Department of Energy

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OCT 20 2005

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0010-06

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE 2004 SITE ENVIRONMENTAL REPORT

References:
1) Letter, J. Saric to W. Taylor, "Comments on the 2004 Site Environmental Report," dated August 16, 2005

2) Letter, T. Schneider to W. Taylor, "Technical Review Comments on 2004 Site Environmental Report," dated September 15, 2005

Enclosed for your review and approval are responses to U.S. Environmental Protection Agency and Ohio Environmental Protection Agency comments on the 2004 Site Environmental Report.

If you have any questions or require additional information, please contact Johnny Reising at (513) 648-3139.

Sincerely,

Johnny W Reising

Johnny W. Reising
Director

Enclosure

cc w/ enclosure:
B. Kain, DOE-EMCBC
G. Stegner, DOE-OH/FCP
J. Craig, DOE-LM
C. Jacobson, Stoller
M. Lutz, Stoller
J. Powell, DOE-LM
C. Connell, ATSDR
G. Jablonowski, USEPA-V, SR-6J
T. Schneider, OEPA (three copies of enclosure)
M. Shupe, HSI GeoTrans
R. Vandegrift, ODH
AR Coordinator, Fluor Fernald, Inc./MS6

cc w/o enclosure:
H. Bilson, Fluor Fernald, Inc., MS01
J. Chiou, Fluor Fernald, Inc., MS88
B. Hertel, Fluor Fernald, Inc., MS12
F. Johnston, Fluor Fernald, Inc., M12
C. Tabor, Fluor Fernald, Inc., MS12
E. Woods, Fluor Fernald, Inc., MS90

RESPONSES TO U.S. AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE 2004 SITE ENVIRONMENTAL REPORT

FERNALD CLOSURE PROJECT
FERNALD, OHIO

OCTOBER 2005

U.S. DEPARTMENT OF ENERGY

RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE 2004 SITE ENVIRONMENTAL REPORT

SPECIFIC COMMENTS:

1. Commenting Organization: U.S. EPA Commenter: Saric
Section #: 3.3.1.3 Pg #: 3-16 Line #: Not Applicable (NA) Code: C
Original Specific Comment #: 1
Comment: Figure 3-9 on this page includes two hatched areas in the northeast and southeast corners of the figure. Other figures in the report indicate that these two areas are bedrock highs. The legend in Figure 3-9 should be revised to indicate that the hatched areas are bedrock highs.
Response: DOE acknowledges the comment.
Action: In the future, bedrock highs will be consistently indicated in the figure legends, as appropriate.

2. Commenting Organization: U.S. EPA Commenter: Saric
Section #: 5.3 Pg #: 5-5 Line #: NA Code: C
Original Specific Comment #: 2
Comment: The text states that the maximum concentration of total uranium was detected at fenceline air monitoring station (AMS) – 23 and that the maximum concentration of total particulates was detected at AMS-3. Both AMS-23 and AMS-3 are located near the On-Site Disposal Facility (OSDF). The text should be revised to discuss (1) the causes of these detections and (2) whether the detections are related to construction or waste placement activities at the OSDF.
Response: DOE acknowledges the comment. The 2004 data presented in the annual report represents accumulated emissions throughout the year, which were evaluated to identify any trends that may have been developing. In addition to identifying annual trends, the text briefly described individual data points. The text states that several temporary increases were observed at various monitoring locations; however, the short-lived increases did not pose a potential exceedance of the NESHAP dose limit. The majority of increases were detected in the northeast quadrant; these temporary increases were due to the remediation activities associated with the Waste Pits Project; the on-site disposal facility (OSDF) and its associated material transfer area; and decontamination and demolition (D&D) activities. The annual report text provided a brief description including the location, northeast quadrant (predominant downwind direction), duration (temporary), and sources (Waste Pits, OSDF, and D&D activities). Additional information has also been provided on individual data points in the 2004 bi-weekly preliminary fenceline (site boundary) update emails transmitted to U.S. Environmental Protection Agency and Ohio Environmental Protection Agency. For example, the bi-weekly update for the data collected on January 20, 2004 identified the Waste Pits Project as the source of the elevated uranium concentrations in the downwind quadrant. In addition, the update identified the specific work activity (drying uranium waste materials from Waste Pit 6), that corrective actions were implemented, and that a review of the data would continue in order to ensure that corrective actions are sufficient.
Action: Future annual reports will continue to identify annual trends and describe individual data points, as necessary.

RESPONSES TO OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE 2004 SITE ENVIRONMENTAL REPORT

GENERAL COMMENTS:

3. Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: Attachment A.1 Pg #: A.1-2 Line #: 23 Code: C
Original Comment #: 1

Comment: Future reports that discuss the results of the groundwater modeling conducted for the Comprehensive Groundwater Strategy Report should include the caveat that the three-year reduction was determined using an uncalibrated solute transport model.

