at the site shall be repaired and/or replaced in kind at no cost to the District.

### ***SECTION 507.2 PERMITTING***

#### **(Bid Item No. 1)**

The Bid Price for this item shall include acquiring three (3) well permits from the Santa Cruz County Environmental Health Services Agency. The Contractor shall complete and submit the permit applications. All necessary permit fees will be paid by the Contractor. Any needed information and signatures will be provided to the Contractor to allow for completion of the permit application. Payment for this bid item shall be the lump sum price as bid.

### ***SECTION 507.3 MOBILIZATION/DEMobilIZATION***

#### **(Bid Item No.2)**

The Bid Price for this item shall include mobilization to the site and demobilization after completion of the tasks at the site. This item includes, but is not limited to installing any necessary security fences and signs, initiating traffic control, and installing any required water or runoff control. Payment for this bid item shall be the lump sum price as bid

### ***SECTION 507.4 DRILL 8 ¼ INCH BOREHOLE***

#### **(Bid Item No. 3)**

The Bid Price for this item shall include installing approximately 700 LF of one (1) 8¼-inch diameter borehole. The deep monitoring well will be installed in this borehole. The basis of payment for this Bid Item shall be the actual linear footage of borehole and the unit price per LF as bid.

### ***SECTION 507.5 GEOPHYSICAL LOGGING***

#### **(Bid Item No. 4)**

The Bid Price for this item shall include spontaneous potential, 16 and 64-inch normal resistivity, and natural gamma logging for the borehole described in 6.03. Payment for this bid item shall be the lump sum price as bid.

***SECTION 507.6 BACKFILL AND WIPER RUN IN 8¼ INCH BOREHOLE***

**(Bid Item No. 5)**

The Bid Price for this item shall include furnishing and installing approximately 100 LF of cement-bentonite grout in the 8¼-inch borehole. The basis of payment for this bid item shall be the actual linear footage of cement-bentonite grout installed.

***SECTION 507.7 FURNISH AND INSTALL 3" SCH80 PVC BLANK***

**(Bid Item No. 6)**

The Bid Price for this item shall include furnishing and installing approximately 580 LF of 3" Schedule 80 blank PVC as part of the deep monitoring well to be installed in the borehole described in 6.03. The basis of payment for this Bid Item shall be the actual linear footage of PVC blank installed and the unit price per LF as bid.

***SECTION 507.8 FURNISH AND INSTALL 3" SCH80 PVC SCREEN***

**(Bid Item No. 7)**

The Bid Price for this item shall include furnishing and installing approximately 20 LF of 3" Schedule 80 screen PVC as part of the deep monitoring well to be installed in the borehole described in 6.03. The basis of payment for this Bid Item shall be the actual linear footage of PVC screen installed and the unit price per LF as bid.

***SECTION 507.9 FURNISH AND INSTALL 3" SCH80 PVC CELLAR***

**(Bid Item No. 8)**

The Bid Price for this item shall include furnishing and installing one (1) 3" Schedule 80 PVC cellar as part of the deep monitoring well to be installed in the borehole described in 6.03. Cellar shall be 5 feet in length. Payment for this bid item shall be based on the unit price per cellar as bid.

***SECTION 507.10 FURNISH AND INSTALL GRAVEL PACK***

**(Bid Item No. 9)**

The Bid Price for this item shall include furnishing and installing approximately 35 LF of 8x16 filter pack in the deep (8¼-inch) borehole. The basis of payment for this Bid Item shall be the actual linear footage of gravel pack installed and the unit price per LF as bid.

***SECTION 507.11 FURNISH AND INSTALL BENTONITE SEAL***

**(Bid Item No. 10)**

The Bid Price for this item shall include furnishing and installing approximately 5 LF of bentonite seal in the deep (8¼-inch) borehole. The basis of payment for this Bid Item shall be the actual linear footage of seal installed and the unit price per LF as bid.

