

**2353**

**RESPONSES TO OEPA COMMENTS  
ON THE INTEGRATED ENVIRONMENTAL  
MONITORING STATUS REPORT FOR  
FOURTH QUARTER 1998**

**FERNALD ENVIRONMENTAL MANAGEMENT PROJECT  
FERNALD, OHIO**

**JUNE 1999**

**U.S. DEPARTMENT OF ENERGY  
FERNALD AREA OFFICE**

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the quarter? If the borescope data are found reliable, what are the implications for overall capture zone stability?

Response:

This comment includes several concerns: 1) why weren't all wells along the eastern boundary included in the observation concerning capture; 2) the lack of full capture of the northeastern lobe at the time of the borescoping is of particular concern given that the aggressive pumping rates were being employed at the time; 3) borescope results should be interpreted rather than just described; and 4) what can be done to verify the flow directional data derived from the borescope. These concerns are addressed as follows:

- 1) The observation focuses on borescope flow data that does not agree with the interpreted capture zone shown in the map (refer to Figure 1-37). Monitoring Well 22303 should have been included in this observation but was inadvertently omitted. Borescope flow direction data at Monitoring Wells 21063 and 2093 do not agree with the interpreted capture zones derived from water level data. Monitoring Wells 2898 and 3898 were not included in the observation because borescope flow directions agree with the interpreted capture zone.
- 2) The intent behind "aggressive pumping rates" is further described in the bullet on which this comment is based. As presented in Figures 1-5 through 1-21 during the time period of "aggressive pumping" identified in the text, the pumping rate in Extraction Wells 31550, 31560, 32308, and 32309 increased, and the pumping rate in Extraction Wells 31564, 31565, 3926, and 3927 decreased. Groundwater modeling, and groundwater elevation maps indicate that Extraction Wells 3926 and 3927 appear to have more influence over the northeastern lobe than Extraction Wells 32308 and 32309. So during the time period of "aggressive pumping", the extraction wells with the most influence over the northeastern lobe were actually pumping less. As noted in the bullet, the intent is not to forfeit capture in the name of optimization. To support efforts to optimize the groundwater remediation, DOE will be varying the pumping rates in the extraction wells over the life of the remedy. However, DOE recognizes that plume capture obligations are a constraint to be considered when pumping rate changes are made. As such, when future pumping rate modifications are made, capture zone evaluations will be completed more frequently than the IEMP established quarterly schedule to ensure that unacceptable conditions do not persist for extended periods.
- 3) DOE will provide additional interpretation of borescope results in future IEMP quarterly status reports, particularly when there are significant differences in the flow directions derived from the borescope versus those from water levels. Previous comment responses on interpretation of borescope results are summarized in the Responses to U.S. EPA and OEPA Comments on the Integrated Environmental Monitoring Status Report for Third Quarter 1998, Comment Response #12 as well as Comment Response #11 from the aforementioned comment response document.
- 4) Based on past experience with the colloidal borescope, DOE has found that observed flow directions are generally consistent over time at the same monitoring well locations. There are occasional exceptions to this rule. Plausible explanations for these exceptions range from differences in the seasonal recharge to changes in the micro-flow regime in the vicinity of the individual well screens. Each quarterly measurement provides follow-up data to check anomalous flow directions.

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As for using other technologies, DOE has had previous experience at this site using conventional thermal flow direction measurement technology and has found that it is very sensitive to calibration and difficult to get consistent results.

Action: When future pumping rate modifications are made, capture zone evaluations will be completed more frequently than the IEMP established quarterly schedule to ensure that unacceptable conditions do not persist for extended periods. DOE will also provide additional interpretation of borescope results in future IEMP quarterly status reports, particularly when there are significant differences in the flow directions derived from the borescope versus those from water levels.

5. Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.  
Section#: 1.0 Pg.#: Fig. 1-37 Line#: N/A Code: C  
Original Comment#  
Comment: Future versions of this figure should show the South Field extraction wells, the Re-injection Demonstration wells, and the South Plume Optimization wells besides the South Plume recovery wells. Showing the spatial distribution of the restoration pumping centers compared with the borescope wells will aid in the interpretation of the directional flow data.  
Response: DOE acknowledges the comment.  
Action: DOE will add the requested wells to the borescope figure in future IEMP reports. (For the Integrated Environmental Monitoring Status Report for First Quarter 1999, refer to Figure 1-33.)
6. Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.  
Section#: 1.0 Pg.#: Fig. 1-38 Line#: N/A Code: E  
Original Comment#  
Comment: South Field Recovery wells 31565, 31562, 31566, 31561, 31560, 31564, 31563, and 31550 are incorrectly shown on the figure as re-injection wells.  
Response: DOE acknowledges the comment.  
Action: DOE will make the necessary corrections in future IEMP quarterly status reports. (For the Integrated Environmental Monitoring Status Report for First Quarter 1999, refer to Figure 1-34.)
7. Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.  
Section#: 1.0 Pg.#: 1-6 Line#: 30 Code: E  
Original Comment#  
Comment: The referenced text should clarify if Monitoring Well 2430 was or was not treated for biofouling.  
Response: DOE acknowledges the comment. Monitoring Well 2430 was treated for biofouling in October of 1998.  
Action: No action required.
8. Commenting Organization: Ohio EPA Commentor: DSW  
Section#: 2.0 Pg.#: Data set Line#: Data set Code: C  
Original Comment#  
Comment: It appears that elevated nitrate/nitrite levels are seen at the storm outfalls intermittently, approaching the FRL for ground water in areas with a direct connection to the ground water (> 10 mg/L). These may be related to careless hydro seeding. I have seen hydro seeding applied to open water areas in the sediment basins. Has there been any follow up with the applicators of the hydro seed regarding this?

