

N65928.AR.000923
NTC ORLANDO
5090.3a

EMAIL REGARDING SUMMARY OF IN SITU RECIRCULATION WELL REPAIRS AT
OPERABLE UNIT 4 (OU 4) INTERIM REMEDIAL ACTION NTC ORLANDO FL
8/17/1999
BECHTEL

[Redacted]

00671

McCoy, Steven

From: Manning, Robin [jrmannin@bechtel.com]
Sent: Tuesday, August 17, 1999 4:06 PM
To: 'Barbara Nwokike (E-mail)'
Cc: 'Al Aikens (E-mail)'; 'Dave Grabka (E-mail)'; 'Nancy Rodriguez (E-mail)'; 'Steve McCoy (E-mail)'; 'Wayne Hansel (E-mail)'; 'rallen@harding.com'; 'msalvett@harding.com'
Subject: Summary of UVB Well Repairs and Performance, Aug. 9-13, 1999



Well Repairs-Aug.
1999.doc

Sorry, but Bill Hevrdeys had not had time to review my first attempt at this little report. Attached is a revised copy which includes a few correction and clarifications suggested by Bill. The new stuff was added in bold text.

<<Well Repairs-Aug. 1999.doc>>

Robin Manning
Bechtel Navy RAC Project
e-mail: jrmannin@bechtel.com
Phone:(423) 220-2406 Fax: (423) 220-2748

Summary of In Situ Recirculation Well Repairs – August 9-13, 1999
OU 4 Interim Remedial Action
NTC Orlando, Area C

Background Information

In November of 1998, Bechtel and their Subcontractor (R.F. Weston) initiated a series of field modifications to the two “UVB” wells to correct several design limitations and to improve overall operability and performance. Both EPA Region 4 and the FDEP approved these modifications. Listed below are the maintenance activities and design improvements completed last fall.

- Remove the “down-hole” components from each well, clean the accumulated fine sand from the lower well casing, and re-develop the wells.
- Install a 6-inch diameter pre-packed well screen inside the original well casing and screen to eliminate the penetration of fine sands into the well.
- Install an external accumulation tank (approx. 300 gal. capacity) to collect treated effluent prior to the discharge of the treated effluent back into the lower unit of the aquifer.
- Install a single-pump treated effluent pumping system to return the treated effluent to the lower aquifer.
- Install a biocide addition system to prevent bio fouling and precipitation of inorganics, primarily iron, inside the wells.

The objectives of these modifications were to eliminate excessive well maintenance associated with fine sediment accumulation; improve pumping rates, allow simpler and more reliable balancing of influent and effluent flows; and to prohibit deleterious affects of biological growth and/or mineral deposits.

The modifications noted above were completed and the two treatment systems re-started by December 13, 1998. The two wells ran continuously, except for a few shutdowns due to voltage surges, until mid-April of this year. At this time, UVB-2 stopped extracting groundwater. Also, the batteries in the Troll, data logging pressure transducers began to go fail. One additional complication to retrieval of field data was HLA could no longer afford to collect system performance data each week for review by Bechtel and R.F. Weston. These factors, along with a lengthy claim negotiation between Bechtel and R.F. Weston, resulted in an extended shutdown of UVB-2. UVB-1 did continue to pump and perform treatment of groundwater during this time frame.

Recent O&M Activities

A comprehensive O&M visit was performed on April 29-30, 1999 to restore normal operation to the well components. During this visit both treatment systems were opened and the air stripping reactor removed. The holes in the reactor’s stripper plates were observed to be 90% plugged at UVB-2 and 50% plugged at UVB-1. The plates were cleaned by hand reaming with a drill. The autodialer at UVB-1 was also malfunctioning and was therefore, returned to the manufacturer for repair. UVB-1 continued to run in a cycling mode (i.e., influent submersible pump cycling on and off based on water level in the external treated water holding tank). The pumping rate at UVB-1 was averaging about 3.0 gpm subsequent to the maintenance visit.

UVB-2 could not be repaired during the April 29-30 visit. The groundwater extraction pump (**i.e., submersible influent pump**) behaves like it is clogged with sediment. A follow up visit by the local electrical subcontractor on May 10, 1999 could not detect any type electrical problem with the motor or the motor circuit for the submersible influent pump. Bechtel and Weston speculated the pump was likely fouled with iron or similar mineral deposits.