***SECTION 507.12 FURNISH AND INSTALL CEMENT-BENTONITE GROUT***

**(Bid Item No. 11)**

The Bid Price for this item shall include furnishing and installing approximately 560 LF of cement-bentonite grout, at appropriate depths, in the deep (8¼-inch) borehole. The basis of payment for this Bid Item shall be the actual linear footage of seal installed and the unit price per LF as bid.

***SECTION 507.13 DRILL 6 ¼ INCH BOREHOLES***

**(Bid Item No. 12)**

The Bid Price for this item shall include installing approximately 700 LF of two (2) 6¼"-diameter boreholes. It is anticipated that the borehole depth will be divided between the intermediate and shallow monitoring wells as follows: 565 feet for the intermediate well boring and 135 feet for the shallow well boring. The basis of payment for this Bid Item shall be the actual linear footage of borehole and the unit price per LF as bid.

***SECTION 507.14 FURNISH AND INSTALL 2" SCH40 PVC BLANK***

**(Bid Item No. 13)**

The Bid Price for this item shall include furnishing and installing approximately 650 LF of 2" Schedule 40 blank PVC, as part of the intermediate and shallow wells to be installed in the boreholes described in 6.08. The basis of payment for this Bid Item shall be the actual linear footage of PVC blank installed and the unit price per LF as bid.

***SECTION 507.15 FURNISH AND INSTALL 2" SCH40 PVC SCREEN***

**(Bid Item No. 14)**

The Bid Price for this item shall include furnishing and installing approximately 40 LF of 2" Schedule 40 screen PVC, with 20 feet installed in the intermediate well and 20 feet installed in the shallow well. The basis of payment for this Bid Item shall be the actual linear footage of PVC screen installed and the unit price per LF as bid.

***SECTION 507.16 FURNISH AND INSTALL 2" SCH40 PVC CELLAR***

**(Bid Item No. 15)**

The Bid Price for this item shall include furnishing and installing two (2) 2" Schedule 40 PVC cellars, as part of the intermediate well and the shallow well. Cellars will be 5 feet long. Payment for this bid item shall be based on the unit price per cellar as bid.

***SECTION 507.17 FURNISH AND INSTALL GRAVEL PACK***

**(Bid Item No. 16)**

The Bid Price for this item shall include furnishing and installing approximately 70 LF of 8x16 filter pack, at appropriate depths in the intermediate well and shallow well boreholes (6¼-inch). The basis of payment for this Bid Item shall be the actual linear footage of gravel pack installed and the unit price per LF as bid.

***SECTION 507.18 FURNISH AND INSTALL BENTONITE SEALS***

**(Bid Item No. 17)**

The Bid Price for this item shall include furnishing and installing approximately 10 LF of bentonite seal, divided evenly between the intermediate well and shallow well boreholes (6¼-inch). The basis of payment for this Bid Item shall be the actual linear footage of seal installed and the unit price per LF as bid.

***SECTION 507.19 FURNISH AND INSTALL CEMENT-BENTONITE GROUT***

**(Bid Item No. 18)**

The Bid Price for this item shall include furnishing and installing approximately 620 LF of cement-bentonite grout in the intermediate well and shallow well boreholes (6¼-inch). The basis of payment for this Bid Item shall be the actual linear footage of seal installed and the unit price per LF as bid.

***SECTION 507.20 FURNISH AND INSTALL TRAFFIC BOXES AND CONCRETE SURFACE SEALS***

**(Bid Item No. 19)**

The Bid Price for this item shall include furnishing and installing three (3) traffic boxes set in Class A concrete surface seals, to a depth of 3 feet. The basis of payment for this Bid Item shall be based on number of traffic boxes and seals installed, and the unit price per installation as bid.

***SECTION 507.21 STANDBY TIME***

**(Bid Item No. 20)**

The Bid Price for this item shall include standby time beyond the control of the Contractor. The basis of payment for this Bid Item shall be the actual hours of standby and the unit price per hour as bid.

