Department of Energy

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FEB 19 2004

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V, SR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0156-04

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF THE RESPONSE TO THE OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE INTEGRATED ENVIRONMENTAL MONITORING PLAN MID-YEAR DATA SUMMARY REPORT FOR 2003

Reference: Letter, J. Saric to J. Reising, "2003 IEMP Mid-Report," dated December 24, 2003

This letter transmits the subject document to the United States Environmental Protection Agency (USEPA) and Ohio Environmental Protection Agency (OEPA). The USEPA identified that the Integrated Environmental Monitoring Plan (IEMP) Mid-Year Data Summary Report for 2003 was adequate (reference) and had no comments.

This letter also serves to reiterate the information that has been communicated through the weekly conference calls. Specifically, in addition to those changes identified in the annual review of the IEMP, Revision 3 (Calendar Year 2004 monitoring), there have been several wells that have been plugged and abandoned, to date, that were identified for monitoring in 2004. These wells are as follows:

2430 (Property Boundary and Groundwater Elevations)
3067 (Property Boundary)
4067 (Groundwater Elevations)

These three wells specifically were plugged and abandoned to facilitate the construction of Cell 8 of the On-Site Disposal Facility. It is important to note that there will be wells installed to monitor the Great Miami Aquifer in the area around Cell 8 and these wells will be evaluated for possible addition to the Property Boundary Monitoring and/or

Recycled and Recyclable

Groundwater Elevations Program. Furthermore, it is expected that additional wells will need to be plugged and abandoned during 2004. This information will continue to be provided in the weekly project reports discussed during the weekly conference calls.

If you have any questions concerning the enclosed documents, please contact Ed Skintik of my staff at (513) 648-3151.

Sincerely,

W J Taylor

FCP:Skintik

William J. Taylor
Director

Enclosure: As Stated

cc w/enclosure:
F. Bell, ATSDR
M. Cullerton, TetraTech
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RESPONSES TO OHIO ENVIRONMENTAL PROTECTION AGENCY ON THE IEMP MID-YEAR DATA SUMMARY REPORT FOR 2003 (51350-RP-0023 Revision 0, Final)

FERNALD CLOSURE PROJECT
FERNALD, OHIO

FEBRUARY 2003

U.S. DEPARTMENT OF ENERGY

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RESPONSES TO OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE IEMP MID-YEAR DATA SUMMARY REPORT FOR 2003 (51350-RP-0023, REVISION 3, FINAL)

COMMENTS

1. Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 3-3 Line #: 8 Code: C
Specific Comment #: 1
Comment: Construction data for the five perched water monitoring wells could not be located on the Fernald IEMP Data Information Site. Please provide the well construction data for these five monitoring wells.
Response: DOE acknowledges the comment.
Action: The construction data for the five perched water wells around the on-site disposal facility (Cell 1) have been added to the IEMP Data Information Site.

2. Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 3-3 Line #: 8 Code: C
Specific Comment #: 2
Comment: Why are the water levels in 13261 so low relative to the other four wells? Are the other wells screened in a coarse-grained unit that is not present at 13261?
Response: DOE is not sure why the water levels are so low in 13261 relative to the other wells. There were no coarse grained units in any of the boreholes except 13249. In the boring for 13249, coarse-grained fill was found near the surface down to about 9 feet, and a 2-inch sand seam was found near the bottom of the borehole. The screen for Wells 13249, 13250, and 13251 were all set across the brown-gray clay contact. Wells 13252 and 13261 were both screened entirely in the gray clay. All the wells were installed per Variance # 20100-PSP-0002-03 which was reviewed and approved by OEPA in March 2002.
Action: DOE will continue monitoring the water levels in all the wells around Cell 1.

3. Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: 3.0 Pg.#: 3-3 Line #: 8 Code: C
Specific Comment #: 3
Comment: The elevation of the interface between the brown and gray tills in the vicinity of the OSDF is shown on Sheet X-10 (Brown Till/Gray Till Interface Contour Map) of the OSDF Final Design Package (May, 1997). The water level elevations observed in 13249, 13250, and 13251 are generally similar to the elevations of the brown/gray till interface. A high hydraulic conductivity zone might, therefore, locally coincide with the till interface and be a significant perched water unit in the Cell 1 vicinity. The relative extent and hydraulic conductivity of the perched water unit may drive the surface water drainage improvements design that is currently underway. Although significant site characterization investigations have been conducted in the Cell 1 footprint, perched groundwater units have not been mapped in the area to the north of Cell 1. Is the currently available data regarding the up gradient-perched water system sufficient to support an effective design?
Response: The water elevations in 13249, 13250, and 13251 are very near the surface, well up into the brown clay (or fill in the case of 13249). The current design is focused on the western side of Cell 1. If the current design does not prove to be effective in maintaining the perched water levels below the secondary liner elevation, as evidenced by the water levels in the Cell 1 Horizontal Till Well 12338, then additional work may be needed on the north side of Cell 1 (above and beyond the recent drainage improvements already completed on the north side). This additional work, if required, may involve additional characterization of the perched water zones north of Cell 1.
Action: DOE will complete drainage improvements on the west side of Cell 1 and continue to monitor perched water levels in the existing Cell 1 network to determine if additional action is required after the west side improvements have been completed.

4. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.0 Pg.#: Figs 3-5 & 3-6 Line #: Code: C
Specific Comment #: 4
Comment: There appear to be responses in the LDS systems of Cells 4 and 5 to the rainfall during the week of 3/26. A very large rainfall the week of 6/18 was preceded and followed by two relatively dry weeks. The responses during that week, and what would be interpreted as a residual response the following week, might be significant. A plot of weekly waste placement volumes superimposed on the flow rates has been helpful in interpreting the flow data from other cells and no doubt would be helpful here, too.
Response: DOE acknowledges the comment. The nearly five years of quantitative flow data from the on-site disposal facility LDS along with more than six years of chemical data from the LDS and LCS layers, indicate the liner systems for all the cells are operating within the design parameters. These data also indicate it is difficult to pin down the exact cause for the observed fluctuations in LDS accumulation rates.

Waste placement activities resumed after the winter shut-down in both Cell 4 and Cell 5 in late March 2003 – coincident with the initial LDS flow from both cells. Note that there were similar magnitude weekly rainfall totals earlier in the year and there was no response in the LDS for either cell. As discussed during the weekly conference calls, the increase in LDS accumulation rates coincident with heavy precipitation events may be due to the weight of the water on the liner system squeezing the construction water out of the LDS layer. Graphs showing the waste placement volumes versus accumulation rate are provided in the Impacted Material Placement Reports and in the 2002 Site Environmental Report Appendix A, Attachment A.5.
Action: No action required

5. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg.#: 3-1 Line #: last paragraph on page Code: C
Original Comment #: 5
Comment: The text states that the observed flows in the Cells 4 and 5 LDS systems are higher than those previously observed in other cells. The paragraph compares the observed LDS volumes with the measured rainfall that fell during the construction of the primary liner. It is concluded that the relatively high LDS flows in Cells 4 and 5 compared to the other cells are attributable to the higher rainfall during construction. It is also noted that the observed flows in the LDS systems are only a tiny portion of the rain that fell during construction.

While we do not take issue with the facts or conclusions drawn, we note that LDS flows in new cells vary widely and it is difficult to draw valid conclusions about the significance of the LDS volumes until after the cell is capped. We also note that although construction water is drained prior to operation of the cell, the volume is not measured and it is not possible to perform a water balance.

We note that since the time period of this report, the Cells 4 and 5 LDS flows have decreased to a level that is more typical of the flows observed in previous cells.
Response: DOE acknowledges the comment.
Action: No action required.

6. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg.#: 3-1 Line #: last paragraph Code: C
Original Comment #: 6
Comment: The text states, "A portion of the water became trapped, as construction water, in the geosynthetic clay liner in the cells' leak detection systems and the geotextile cushion within the leak detection systems."