Treatment System Repairs Performed August 9-13, 1999

To restore operation to UVB-2, Bechtel, R.F. Weston, and CH2M Hill mobilized to the site on August 9, 1999 to undertake both repairs and perform routine maintenance at both UVB wells. Specifically, the objectives of the trip were to:

- Disassemble both UVB wells for inspection of internal components.
- Remove any accumulated sediment from the well casings as required.
- Clean and replace, if necessary, the submersible influent pumps.
- Install new effluent flow meters to accurately measure the anticipated flow rates (1-4 gpm).
- **Remove and replace Troll pressure transducers**
- Re-start and balance both treatment systems.
- Provide training to CH2M Hill on system servicing and operations.

The nonfunctioning UVB-2 was repaired first. This well was found to be very clean inside with little visible evidence of iron or mineral deposit buildup. The stripper plate, which was cleaned in late April 1999, was found to have no evidence of further scale buildup. The **annulus between the original well screen and the pre-pack screen** was completely free of the fine sands that had previously penetrated through the outer well screen. The submersible pump did have some sediment accumulation and **high amperage readings on the motor indicated the pump was worn**. Therefore, the pump was replaced with a new pump. The original motor was used on the new pump housing. The paddle-type flow meter was removed and replaced with a nutating disc water meter capable of accurate flow measurement down to 0.5 gpm. Upon the re-start of UVB-2 it was noted the biocide chemical metering pump was performing very erratically. The electronic control module for the pump may have been damaged by a lightning strike. Weston was able to locate a compatible metering pump in the Orlando area, and the pump was installed in place of the original pump. This pump is operationally the same the original pump.

UVB-1 was found to be in similar condition to UVB-2 except it was fully operational prior to the shutdown for maintenance. The well components were also clean and no fine sand was present in the well casing. The autodialer had been repaired and was re-installed. There were no detectable problems with the chemical metering pump at UVB-1. The submersible groundwater extraction pump was taken apart, cleaned, and re-installed. A new water meter was installed.

Operating Data

After final balancing of UVB-1, this well was pumping at 2.0 to 2.5 gpm with a pre-valve discharge pressure of 25 psi. The influent airflow rate is 123 cfm. There is 25.5 inches of biocide in the treatment drum. Flow rates at UVB-1 are limited by treated groundwater re-injection to the lower screen. The groundwater extraction pump is cycling on and off based on the level of water in the treated water effluent tank. The influent pumping has to be suspended periodically to allow the effluent discharge to "catch up" and gain some storage volume in the effluent storage tank. This results in cycling on and off of the influent submersible pump to achieve balanced flows.

UVB-2 was not re-started and balancing completed until August 13, 1999. This delay was due to the extra time required to locate and install a new chemical metering pump. Based on a short period of observation, the average pumping rate is just under 2.0 gpm. [**Note – As of August 17, 1999, this rate has been reduced to less than 1 gpm due to low yield of influent groundwater**] The pre-valve discharge pressure is 25.5 psi. The influent airflow rate is 128 cfm. There is 32 inches of biocide remaining in the treatment drum. Contrary to UVB-1, this well is limited in pumping rate by water yield from the well. The influent submersible pump is shutting off periodically due to water level in the well reaching the low-level switch. This shuts the pump off until the well can recharge.

Pressure Transducers

Bechtel has replaced three of the Troll transducers with units containing new lithium batteries. The recently serviced transducers are in the two UVB well and in observation well OW-9. There is also a still active transducer in observation well OW-8. All remaining transducers, with one exception, have been removed from their current locations and returned to In Situ Inc. to have new batteries installed. There is one transducer mounted on a reel that Bechtel has not returned for a battery replacement. The remaining transducers (except the one in OW-8) all have new batteries or are at the manufacturer at this time for battery replacement.

The transducers have not been configured or turned on. This will need to be accomplished by CH2M Hill based on their preferred configuration. Bechtel will furnish records on where each transducer is installed matching serial numbers to specific wells. Bechtel **and/or HLA** will also provide CH2M Hill information on the depth at which the three transducers noted above are installed.

O&M Turnover

A meeting was held at the site on August 11, 1999 with SouthDiv, CH2M Hill, HLA and Bechtel to discuss issues regarding turnover of the treatment systems to CH2M Hill. CH2M Hill is funded to assume the operational responsibility. Prior to a final turnover however, Bechtel must provide several items to CH2M Hill:

- Final O&M manual reflecting as-built conditions (i.e., Nov. 1998 design mods.)
- Procedure for well component removal to gain access to original well casing and screens.
- Copies of approval letters/documentation from FDEP and EPA Region 4 for the modifications made in Nov. 1998.

CH2M Hill is assuming partial O&M responsibility including weekly inspections of the treatment systems and recording of operational/performance data. Bechtel and Weston will continue to provide O&M support as needed until the O&M manual is finalized and CH2M Hill can place subcontract(s) to provide anticipated routine O&M services. Bechtel is to provide a complete draft of the revised O&M manual to CH2M Hill by September 1, 1999.