March 30, 2007

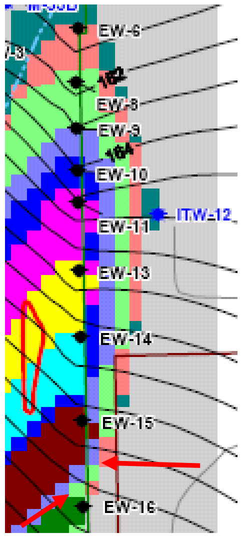
EPA Comments on December 22, 2006, Evaluation of the Surficial Aquifer Containment System for the Koppers Superfund Site (Gainesville, Florida), prepared by GeoTrans for Beazer East:

1. On page 4 in the last sentence of Section 2.1, the report indicates that model layer 1b becomes partially saturated in the immediate vicinity of the containment system and modeled ground-water withdrawal wells were located in underlying model layers 1c and 1d to minimize the potential of model layer 1b becoming unsaturated in the withdrawal well grid cell during the simulation and the corresponding well pumpage being shut off. Pumping rates for modeled extraction wells considered the average pumping rates over the past 12 years. Has there been any trend in the discharge rates that would make the use of more recent pumping data preferable for the simulation?

2. The report indicates that five simulations were run, four in which all wells are located along the periphery of the Koppers property and a fifth simulation which considered wells located in the immediate proximity of identified principal source areas. The latter simulation would predictably result in incomplete capture of surficial aquifer contamination which has by now no doubt been spread across a large part of the Koppers property, and which has likely created a secondary source area (through either sorbed contamination or isolated areas of residual NAPL) that would not be addressed by recovery wells placed solely near the source areas. An additional option would be to consider a composite of the most effective property-line recovery well configuration with additional wells located to contain/remove mass from identified principal contaminant sources. This sixth modeling scenario needs to be added.

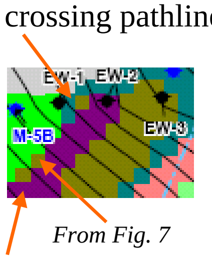
3. The report needs to specify the modeled pumping rates for each of the extraction wells for the base case. The first paragraph of Section 3.3 implies that for the base case simulation, existing wells are modeled as being pumped at the same rate. Is this assumption valid, and is there any benefit to varying pumping rates of individual wells in order to either enhance capture or shorten particle paths to a discharge point?

4. It is difficult to determine from the figures provided how particles released at certain locations manage to reach a distant extraction well location. For example, referring to Figure 2 (a portion is reproduced below) it is hard to see how particles released just north and northwest of EW-16 (light green color, noted by red arrows below) eventually migrate to EW-8.

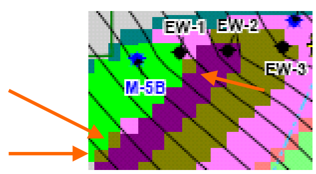


In this example, pathlines from the release points in the upper surficial aquifer near EW-16 must proceed under the model layer where the particles are released in order to avoid crossing other pathlines at upper aquifer release points further north. This three-dimensional aspect of particle transport is not shown on Figure 2. There is probably a limited ability to show particle movement in three dimensions, particularly because of the large number of particles released. The text, therefore, needs to include language that explains how particles released in the upper part of the aquifer may move downward into underlying model layers before reaching the discharge point.

5. With regard to figures 7 and 10, it is difficult to see how particles released in the lower part of the aquifer (in locations identified below; olive-colored model cells highlighted by orange arrows) can be transported to an EW-3 discharge point without crossing pathlines of particles released elsewhere that are captured by EW-2.



From Fig. 7

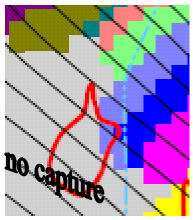


From Fig. 10

Unlike conditions in the shallower part of the surficial aquifer where particles may be transported downward in the aquifer and thus would appear to cross paths in a two-dimensional representation (see comment 4 above) the particles released at the locations shown on the drawings taken from Figure 7 and Figure 10 are released in the lowermost part of the surficial aquifer. Thus, it is unclear how these particles can move through the surficial aquifer past locations where particles are released at the same depth yet migrate to a closer extraction well. The document needs to account for what appears to be an anomalous capture of particles by explaining what model layers these particles are moving through and how their pathlines avoid crossing the pathlines of some of the particles that move to EW-2.