***SECTION 507.22 WELL DEVELOPMENT***

**(Bid Item No. 21)**

The Bid Price for this item shall include airlifting wells until discharge is clear in the three (3) monitoring wells. The basis of payment for this Bid Item shall be the actual hours of well development and the unit price per hour as bid.

***SECTION 507.23 DRILLING FLUID/CUTTINGS/DISCHARGE WATER DISPOSAL***

**(Bid Item No. 22)**

The Bid Price for this item shall include disposal of drilling fluids, cuttings and solids settled out from discharge water, and discharge water at the site. Payment for this bid item shall be the lump sum price as bid.

***SECTION 507.24 SITE CLEANUP/WELLHEAD COMPLETION***

**(Bid Item No. 23)**

The Bid Price for this item shall include cutting the PVC casings to 4" below the traffic box cover; providing well caps; and site restoration to pre-construction conditions. Payment for this bid item shall be the lump sum price as bid.

## ***SECTION 507.25 SUBMITTALS***

### **(Bid Item No. 24)**

The Bid Price for this item shall include all required submittals including filing water well driller's report with the California Department of Water Resources (DWR). Payment for this bid item shall be the lump sum price as bid.

## **SECTION 508. TECHNICAL SPECIFICATION**

### **PART 1 GENERAL**

#### ***SECTION 508.1 PURPOSE***

The purpose of this project is to construct a cluster of three monitoring wells in separate boreholes as part of Soquel Creek Water District's (District) monitoring well network. The primary purpose of the monitoring wells is to monitor the movement of seawater intrusion in the Aromas Red Sands, and to monitor groundwater levels. The following technical specifications are to establish minimum construction requirements that must be met in the construction of these monitoring wells.

#### ***SECTION 508.2 PROJECT LOCATION***

The monitoring well cluster will be located in the Town of Aptos near the intersection of Dolphin Drive and Sumner Avenue as shown in Figure 1. The approximate location coordinates are Latitude 121° 52.562' W, Longitude 36° 37.127' N. The well site is at an approximate elevation of 105 feet. This well cluster will be named SC-A8.

The SC-A8 monitoring wells will be located along the southeast side of Dolphin Drive in an unpaved area between Dolphin Drive and a small drainage. Contractor shall inspect the drilling site and make provisions for the mobilization and demobilization of personnel, equipment and supplies, and material at the location.

#### ***SECTION 508.3 LOCAL CONDITIONS AND GEOLOGY***

The monitoring wells are located in an area known locally as the Soquel-Aptos Basin. The hydrogeology of the Soquel-Aptos Basin is dominated by two units: the Pliocene to Upper Miocene Purisima

Formation and the Quaternary Aromas Red Sands. The Purisima Formation is a relatively well structured collection of marine sandstones with siltstone and clay interbeds. The Aromas Red Sands are a comparatively unstructured, highly heterogeneous collection of fluvial, marine, and eolian sands with lenses of silt and clay. Final water levels in the wells are expected to be approximately 100 feet below ground surface.

#### ***SECTION 508.4 CONTRACTOR QUALIFICATIONS***

Contractor must possess a valid Class C-57 California Contractor's License.

### **PART 2 WELL CONSTRUCTION**

#### ***SECTION 508.5 SCOPE OF WORK***

The scope of this project consists of mobilization and demobilization, drilling three (3) boreholes, geophysical logging, installing monitoring well casings and screens, placing filter packs and sanitary seals, well development, and wellhead completion.

Contractor shall furnish all materials, equipment, supplies, transportation, and labor, perform all operations, and conduct all work necessary to complete the monitoring well cluster, consisting of three (3) monitoring wells in separate boreholes, all in accordance with the requirements of the Contract Documents, Santa Cruz County Health Services Agency regulations and Well Permit requirements, any and all applicable local codes, and the latest revision of California Department of Water Resources Bulletins No. 74-81 and 74-90, California Well Standards.