**Response:** DOE is unaware of any instances of careless spraying of hydro-seed but we will remind construction managers of the importance of implementing proper hydro-seeding techniques. The mulch comprising the hydro-seed mixture is typically wood cellulose. Cellulose is not a source of nitrogen and would not lead to the formation of nitrates. A possible source of nitrate/nitrite would be fertilizer applied with or in the hydro-seed mixture. If applied, the impact from fertilizer would depend on the nitrogen content of the fertilizer used.

It is important to note that during 1998, the highest nitrate/nitrite concentration at the stormwater outfalls was at STRM 4003 in June with a concentration of 10.9 milligrams per liter (mg/L). Storm water outfalls are sampled twice a year for nitrate/nitrite (in June and December). The highest concentration in December was 4.4 mg/L at STRM 4003. In 1998 nitrate/nitrite concentrations in groundwater in the southern area of the Fernald Environmental Management Project (FEMP) are around 2 mg/L and there is no indication of an upward trend.

As part of the integrated approach to final remediation level (FRL) exceedance evaluation, all surface water constituents are evaluated against groundwater FRLs at locations where surface water is directly infiltrating groundwater. No surface water constituent concentrations exceeded any groundwater FRLs (at locations where infiltration could occur), except for an occasional total uranium exceedance. The design of the groundwater remediation systems has accounted for this potential contaminant pathway by installing extraction wells downgradient of these areas where direct infiltration can occur. Analytical data will continue to be monitored to determine cross-media impacts.

**Action:** No action required.

9. **Commenting Organization:** Ohio EPA  
**Section#:** 3.2 **Pg.#:** 3-4

**Commentor:** OFFO  
**Line#:** 14-25 **Code:** C

**Original Comment#**

**Comment:** The text states that the project specific monitor is not placed in the optimum location due to the obstruction of a bermed tank. When will the bermed tank be removed, and the monitor be placed in the proper position? Currently, the sampler is placed in the least prominent wind direction and the fence line samplers near the STP are measuring higher than normal concentrations. An increased effort should be made to ensure that releases to the public from STP dismantlement activities remain ALARA.

**Response:** The bermed primary sedimentation tanks will be removed during the Area 1, Phase 2 Sewage Treatment Plant Excavation Project which began on May 27, 1999. DOE located the STP-1 monitor as close to the demolition activity as practicable and in consideration of several criteria. These criteria included: the U.S. Environmental Protection Agency siting criteria (40 CFR 58, Appendix E), the location of AMS-3 which is in the predominant downwind direction from the sewage treatment plant, and operational considerations such as the availability of electrical power and access. DOE recognizes that a project-specific monitoring location to the east or northeast of the primary sedimentation tanks would be optimal; however, such a location would have to be on private property in order to be outside the "building wake" created by the tanks. Therefore, the STP-1 monitor is situated in the best available location for monitoring remediation activities associated with the sewage treatment plant. Additionally, DOE will continue to aggressively implement fugitive dust controls to ensure project emissions remain As Low As Reasonably Achievable.

**Action:** No action required.

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Response: The commitment was to discontinue visual observations of sediment loading to Paddys Run until either:

- Significant soil disturbances occur in the drainage area discharging to Paddys Run via the north drainage ditch
- Storm water control inspections indicate that sediment controls are not properly functioning.

As identified in the Integrated Environmental Monitoring Status Report for Third Quarter 1998, monitoring resumed because construction activities were initiated. Monitoring was not initiated because construction activities were causing an impact at STRM 4006. Monitoring activities continued in the fourth quarter because construction activities continued, not because there was an effect at STRM 4006. Additionally, as identified in the Integrated Environmental Monitoring Status Report for Fourth Quarter 1998 (page 2-2, lines 35-37), review of the surface water and treated effluent data provided within this report does not indicate that these activities have caused any persistent exceedances.

The raw data associated with the visual observations of sediment loading to Paddys Run consists of precipitation data. Monitoring is conducted if there is a rainfall event greater than 0.5 inch. The precipitation data are provided on the data disks accompanying IEMP quarterly status reports. Visual observations are recorded on a log book but are not recorded electronically. These observations are summarized in IEMP quarterly status reports. To date, visual observations have indicated turbid conditions upstream and downstream of the trestle and no added impact from the northern drainage ditch (deeming no further action).

Action: No action required.

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