

July 18, 2008

Mr. Scott Miller
Remedial Project Manager
U.S. Environmental Protection Agency
Region IV, Superfund North Florida Section
61 Forsyth Street, SW
Atlanta, GA 30303-3104

Subject: Response to Comments on the “Upper Floridan Aquifer Sentinel Monitoring Well Installation Work Plan, Revision 1, Koppers Inc. Site, Gainesville, Florida, June 10, 2008”

Dear Mr. Miller:

On behalf of Beazer East, Inc., included in this letter is our response to comments on the monitoring well installation work plan entitled “*Upper Floridan Aquifer Sentinel Monitoring Well Installation Work Plan, Revision 1, Koppers Inc. Site, Gainesville, Florida, June 10, 2008*”. Comments on the work plan were received from the Florida Department of Environmental Protection (FDEP) in an email dated June 19, 2008, Saint Johns River Water Management District (SJRWMD) in an email dated June 20, 2008, Alachua County Environmental Protection Division (ACEPD) in an email dated June 20, 2008 and Gainesville Regional Utilities (GRU) in a letter dated June 18, 2008. In summary there are two primary comments on the proposed work plan: 1) A request that multi-level sampling systems be installed in the Sentinel wells; and 2) A request for additional geophysical logs. We will address these comments in addition to some miscellaneous comments below.

Comment #1 Multi-Level Sampling Systems

The primary comment from FDEP, ACEPD and GRU was the concern that multi-level sampling systems were not proposed for the off-Site sentinel wells. As you recall, Westbay systems were installed in all recently completed Upper Floridan (UF) Aquifer wells at the Site. The Westbay systems were installed in on-Site UF wells to sample vertically discrete intervals within the Upper Transmissive Zone (UTZ) and Lower Transmissive Zone (LTZ). The multi-level sampling was implemented in these on-Site wells for discrete characterization of the vertical distribution of constituents in groundwater adjacent to and downgradient of potential source areas. Nine quarterly sampling events from the Westbay UF Aquifer wells demonstrated that: 1) Site-related impacts are not wide-spread within the UF Aquifer; and 2) The majority of the observed impacts in UF Aquifer may be a direct result of leaky annular well seals.

From a broad perspective, the current groundwater monitoring program at the Site consists of multiple concentric rings of monitoring wells to detect potential impacts to the UF Aquifer. The first ring of monitoring consists of multi-level UTZ source area wells located adjacent to the four suspected source areas. The second ring of monitoring consists of multi-level transect wells located approximately 400 feet downgradient of the northernmost source area monitoring wells. The third ring of monitoring consists of multi-level UTZ and LTZ property boundary wells. Finally, a fourth ring of monitoring will be added with the installation of the proposed UTZ and LTZ Sentinel wells. Accordingly, the monitoring program currently in place provides multiple rings of protection in addition to multiple vertical monitoring points to detect Site-related constituents.

The primary objective of the outermost fourth ring of Sentinel monitoring wells is to provide an additional level of monitoring protection in the event that constituent impacts are present in the UF Aquifer. These Sentinel monitoring points have been specifically designed to provide representative water quality samples for each of the two primary production zones (UTZ and LTZ) in the UF Aquifer. As you recall, the Murphree Wellfield produces groundwater from over the entire UTZ and LTZ intervals. Accordingly, monitoring of the UTZ and LTZ zones must ensure that representative samples are collected from all permeable intervals within these zones, not isolated or discrete zones.

In addition, the GRU raised the concern that vertical flow of groundwater will occur between the multiple-screen intervals under natural conditions. The primary concern is that within an individual well there will be inter-well flow from screen intervals with higher head (upper screen intervals) to screen intervals with lower hydraulic head (lower screen intervals). In addition, the concern has been expressed that groundwater quality within the individual wells will be dominated by the more permeable zones within the UTZ and LTZ. First, the more permeable zones within the UTZ and LTZ are the primary zones of interest for monitoring, since these are the very zones that would likely be transporting Site constituents. It is advantageous to preferentially sample these zones. Second, nine quarterly sampling events demonstrates that there is little vertical hydraulic-head difference between discrete zones in the UTZ and LTZ wells. This indicates that permeable zones within the UTZ and LTZ are hydraulically vertically well connected. Hence, inter-well flow is not expected to be significant, since there is only a small vertical hydraulic-head difference (a few tenths of feet) between these zones. In addition, the fact that the UTZ/LTZ is hydraulically well connected emphasizes the need to collect representative groundwater samples from the entire interval. The suggested multi-level systems are designed for low-volume sampling from sampling ports that are less than 1 inch in diameter. This groundwater sample is representative of a very small portion of the aquifer. It is technically more defensible to collect a volume averaged sample from a larger portion of the UTZ and LTZ to ensure that potentially impacted zones are sampled.