Contractor shall drill the well at the exact location designated by the Engineer unless otherwise specified due to the existence of underground or overhead structures which preclude the safe operation of equipment. Contractor shall properly install the materials described herein in accordance with these specifications. Well construction drawings are provided in Figure 1.

#### ***SECTION 508.6 WELL DRILLING***

The wells will be drilled by conventional direct-rotary drilling methods with drilling equipment of sufficient capacity to drill the 8¼-inch

diameter borehole required by these specifications to a depth of 700 feet. Two 6¼-inch boreholes will also be drilled to approximate depths of 560 and 130 feet. All drilling equipment including mast and drawworks, air compressors, drilling fluid pumps, drill pipe, etc., must be of requisite size, sufficient capacity, and suitable condition to drill and set casing to the anticipated depths.

**SECTION 508.7 CASING DEPTH**

The estimated casing depths are shown on Figure 1. The final monitoring well casing depths will be determined by the Engineer from an examination of the hydrogeologic data and borehole samples. The deepest monitoring well must be completed below the depth at which seawater intrusion has been detected. The final depth will be determined by the depth of the observed seawater interface. The intermediate well depth will be completed 40 feet above the deepest well and the shallow well will be completed just below the water table. Estimated depths are provided in Table 1. Although the estimated well depth for the deepest well is 600 feet, the boring for this well shall be drilled to 700 feet to ensure the seawater interface is crossed. For bid purposes, the quantity of each Work Item shall be in accordance with the Bid Schedule in Section II-Proposal.

Table 1 Estimated Boring and Well Depths

Well Location	Estimated Depths (ft bgs) Subject to Change in Field			
	Deep Well Boring	Deep Well Completion(SC-A8A)	Intermediate Well Completion (SC-A8B)	Shallow Well Completion (SC-A8C)
Dolphin & Sumner	700	600	560	130

**SECTION 508.8 STRATIGRAPHIC LOG**

A stratigraphic log shall be prepared by the Engineer to accompany the set of formation samples from the deep well boring noting depth, strata thickness, lithology (i.e., soil, rock type), and include grain size, shape

of constituent particles, color, relative plasticity (for clay/silt mixtures), relative density (for sand/gravel mixtures), rate of penetration, and other pertinent information. Contractor shall cooperate and provide assistance as required in collecting data or preparing the stratigraphic log. Intervals for collecting cuttings for logging the deep well boring shall be every 5 feet or at significant changes.

The stratigraphy observed in the deep well boring will be the assumed stratigraphy for the intermediate and shallow borings. While of the intermediate and shallow boreholes, the driller shall collect lithologic samples every 10 feet to allow verification of the stratigraphy. Engineer will supply bags for the lithologic samples collected by the driller. The Contractor will alert the Engineer to any significant deviations from the expected stratigraphy in the shallow and intermediate boreholes, particularly in and around the anticipated screened intervals.

#### ***SECTION 508.9 BOREHOLE GEOPHYSICAL LOGGING***

Contractor shall provide geophysical logging of the deep well boring for the purpose of screen location and identification of saline water. Geophysical logs to be provided shall include spontaneous potential, 16- and 64-inch normal resistivity, and natural gamma.

Contractor shall submit all logging results to the Engineer. Final logging results shall be provided in digital ASCII format. One field copy of each log must be provided to the Engineer immediately upon the completion of the geophysical logging work.

If the logging probe fails to descend to the desired depth, the Contractor, at their own expense, shall condition the hole and permit the logging probe to descend to the bottom of the hole. Standby time will not be paid for additional cleaning and conditioning of the hole to enable logging operations to proceed.

#### ***SECTION 508.10 BACKFILLING AND WIPER RUN***

The deep borehole will be drilled deeper than the planned well completion depth. Contractor shall backfill the deep borehole with cement-bentonite grout to the final well completion depth determined by Engineer. Contractor shall take appropriate cautions to fill the borehole with grout only to the depth required. Contractor will not be

compensated for placing grout above any depth requested by the Engineer.