Response: The three-year reduction refers to the predicted shortening of the aquifer remedy through the continued use of well-based re-injection in the South Field. Since the original solute–transport calibration was done in 1993; new parts of the plume have been discovered. Initial conditions in the groundwater model have been updated to incorporate these new plume additions into the remedy designs (i.e., South Field Phase-II, Waste Storage Area Phase I).

The latest remedy design is the Waste Storage Area Phase II Design. The groundwater modeling used to develop this design has initial conditions updated through April of 2005 and does not include well-based re-injection in the South Field. The new design indicates that the Waste Storage Area (not the South Field) will clean up last.

Action: No action required.

4. Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: Attachment A.1 Pg #: A.1-6 Line #: 21 Code: C
Original Comment #: 2

Comment: It should be noted that, based on casual inspection, the model-predicted concentrations are less or much less than the final observed concentrations for 18 of the 22 wells. This disconnect between the model and reality is biased toward portraying the site remediation as more effective than it actually is and calls into question model-based justifications for changes the site remediation system (such as the decision to terminate well-based re-injection).

Response: DOE acknowledges the comment. Many of the model concentration predictions for extraction well locations are lower than what is being measured in the field. All three-cleanup predictions, (i.e., model prediction, trend of observed concentration data, trend of 95% UCL of observed concentration data) are presented to illustrate the uncertainty in predicting cleanup times for the aquifer, and to illustrate the uncertainty between model predictions and field observations.

Recognizing this uncertainty, modeling results were just one of the factors that contributed to the decision to terminate well-based re-injection. Operational costs and D&D options were also factored into the decision. An opportunity presented itself for downsizing the treatment facility and disposing of the contaminated material into the OSDF. If this window of opportunity were missed, a much more costly process of shipping contaminated material offsite would have resulted along with the risks associated with transportation. In evaluating the downsizing decision, future treatment needs were considered. It was determined that it is not cost effective to maintain treatment capacity solely for the purpose of supporting well based injection.

Action: No action required.

5. Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: Attachment A.3 Pg #: A.3-2 Line #: 9 Code: C
Original Comment #: 3

Comment: What is the reason for the absence of the flow divide during the second and third quarters of 2004?

Response: As indicated in the text, the flow divide was not evident based on the elevation data collected during the second and third quarters of 2004. It is obvious that the groundwater must somehow flow around the bedrock high that separates the New Baltimore Outlet from the Paddys Run Outlet, but the flow divide in the second and third quarters of 2004 is not evident based on the extremely low gradient during those quarters.

Action: No action required.

6. Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: Attachment A.5 Pg #: A.5-10 Line #: 20 Code: C
Original Comment #: 4

Comment: The text indicates that if the horizontal till well concentrations for a parameter fluctuate significantly or are similar to the LCS, then they should be eliminated as a monitoring parameter. With respect to elimination because of similarity between till well and LCS, this approach assumes that the existing LCS baseline data set is representative of the full range of concentrations that will occur through the life of the cell. However, it is unlikely that all portions of the cell contribute to the LCS in equal proportion. Higher LCS concentrations could be observed at a future time, thus, the parameter could be detected by the system. Elimination of parameters due to similarity of concentrations, therefore, may not be protective of groundwater.

Response: This is a similar comment as #139 in the August 2005 Comment Response Document on the Revised Comprehensive Legacy Management and Institutional Control Plan. As indicated in Comment Response/Action #139, the following text will be removed from Section 4.4.3.1 (OSDF Groundwater/Leak Detection and Leachate Monitoring Plan):

"An indicator parameter will be considered for elimination when the baseline data indicate significant fluctuations and/or concentrations in horizontal till or Great Miami Aquifer monitoring wells that are similar to those observed in the LCS and LDS. When the baseline concentration of a constituent is similar to that observed in the LCS and LDS, a leak from the OSDF cannot be identified in the monitoring wells. When the background concentrations fluctuate significantly, leak detection is compromised due to a high chance of a false-positive. In either case, the constituent cannot be considered a reliable indicator for leak detection purposes."

This text will also be removed from future annual site environmental reports.

Action: As indicated in comment response, text will be removed from future annual site environmental reports.

7. Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: Attachment A.5 Pg #: A.5-12 Line #: 24 Code: C
Original Comment #: 5

Comment: The results of the leach tests could have significant impact on the evaluation of one of only four leachate monitoring parameters for the OSDF. DOE should provide additional detail regarding the experimental setup for the tests. What QA/QC samples will be included in the experiment? What volume of water will be collected for each sample? What effect will the decrease in water volume have on the test? Could an experiment be devised that would examine for the dolomite gravel and the leaching capability of in-situ perched groundwater?

