

SECTION 01010
SUMMARY OF WORK

PART 1 – GENERAL DESCRIPTION

- 1.1 Work covered by these contract documents shall be done in two phases, both at the site of the existing Keopu Deep Monitor Well, State No. 3858-001. The existing monitor well consists of 759 feet of 8-inch (ID) solid steel casing and 563 feet of open hole drilled with a 7 7/8-inch bit inserted through the 8-inch casing. There is an upward flow of fresh water under artesian pressure in the open hole. In Phase 1 of the work, the upward flow of the fresh water is to be sealed off, enabling the well to be used to monitor basal groundwater. In Phase 2, a new monitor well is to be constructed on the same site. The new well will be configured to evaluate and monitor the fresh water under artesian pressure which lies below the basal lens

The work involved is complex and unique and the information derived will be of substantial scientific importance. For these reasons, the Contractor must have prior, verifiable experience in the use of inflatable packers to close off upward artesian flow and cementing through the packers to seal off the portion of the borehole below the packers. Specifics of this experience are to be listed in the Contractor's Statement of Qualifications to be submitted with his bid. Refer to Paragraph B of the Information and Instructions to Bidders for the specific requirements of the Statement of Qualifications. If a Bidder does not have verifiable experience or does not submit a Statement of Qualifications with their bid, the Bidder shall be considered nonresponsive and their bid shall be rejected.

1.2 ITEMS AND ORDER OF WORK FOR PHASE 1

1. Demolish and remove the existing chain link fence at the site of the existing monitor well. If necessary for equipment access to the site, demolish and remove existing hollow tile building.
2. Mobilize all necessary equipment at the well site.
3. Provide and install a flow through inflatable packer at 1097-foot depth below the top of the 8-inch casing.
4. With the packer in place and inflated, the Contractor shall measure the depth to water inside the tubing used to hold the packer in place. The depth to water measurement shall be referenced to the top of the existing 8-inch casing. The Contractor shall notify the Engineer a minimum of 48 hours prior to undertaking the next step of placing cement grout through and below the packer.

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5. Using a tremie pipe inserted through the packer, fill the well's open hole from its bottom at 1322-foot depth up to (or into) the inflatable packer with cement grout.
6. The packer shall be left in place and fully inflated until, in the judgement of the Engineer, the cement grout installed in the open hole has sufficiently set. The Contractor shall use the tremie pipe or other similar device to sound the top of cement to assist the Engineer in determining whether the cement grout has sufficiently set.
7. The Contractor shall then remove the tremie pipe, tubing used to place the packer, and, at his election, the deflated packer. If the Contractor elects to remove the packer, he is responsible for its complete removal from the well.
8. When all of the Contractor's equipment has been removed from the well, the Contractor shall allow one full working day for the Engineer to make measurements of the well's static water level, to make a CTD profile through the water column, and to make a video log the well.
9. Based on the results obtained in Item 8 above and if directed by the Engineer, repeat work Items 3 through 7 with an inflatable packer set at 906-foot depth. With the packer inflated, cement grout the open hole below the packer up to (or into) the inflated packer using a tremie pipe.
10. When all the Contractor's equipment has been removed from the well after the cement has set, he shall allow the Engineer one full working day to repeat the measurements described in Item 8 above.
11. Based on the results obtained in Item 10 above and if directed by the Engineer, repeat work Items 3 through 7 with an inflatable packer set at 805-foot depth and the open hole filled with cement grout up to (or into) the inflatable packer.
12. After the cement grout has set in the judgement of the Engineer, the Contractor shall remove all his equipment from the well including, at his election, the inflatable packer.

1.3 ITEMS AND ORDER OF WORK FOR PHASE 2

1. Move and mobilize on the site of the new deep monitor well.
2. Drill a 17-inch (min) diameter borehole to the depth directed by the Engineer. As soon as groundwater is encountered, an expected depth of about 730 feet, the Contractor shall have one man measuring and logging the conductivity and temperature of water removed from the borehole and the drilling depth whenever drilling is being undertaken. During the course of drilling and at the depth directed by the Engineer, the Contractor shall remove his tools from the borehole and allow

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one full working day for the Engineer to make measurements and video log the borehole.

3. Provide and install 10-inch (ID), 3/8-inch wall thickness solid casing to the depth directed by the Engineer.
4. Using a tremie pipe, fill the annular space with cement grout from the bottom of the solid casing up to the ground surface. Water under artesian pressure will be flowing up the annular space and interfere with the placement of the cement grout. To avoid this and prior to installing the cement grout, the Contractor shall seal off the upward flow with an inflatable packer set in the borehole below the bottom of the casing or by the other means approved by the Engineer.
5. After the cement grout has been allowed a minimum of 48 hours to set, drill a 9-inch (min) diameter borehole from the bottom of the casing to the depth directed by the Engineer.
6. Upon completion of drilling to the depth directed by the Engineer, the Contractor shall remove his tools from the well and allow one full working day for the Engineer to make measurements and a video log.
7. Provide, install, and subsequently remove a test pump at the depth directed by the Engineer and capable of delivering 700 GPM to the ground surface for up to 48 hours continuously. Two 1-inch (min) diameter sounding tubes shall be strapped to the pump column, one for manual water level measurements and the other for installation of a downhole recording pressure transducer to be provided by the Engineer.
8. Perform the step and constant rate pump tests as directed by the Engineer.
9. Install the concrete pad and locking cap as shown on the Construction Plans.
10. Install the chain link fences and gates around existing well State No. 3858-001 and the new deep monitor well as shown on the Construction Plans.
11. Demobilize

END SECTION

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