Backfill grout shall be allowed to set for 24 hours after placement. After the grout has set, Contractor shall clean the borehole with a “wiper run” using the 8¼-inch drill bit. The “wiper run” will additionally be used to remove any grout above the depth requested by the Engineer, and ensure that the borehole is open to the appropriate depth.

### ***SECTION 508.11 MONITORING WELL CASINGS***

Monitoring wells are to be completed in each of the three (3) boreholes. Monitoring well casing material shall be Schedule 80 PVC for the deep well and Schedule 40 PVC for the shallow and intermediate wells. Casing joints shall be flush threaded.

The deep monitoring well shall be 3-inches nominal diameter. The two shallower wells shall be 2-inches nominal diameter. The actual length of each monitoring well casing to be installed shall be determined by the Engineer from review of geophysical logging data and formation samples.

Centralizers shall be of the same material as the monitoring well casing or other non-conductive material (steel may not be used), and shall be located at the top and bottom of the screened interval. Centralizers shall be located every 100 feet along the sections of blank casing.

### ***SECTION 508.12 WELL SCREENS AND END FITTINGS***

Monitoring well screen material shall be Schedule 80 PVC for the deep well and Schedule 40 PVC for the intermediate and shallow wells. Well screens shall consist of horizontal machine-cut 0.040-inch slots. Unless directed otherwise by the Engineer, screens should be 20 feet in length for each well. Casing joints shall be flush threaded with no adhesives. Monitoring well screen strength shall be sufficient to withstand all anticipated forces imposed on the screens during installation, isolation seal placement, well development, and use. The nominal and inside diameters of the monitoring well screens shall correspond to that of the monitoring well casings.

The placement depths and lengths of monitoring well screens shall be determined by the Engineer from review of geophysical logging data and formation samples

End fittings shall be fabricated from new materials and be of the same materials as the monitoring well casing. The bottom of each monitoring well screen shall be fitted with a 5-foot cellar pipe made of blank monitoring well casing.

### ***SECTION 508.13 FILTER PACK***

All filter pack material shall be 8x16 Filter Pack manufactured by RMC, Silica Resources, or equal. Filter pack material shall be clean, hard, predominantly (90%) siliceous, water-worn, and sub-rounded to rounded. Delivery and storage methods should ensure that materials are protected from the weather and do not come in contact with the ground or other contaminating materials.

Unless directed otherwise by the Engineer, filter pack shall extend from 5 to 10 feet below the bottom of the monitoring well screen to 10 feet above the monitoring well screen. The finished length of each filter pack interval shall be determined by the Engineer from review of geophysical logging data and formation samples.

Contractor shall be responsible for supporting and anchoring the well casing in such a way as to hold it in place during the placement of gravel and annular seals. The bottom of the casing shall be at a sufficient distance above the bottom of the hole to ensure that the casing is held in tension, and none of the weight of the casing is supported from the bottom of the hole. Float plugs shall not be used to land and set casing.

After a casing string has been suspended in the hole, the placement of the filter pack shall proceed without delay. The filter pack material shall be placed by a tremie pipe lowered to the bottom of the annular space between the outside of the casing and the wall of the well bore. Tremie pipe shall be flush threaded to help prevent damage to the monitoring well casings during filter pack placement.

As filter pack material is poured into the tremie pipe, water shall also be introduced to help carry the material. The tremie pipe shall be slowly raised as the material fills the annular space. The volume of filter pack material introduced into the well shall be not less than the computed volume of the annular space between the outside of the

casing and the wall of the hole. The height of the filter pack shall be checked periodically with a sounder to ensure that the volume of filter pack installed is nearly equivalent to the computed amount. The Contractor shall accurately measure the volume of filter pack added to the well.

#### ***SECTION 508.14 GROUTING AND SEALING***

Well sealing shall be in accordance with the following requirements, and the precedence as shown:

- Santa Cruz County Health Services Agency regulations and Well Construction Permit.
- The latest revision of the California Department of Water Resources Bulletin No. 74, California Well Standards, and
- Contract Documents.

