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STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

August 28, 2008
Honolulu, Oahu

Request to Enter Into a Contract for Professional Services
To Conduct Borehole Assessment of Deep Monitor Wells in Maui and Oahu
And Develop Video Logging Capability within the
Commission on Water Resource Management

BACKGROUND

The Commission on Water Resource Management (CWRM) owns and maintains twelve deep monitor wells from which vertical profiles are conducted to monitor chloride level and basal lens-transition zone thickness. Over the years these deep monitor wells increasingly present challenges to regular conductivity-temperature-depth (CTD) logging and plague with issues concerning the CTD sensor and/or deployment tape being caught up at certain levels inside the well. Some of the possible causes of CTD logger hang-ups are:

1. Original irregularities in well diameter
2. Well deviation from plumb
3. Casing sizes and dimension
4. Post-drilling well deformation
5. Wall collapse and erosion
6. Spalling of sides of corroded casing
7. Debris falling in or thrown into the well
8. Organic build up and protuberances
9. CTD sensor and tape drift with borehole flows

Any of the above causes or combination thereof can affect the accuracy and precision of CTD logging, as well as cause damage or lost of monitoring equipment. It is prudent to say that it is just a matter of time when a well deteriorates to a condition when CTD logging can no longer be performed. This is already true for Lahaina (in Maui) and Keopu (in Big Island) wells, while Kunia Mauka and Halawa (both in Oahu) are starting to show signs of structural impediment to CTD logging with risk of breaking the tape and losing the CTD. With the acquisition of new RBR sensor, well logging is compounded with borehole deployment of a comparatively larger diameter CTD sensor. In fact, the RBR sensor was already stuck at certain level in Halawa well that prevented it from being reeled up, requiring several forceful attempts to retrieve the CTD sensor.

This assessment is necessary to really understand what is causing the CTD to stall during deployment and to create specific solutions on how to go around with the problem. Video logging is the most practical tool for borehole assessment, allowing us to see and record well condition in its entire length. With acquisition of video logging capability, staff will be able to conduct in-house well assessment, as well as identify occurrences of borehole flows and conduct geologic and stratigraphic analyses.

PROJECT PROPOSAL

This project has two components: borehole assessment of deep monitor wells and development of in-house video logging capabilities for CWRM. There are two wells requiring immediate borehole assessment: the Lahaina deep monitor well in Maui and the Halawa deep monitor well in Oahu, where the likelihood of losing a CTD sensor, particularly the new RBR, is high. The contractor will provide an experienced geoscientist in deep well video logging techniques to perform the assessment of selected wells. CWRM will be provided with an Assessment Report documenting the findings and conclusions of the video logs, and a digital recording of the borehole survey.

The contractor will recommend industry-standard equipment used in borehole assessment and acquire a video logging system for the project, which will include at a minimum: 1) motorized winch, tripod and 1,650-ft cable, 2) submersible camera capable of viewing in all directions inside the well, 3) video recording system, and 4) storage containers. It will also provide onsite training of the staff in the techniques of borehole assessment and the operation of the equipment. The video logging system will become the sole property of CWRM after project use.

Estimated Cost: The estimated cost for this project is not to exceed $45,000 and shall be subject to the availability funding within the Commission's budget.

RECOMMENDATION

Staff recommends that the Commission authorize the Chairperson to enter into a contract for professional services to conduct borehole assessment of deep monitor wells in Maui and Oahu and develop video logging capability within CWRM.

Respectfully submitted,

KEN C. KAWAHARA
Deputy Director

APPROVED FOR SUBMITTAL:

LAURA H. THIELEN
Chairperson