6. In the second paragraph of Section 3.3, the text states that installation of a new well between EW-3 and EW-6 does not improve the performance of the hydraulic containment system in this area of the site. We agree that adding the well does not improve containment in this part of the site. However, there is another aspect of the additional well that does enhance the capture of contaminated ground water. Specifically, in what is likely to be an area of relatively highly contaminated lower surficial aquifer ground water in the vicinity of the north lagoon, there is some

improved capture of that contamination in the modeled scenario that includes a pumping well between EW-3 and EW-6 (see comparison illustration below; Figure 10 shows the added well capture zones). This additional ground-water capture may be desirable.



From Fig. 7

From Fig. 10

7. With regard to the statements made on page 7 and in Section 3.6 concerning the inclusion of performance monitoring well ITW-12 as a monitoring point that is within the hydraulic capture zone of the current well system, a review of Figure 4 indicates that in the area of ITW-12, there is apparently no capture of ground water from the deeper surficial aquifer. There is the potential that some of the ground water passing by ITW-12 has followed a flow path that includes shallower parts of the surficial aquifer to the south-southwest, where as Figure 2 and Figure 3 show, there is probably some contaminant movement across the Koppers property line that is not captured by the line of Koppers property boundary extraction wells. This shallower surficial aquifer ground water in the vicinity of EW-16 and EW-17 is contaminated. From a point slightly east and northeast of these extraction wells, this contaminated water is likely moving further downward through the surficial aquifer as it proceeds northward. It is then probably detected by sampling at ITW-12. Is there any potential that higher concentrations of Koppers-derived contaminants may be migrating northward from the vicinity of EW-16/EW-17 through the surficial aquifer along flow lines to the east of ITW-12? Older sample results from monitoring on the former Cabot Carbon property suggest that some more significant Koppers-derived contamination may be migrating along flow paths that pass to the east of ITW-12 (data from monitoring well ITW-6 on the former Cabot Carbon property are most notable). ITW-6 should be resampled to evaluate current conditions in that area. The last sample result that EPA found for this well was from July 1994, when 450 ug/L of naphthalene was detected.

8. EPA does not concur with the recommendation to install new wells for hydraulic containment of source areas and phase out existing extraction wells around the periphery of the Koppers property. A chief objection to this proposal is the absence of a property-wide evaluation of current surficial aquifer contaminant concentrations and distribution that would allow for a fundamental understanding of the likely surficial aquifer contaminant mass (both dissolved phase and sorbed or potentially NAPL) that is distributed across the Koppers property. Of particular concern is the potential for remaining significant soil and ground-water contamination outside areas that would eventually be contained by ground-water recovery from points near the identified principal source areas. As explained further below, this contamination is of

concern to EPA and needs to be characterized before any reductions to the extraction of ground water at the property boundary are considered.

EPA disagrees with the statement on page 14 “The numerical model evaluation of the existing Hydraulic Containment System demonstrates that continued operation of withdrawal wells along the property boundary is not needed.” For the model runs where such wells are eliminated, the results indicate that at a minimum, surficial aquifer ground water from about the northern third of the Koppers property would not be captured by ground-water extraction near the identified principal source areas. Surficial aquifer ground-water quality over much of this area has not been recently characterized. As noted in a December 7, 2006 letter from EPA to Beazer, EPA has requested that surficial aquifer wells across the Koppers property be redeveloped and sampled, unless it can be shown that resampling of specific wells would provide data that are fundamentally duplicative of data obtained from another well. These data, along with the submitted surficial aquifer capture zone analysis, may indicate that changes to the operation of the extraction wells are advisable.

EPA does, however, believe that recovery of ground water from areas closer to the identified principal contaminant source areas may be an important part of the overall remedial strategy for the surficial aquifer. Design of an extraction well network that optimizes recovery of contaminated surficial aquifer ground water will probably need to be completed after the ground-water quality within the aquifer is better understood and after EPA has selected a remedial alternative to address contamination at the identified principal source areas on the Koppers property. However, as noted in comment 2 above, a sixth modeling scenario needs to be added to the evaluation. This model scenario will present a surficial aquifer extraction well system that optimizes recovery of presumably contaminated surficial aquifer ground water across the Koppers property, and from all depths within the surficial aquifer.