All tremie pipe used in the placement of any seal shall be flush threaded to help prevent damage to the monitoring well casings during sealing operations. A 5-foot bentonite seal shall be placed above the top of the filter pack. Sealing material above the bentonite seal and below the surface seal shall consist of cement-bentonite grout for all seals. To reduce the heat of hydration, the cement-bentonite grout shall include approximately 5% bentonite by weight. No accelerators

Water used to prepare sealing mixtures shall be of drinking water quality and shall be free of petroleum products, suspended material, and other deleterious substances.

#### ***SECTION 508.15 SEAL PLACEMENT***

- Location and Length: The final location and vertical length of each seal shall be determined by the Engineer from evaluation of borehole cuttings and geophysical logs. Unless directed otherwise by the Engineer, a seal consisting of bentonite shall extend from the top of the filter pack to 5 feet above the filter pack. The cement-bentonite grout seal shall extend from the top of the bentonite seal to the surface.
- Preparation: Prior to placing any annular material, the borehole shall be circulated clean of all sediment and the drilling mud conditioned to the satisfaction of the Engineer.
- Seals: Unless otherwise directed by the Engineer, each interval to be sealed shall be filled with grout, from bottom to top in one

continuous operation. The grout shall be placed through a tremie pipe, by positive displacement pumping. The discharge end of the tremie pipe shall remain below the level of the grout in the borehole throughout the placement. The tremie pipe shall be maintained full of grout at all times. Each monitoring well casing shall be filled with water during each sealing operation. Monitoring well casings shall be kept full of water as recommended by the sealing-material manufacturer after completion of each sealing operation.

- Grout Set Time: Upon installation of each seal, no further Work shall be completed on the well for 24 hours.

### ***SECTION 508.16 WELLHEAD COMPLETION***

The monitoring well shall be terminated below ground surface (below grade) and covered with a bolt-down traffic box securely cemented into place as shown on Figure 1. The traffic box shall be completed ½ to 1 inches above ground surface to prevent ponding around the well. The traffic box shall be so installed as to permit easy access for instrumentation, monitoring, or sampling. A sufficient number of weep holes or a gravel drain shall be placed in the well box subgrade so that any condensation or liquid is readily drained from the valve box, thus preventing ponding.

The finished length of each monitoring well casing shall extend from the top of the screen to 4 inches below ground elevation.

Upon completion of the well, the Contractor shall install a Morrison Bros. Co. 24" diameter limited access manhole, part no. 418 or approved equivalent water-tight locking well cap at the top each monitoring well.

**PART 3**  
**OTHER REQUIREMENTS**

***SECTION 508.17 PERMITS AND LICENSES***

Contractor shall obtain a Well Drilling Permit from the Santa Cruz County Environmental Health Services Department for the three wells. Contractor shall coordinate with any permitting inspectors as permits or regulations require. Contractor shall maintain copies of all project permits at the construction sites.

***SECTION 508.18 SUBMITTALS***

Submittals shall include but not be limited to the following:

Santa Cruz County Health Services Agency Well Permit Application. Contractor shall transmit two (2) copies of the Santa Cruz County Health Services Agency Well Permit to the District.

California Department of Water Resources Water Well Driller's Report. Prior to final payment, the Contractor shall file completed reports with the California Department of Water Resources (DWR) in accordance with the provisions of the California Water Code. Contractor shall also transmit one (1) copy of both completed well driller's reports to the District.

***SECTION 508.19 MOBILIZATION/DEMobilIZATION***

Mobilization includes the purchase of contract bonds, assembly, and transportation of all necessary tools, equipment, personnel, and materials to and from the work sites to perform all work required under these specifications. It also includes the site work necessary to accommodate the well drilling, casing installation, sealing operations, development, and all other work on the grounds occupied by the Contractor. Mobilization shall include installing any necessary security fences and signs, initiating traffic control, and installing any required water or runoff control. Demobilization shall include removal of all equipment, materials, and temporary facilities installed during all phases of the construction work.