The proposed Sentinel well designs incorporate multiple-screen intervals for the UTZ and LTZ wells. These multiple-screen intervals allow for the future option of

installing multi-level sampling systems, if it is established that constituents are migrating off Site and discrete multi-level samples are needed. The Sentinel well individual screen intervals can be redeveloped to remove transient effects of inter-well flow prior to installing the multi-level samplers.

In addition to the technical basis for not installing multi-level sampling systems in the Sentinel wells, there have also been on-going O&M issues associated with the existing on-Site Westbay systems. Equipment breakdown of key Westbay system components is occurring during each of the sampling events (FTS, the on-Site groundwater sampling contractor is preparing a memo which describes these issues in detail). In addition to reliability issues, there is also a recent concern that some Westbay sampling ports may not be properly sealing due to partial blockage of ports by formation material. Consequently, attempts to obtain discrete representative groundwater samples may be impacted. GeoTrans and FTS are working with factory technicians to help resolve this issue. Accordingly, as a result of these on-going O&M issues we are hesitant to propose the additional installation of multi-level sampling devices in wells at this time. Therefore, it is our recommendation that the monitoring well design remain as proposed.

Comment #2 Additional Geophysical Logs

The ACEPD, SJRWMD and GRU requested that additional geophysical logs be performed during the installation of the Sentinel wells. The reasons provided for performing these logs include: 1) To identify permeable zones for screen placement; 2) To confirm hydrostratigraphic interpretations; and 3) To evaluate annular cement seals. As you are aware, Beazer performed complete suites of geophysical logs during the recent installation of the UF Aquifer UTZ/LTZ wells. The majority of these logs provide little to no additional information to better quantify or establish monitoring intervals. The static and pump flow meter logs were difficult to run and interpret. Typically the uppermost permeable zone dominated flow, such that lower production zones were difficult to identify. The location of screen intervals and/or Westbay packer seats was primarily based on suitable borehole diameters established from caliper logs. The use of a cement-bond log to identify small-scale annular seal issues is not feasible as the resolution of the equipment is not that discrete. Cement bond logs are primarily used to look for large-scale voids and not small-scale fractures between the cement seal and formation.

A subset of geophysical logs that were successfully used on Site for well completion was proposed in the workplan for the Sentinel wells. The geophysical logs that were not included in the Sentinel well work plan provide limited useful data on Site and are not proposed for the Sentinel wells.

Miscellaneous Comments

The GRU recommended that because of grout seal concerns on Site that the annular seal should be allowed to cure for 24 hours following emplacement. The SJRWMD guidelines for well construction (Chapter 40C-3, F.A.C., 517) specify that

grout be allowed to cure for a minimum of 12 hours. In general during the construction of the on-Site wells, the grout seals were allowed to cure for greater than 12 hours. In lieu of the SJRWMD guidance, we will make an attempt to allow 24 hours for cement grout curing prior to performing additional work inside of the casing.

The GRU recommended that well development be performed until a minimum hydraulic conductivity value of 10 ft/day for the UTZ and 100 ft/day for the LTZ is achieved. Beazer has taken exceptional care to help ensure that on-Site monitoring wells are adequately developed. The development of the wells includes both agitation via surging and pumping to remove fine-grained material from around the filter packs. The development approach included the use of straddle-packer like systems to develop each of the individual screen intervals. In addition, a bromide tracer was added to drilling fluid to ensure that the majority of the drilling fluid was removed prior to installing the Westbay systems. This procedure has resulted in an average of over 50,000 gallons being removed from the majority of the recently installed UF Aquifer wells. We are confident that the well development procedures are sufficient to adequately remove fine-grained material that may be deposited along the borehole wall. Beazer does not propose to modify the well development procedure to one that is based on an average permeability for the formation.

Pending resolution of these issues, Beazer is prepared to mobilize to install these additional monitoring wells. Should you require additional information, please feel free to contact me at (303) 665-4390.

Sincerely,



James R. Erickson, P.G.
Principal Hydrogeologist

cc: B. O'Steen, U.S. EPA
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