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June 2, 2008

Ms Jane Powell
Fernald Site Mger
DOE-LM-20.1
10995 Hamilton Cleves Hwy
Harrison, Ohio 45030

RE: COMMENTS – EVALUATION OF AQUEOUS IONS IN THE MONITORING SYSTEMS OF THE OSDF

Ms Powell:

Ohio EPA has received DOE's "Evaluation of Aqueous Ions In The Monitoring Systems Of The On-Site Disposal Facility," dated March 10, 2008. Ohio EPA has reviewed the report and our comments are enclosed. In addition, Ohio EPA suggests that a meeting be held in July 2008 to discuss the attached comments and develop a path forward for the OSDF monitoring strategy. Additionally, we suggest that in February or March of every year following DOE's accrual and analysis of the prior year's data, but before synthesizing the SER text, a meeting between DOE, Ohio EPA and USEPA is held to review the OSDF monitoring data and jointly draw conclusions regarding that data. It is hoped that such a meeting will ensure all parties similarly view the available data and can reach consensus on how the data is interpreted, including any appropriate modifications to monitoring or maintenance that such interpretations may require.

If there are any questions, please contact me.

Sincerely,

Thomas A. Schneider
Fernald Project Manager
Office of Federal Facilities Oversight

Cc: Tim Fischer, US EPA
Michelle Cullerton, Tetra Tech
Frank Johnston, Stoller

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OHIO EPA COMMENTS ON THE EVALUATION OF AQUEOUS IONS IN THE MONITORING SYSTEMS OF THE ON-SITE DISPOSAL FACILITY (OSDF)

Comments:

1. Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: N/A Pg #: N/A Line #: N/A Code: C
Comment: The evaluations presented in this document are inconsistent with the originally agreed-upon intention for collecting the common ion data. As indicated in DOE's March 23, 2005 letter (William Taylor to Jim Saric and Tom Schneider, subject: Transmittal of Response to Ohio Environmental Protection Agency Comment on the 2003 Site Environmental Report Comment Responses), ion monitoring will be conducted for the purpose ascertaining when steady state conditions have been reached and statistically valid control charts can be constructed. In this document, however, the common ion data itself, together with the existing indicator parameter data are reviewed for the purpose of parameter selection not the assessment of steady state conditions. The ultimate goal for the common ion monitoring is to determine when, for each of the eight OSDF cells, valid control charts can be constructed for the key site monitoring constituents including uranium, boron, total organic carbon, and sulfate; the goal is not the identification of substitute parameters. Proceeding with the constituents defined in text is not recommended because they are based on data characterized by continuing trends. In accordance with the original aim of the common ion study, therefore, the following path forward is offered:

- Trend analysis and fluid volume evaluations should continue at the facility and will remain as important inputs to leak detection.
- The existing four indicator constituents should continue to be monitored at all cells and in all monitoring horizons. All samples for metals should be field-filtered.
- A reduced list of common ions should also continue to be monitored at a reduced frequency (semi-annually or annually). Ions that do not help to resolve water quality between horizons should be eliminated. All samples for metals should be field-filtered.
- Bivariate plots should be constructed for the monitoring data on a cell by cell basis. The plots should be constructed on an annual basis and used to compare water quality in each monitoring horizon over time.
- The construction of control charts for the key indicator parameters should resume after correction of the data for any trend that is present. The objective of the control charts will ultimately be leak detection. In the interim period, prior to the dissipation of any trends in the key parameter data, the control charts will assist in the assessment of any changes in the observed trends.

2. Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 1.1 Pg #: 1-2 Line #: 15 Code: C
Comment: Information regarding the sampling protocols followed should be provided for the samples discussed in this document. Specifically, an indication of whether or not the LCS, LDS, and HTW samples were filtered prior to laboratory analysis is needed. As noted frequently in the text, sample acidification causes the dissolution of suspended material in the samples. This dissolution, in turn, results in an increase in the concentrations of metals in solution which then obscures meaningful interpretation of trends in the data. If not being currently performed, future samples collected at the

OSDF should be field-filtered using a 0.45 micron filter prior to subrnittal to the laboratory for analysis.

3. Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 1.2 Pg #: 1-3 Line #: 34 Code: C
Comment: Based on the assumptions defined in this section (20 percent accuracy for analyses and 1/10 leakage volume), in order to be "significant," calculation shows that the ion concentration in the leakage volume would only need to be 3 times greater than the ion concentration in the next lower horizon.

4. Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 2.1 Pg #: 2-1 Line #: 27 Code: C
Comment: The bivariate plots are an effective tool for evaluating the OSDF data. Their utility, however, is limited in this document because the data from all eight disposal cells are lumped together on Figure 2-1 and also on the other 13 plots discussed. The text notes that various data set characteristics are unique to each cell (structural steel in Cell 2 and its impact on the iron data from this cell, inordinate road salting impacts to Cell 8 data, etc.). Since each cell is expected to have its own unique data set characteristics, DOE should construct the bivariate plots on a cell by cell basis.

5. Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 2.1 Pg #: 2-2 Line #: 14 Code: C
Comment: Although the use of de-ionized water in the gravel leach test provided an indication of crushed rock liable elements that were released quickly and constituents that were controlled by dissolution, de-ionized water is not a particularly aggressive leachant and, consequently, the results of this test are largely theoretical and subject to selective interpretation in the text. For example, the text suggests that a similarity between the gravel and LDS data exists which is largely unsupported by the plots. On most plots, the trend of the gravel data is usually closely aligned with the trend through the LCS data. This suggests that if the leach test was run for a longer time or a more realistic leachant was used, the gravel would more closely resemble the LCS on the plots.

6. Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 2.2 Pg #: 2-10 Line #: 1 Code: C
Comment: If the LCS, LDS, and HTW samples were not filtered prior to analysis, the results for iron are meaningless. Particulate iron is likely present in these samples and should be removed by filtering prior to analysis. If no filtering occurred, sample acidification would convert the particulate iron to dissolved iron thus obscuring real trends in the data.

7. Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 3.0 Pg #: 3-1 Line #: 8 Code: C
Comment: Use of the x4 screening factor is arbitrarily defined, does not fully consider the available data collected, and should be abandoned. As noted previously, cell by cell bivariate ion plots and ion concentration versus time plots provide a better picture of the relative relationship of ion concentrations between the three monitoring horizons. For each cell, these plots show differences in monitoring horizon chemistry and, when

constructed through time, show any changes that may occur. When considered holistically with other data, such graphical analysis of the data is far superior to the application of an indiscriminant screening parameter based on arbitrary assumptions regarding data accuracy and leakage rates.

8. Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 3.0 Pg #: 3-1 Line #: 13 Code: C
Comment: Control charts are the preferred approach for statistical evaluation of the LDS and HTW data and are consistent with regulatory requirements. As noted by the text, the concentration data for all leak detection parameters must be in "steady state" meaning that no trends exist in the data. As pointed out by the text, trends do exist for many parameters thus precluding the use of these parameters to construct control charts for leak detection purposes. However, the use of control charts should resume, not for leak detection purposes (at the present time) but to help determine when temporal chemistry changes in the monitoring horizons have dissipated. For key monitoring parameters (such as total uranium, boron, etc.), the control charts should be constructed by first testing the data for trend and removing the trend, if any exists. Once the trend is removed, the control charts should then be constructed with both upper and lower SCL and CUSUM limits. Along with the cell-by-cell bivariate plots discussed above in a previous comment, the control charts constructed will be an important tool for assessing when parameter concentration changes that are transient and related to groundwater aging have dissipated.