We agree that some of the rainfall that fell during construction of the primary liners entered the LDS systems of Cells 4 and 5 and that some of this water no doubt was trapped by the geosynthetic components. We believe it is more likely that this water is held within the gravel components of the LDS system. However, since the total observed LDS flow cannot be broken down into flows from individual components of the LDS system, the point is moot.

Response: DOE acknowledges the comment.

Action: No action required.

7. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg.#: 3-3 Line #: Bulleted paragraph Code: C
Original Comment #: 6

Comment: This text compares the perched water levels as observed in the horizontal till wells and monitoring wells with the elevation of the bottom of the secondary liner. It is concluded that perched levels during the time period covered by this report may have contacted the Cells 1 and 5 secondary liners.

An analysis to estimate the factor of safety of the OSDF liner against hydraulic uplift was performed in the original design package. ('Section 6.1 OSDF Final Design Calculation Package, Geosyntec Consultants, 1997) Figure 2, "Design Basis Perched Water Contour Drawing" shows the perched system under most of Cell 1 is between 605 and 610 feet AMSL. The northeast corner is above 610 feet AMSL and the southwest corner is below 605 feet AMSL. The inferred elevation of the perched system used as the design basis is quite close to Figure 3-7 of this report.

We note that maintaining the bottom of the secondary liner above the perched water system was not a design basis for the OSDF. (Final Design Criteria Package for the OSDF, Section 2.4.2, GeoSyntec Consultants, 1997) The designers contemplated that the perched system could be temporarily dewatered for construction reasons, but it is clear from the context that the main design issue with perched water was stability with respect to hydrostatic uplift and not infiltration of perched water into the LDS layer.

We can only imagine three routes for perched water to enter the LDS layer, through the bottom of the secondary liner (including the sides), or between the two gml layers at the anchor trench along the east and west berms, or through the LDS piping after it has left the primary liner penetration box. In the first case, the water has to penetrate 3 feet of compacted clay, a geosynthetic clay liner and a geomembrane liner. In the second case, the water has to percolate up between the two anchor trenches and then flow between the primary and secondary geomembrane liners before draining downward into the LDS layer. In the third case, the water has to penetrate both the container and the carrier pipe of the dual-containment system. Because all three options appear unlikely, we have previously commented that leakage through the primary liner seemed most probable.

Response: DOE acknowledges the comment and agree that there are various possible pathways for water to reach the LDS. As previously noted, based on chemical differences between the LDS water and the LCS water it appears there is a different source for the LDS water.

Action: DOE will do the following: continue to monitor Cell 1 LCS and LDS flows; begin trending the Cell 1 LCS/LDS flows; and continue to monitor the Cell 1 LCS, LDS, and horizontal till well constituent concentrations. Then the associated trends of these constituent concentrations will be compared on an annual basis and included in the site environmental reports Appendix A, Attachment A.5.

8. Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.2 Pg.#: 4-2 Line #: NA Code: C
Original Comment #: 8

Comment: Although not FRL exceedance, one of the monitoring goals of the IEMP is to identify potential cross media impacts where the groundwater FRL may be exceeded in surface water flow that may directly impact groundwater. This assist in reducing impacts to groundwater and accelerating the remediation of groundwater. As such, it is preferred that exceedances of the groundwater in these surface water flow be reported under notable results and events, with an relevant explanatory notes. During the monitoring period covered in the midyear 2003 report, at least one such exceedance occurred. The March 13, 2003 sample in SWD-03, a drainage to Paddys Run with the next monitoring stations in this flow path being the property line, had a total uranium result of 41.6 μg/L, which although far below the surface water FRL< is greater than the groundwater FRL for total uranium. Please include such results in future data summary reports.

Response: DOE agrees that cross-media impact information could be added to the mid-year data summary report. Relevant explanatory notes will be added where possible. Regarding SWD-03, this location frequently has had total uranium concentrations above the groundwater FRL, which is expected during the remediation process.

Action: Future mid-year data summary reports will identify cross-media impact location exceedances of the groundwater total uranium FRL.