Response: Boron and sulfate are the two key monitoring parameters that will be evaluated with the leach test results. However, the leach tests were performed to evaluate the contribution of all soluble ions derived from the dolomitic rock to the solute load in fluids collected from the

LCS, LDS and HTWs. The crushed stone was collected on April 20, 2005, from the existing gravel stockpile located north of the rail yard using a shovel and plastic bucket. Care was taken to collect stone that had not been exposed to the elements and to avoid areas that had been watered for dust control. The gravel was transported to the Water Monitoring facility and placed into 6 new 5-gallon, rinsed plastic containers. Each container was filled with four liters of deionized water. The gravel was added to a level just below the top of the deionized water. The containers were capped and labeled A through F.

Individual samples were collected from containers A, B, and C at intervals of 30, 60, and 90 days. The fluid in the containers was passed through a 0.45 micron filter into sample containers (i.e., three samples were collected at each time interval). Filtration was necessary to remove the gravel dust that comprised a portion of the solid material placed in the containers. The pH and Eh of each sample was measured and documented at the time of sampling. Samples were submitted for analysis to an offsite laboratory for alkalinity, sulfate, nitrate/nitrite, chloride, fluoride, metals, and total uranium. Containers D, E, and F were held in reserve and were to be sampled only if required by the Project Manager.

Triplicate samples were submitted for each leach-test sampling interval, and standard laboratory QC was run on the batch of samples received by the laboratory. The batch consisted of samples from the leach tests and groundwater monitoring activities, and the laboratory randomly picked a sample to perform the QC measurements.

The volume of water collected at each sampling interval for each of the samples was one liter (i.e., 250 ml for alkalinity and sulfate; 250 ml for nitrate/nitrite; 250 ml for chloride and fluoride; and 250 ml for metals, including total uranium). A decrease in water volume will not change the concentration of constituents limited by solubility constraints (e.g., Ca, HCO3, etc). Labile elements will be released to the solution quickly (e.g., B, Li, Cl, NO3, etc), and volume changes will not have a significant impact on their concentration. For those constituents that are controlled by adsorption/desorption or ion exchange (e.g., K, Na, etc) some change may be observed between the sample intervals.

A leaching experiment with *in situ* perched groundwater and gravel could be devised, but the benefits of this additional work are limited. For example, labile elements will still release immediately and achieve concentrations similar to those observed in the present leach test. Likewise, constituents controlled by solubility will reach levels commensurate with those observed in the leach tests.

Action: Additional information requested is provided in the comment response.

8. Commenting Organization: Ohio EPA Commentor: GeoTrans, Inc.
Section #: Attachment A.5 Pg #: A.5.9-4 Line #: 27 Code: C
Original Comment #: 6

Comment: Notations on the appropriate Cell 1 and 2 plots of where the visual division points were identified for the supplemental analysis would be useful for evaluating the supplemental evaluation of the data. In addition, an indication of what change in the plot (shift in average, change in variability, or change in trend) prompted the selection of the division point on each plot would also be useful.

Response: "A" and "B" control charts are provided sequentially so that the visually division points can be viewed. The division points were determined by visual inspecting the plotted data for possible "change of character" in trends. This would include a possible shift in average, change in variability, or apparent change in trend. The divisions were made on a location-by-location basis (Note: Total uranium and boron were both looked at for each location). The split data sets were then tested for statistical significance of any observed differences. The statistical significance of the differences and trend test results are provided in Table A.5.1-3 (Cell 1 locations) and Table A.1.2-3 (Cell 2 locations). Below is the general rationale for the division points.

Location	Rationale
12338	Apparent shift in mean (upward) and change in variability (reduced).
22201	Apparent shift in mean (total uranium – upward; boron - downward) and change in variability (reduced).
22198	Both total uranium and boron had statistically greater concentrations in the later period but lower variability. Total uranium showed no trend change; however, boron changed from a downward trend to an upward trend.
12339	Apparent shift in mean (upward) and an apparent change in trend from non-trending or slightly upward trending to a more pronounced upward trend.
22200	Both total uranium and boron had trends in the early portion of data (total uranium – downward; boron - upward). Concentrations then leveled off around the division point. The only statistically significant outcome was the differences between "prior-" and "post-date" trends, where total uranium went from a downward trend to no trend and boron from upward trend to no trend.
22199	Boron concentrations seemed to change from relatively low variability to a higher degree of variability. Total uranium seemed to have passed a five-quarter period of somewhat elevated concentrations to return to a lower more steady level of concentrations. There was a difference between "prior-" and "post-date" trends for total uranium concentrations, which went from an upward trend to no trend.

Action: If supplemental statistical evaluations are included in future annual reports, then the general rationale for division points will be provided.

9. Commenting Organization: Ohio EPA Commentor: DSW
Section #: Attachment B.1.2.1 Pg #: B.1-4 Line #: NA Code: C
Original Comment #: 7

Comment: The last sentence of this section states that "...bypassing will likely no longer occur beginning in the fall of 2004," whereas January of 2005 saw a significant bypass event with the SWRB nearly overflowing.

Response: As indicated in the text, "bypassing will likely no longer occur". It was not thought that bypassing would be necessary beginning in the fall of 2004; however, circumstances required a bypass event.

Action: No action required.