### ***SECTION 508.20 DRILLING COMMENCEMENT TIME AND NOTIFICATION***

Contractor shall notify the Engineer at least one (1) hour in advance of the commencement of each day of drilling. If drilling is not ready to commence prior to 2:00 p.m. (and notification given by 12:00 noon), drilling shall not commence until 8:00 am the following morning. Any non-productive time elapsing between notification and actual commencement of drilling will not constitute standby time.

Contractor shall conduct construction operations on a 12-hour per day basis, 8 am to 8 pm, until initial development is complete. Wells shall be installed sequentially as part of the same mobilization.

### ***SECTION 508.21 SITE CLEANUP***

During the progress of construction, Contractor shall keep the premises in a neat and clean condition, and free from any unsightly accumulation of rubbish on a daily basis. Upon completion of the Work, Contractor shall satisfactorily dispose of or remove from the vicinity of the construction sites all rubbish, unused materials, and all other equipment or materials belonging to the Contractor or used under Contractor's direction during the construction. Site shall be cleaned and restored to the satisfaction of the Engineer.

### ***SECTION 508.22 DRILLING FLUIDS***

All drilling fluids shall be acceptable for water well drilling in accordance with AWWA A100 and shall use potable water. All drilling fluid additives, including those proposed for use in the event of lost circulation shall be approved in advance by the Engineer. Contractor shall supply Material Safety Data Sheets (MSDS) for all proposed additives.

Contractor is responsible for providing and paying for water required for all Contractor's needs. Water is available from a fire hydrant approximately 500 feet from the site. Contractor is responsible for obtaining any required water metering device from the Soquel Creek Water District.

### ***SECTION 508.23 DISPOSAL OF DRILLING FLUID, CUTTINGS, AND DISCHARGE WATER***

Contractor shall be responsible for properly disposing of drilling fluid, cuttings, and discharge water resulting from the construction operations.

All materials shall be disposed of off-site. Discharge water shall be stored and settled in on-site storage tanks with clear water and discharged to storm sewers in conformance with all applicable local, state, and federal requirements and standards. Clear fluids can be disposed of in accordance with the District's existing NPDES permit. Contractor is responsible for providing adequate methods and materials for meeting the discharge requirements in Appendix A. All solids shall be disposed of off-site by Contractor.

### ***SECTION 508.24 DEVELOPMENT METHODS***

Contractor shall airlift wells until discharge is clear. Air lifting will proceed from the top of water column to the bottom of the screen interval, if possible. Contractor shall provide enough pipe to lower the air line to the bottom of the screened interval. At Engineer's discretion, development with the air pipe above the screened interval may be adequate for complete development.

Air-lifted water shall be directed to a temporary containment vessel. Water shall be allowed to settle until all appropriate discharge criteria are met.

### ***SECTION 508.25 PROTECTION OF GROUNDWATER RESOURCES***

Contractor shall take all necessary precautions during the construction period to prevent foreign objects, contaminated water, gasoline, or any other contaminant from entering the borehole or any casings, either through the opening or by seepage through the ground surface.

### ***SECTION 508.26 ELECTRIC POWER***

All electric power required on the part of the Contractor during the performance of the Work called for under these specifications, or any

operations appurtenant thereto, shall be furnished by the Contractor at the sole expense of the Contractor.

## **SECTION 509. APPENDIX**

Appendix A – California Regional Water Quality Control Board - Central Coast Division, Waste Discharge Requirements General Permit for Discharges with Low Threat to Water Quality, dated December 7, 2001; Attachment B, Monitoring and Reporting Program No. 01-119 for Discharges with Low Threat to Water Quality General Permit No. CAG993001, dated December 7, 2001.

Figure 1 – Proposed Well Construction Diagram, SC-A8 Monitoring Wells, Soquel Creek Water District, Santa Cruz County, California, dated 05/02/06, by HydroMetrics LLC.