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George V. Voinovich
Governor

June 7, 1999

Mr. Johnny Reising
U.S. Department of Energy, Fernald Area Office
P.O. Box 538705
Cincinnati, OH 45253-8705

Re: COMMENTS ON MODIFICATIONS TO OSDF LTS DESIGN

Dear Mr. Reising:

This letter provides Ohio Environmental Protection Agency comments on the Modifications to the OSDF Leachate Conveyance System Design which was transmitted via your letter DOE-0769-99. The design of the interim system did not follow the usual review and comment process. In fact, the construction has been completed and the system is operating. Instead of review and comment, we participated in many design and construction meetings. This was a tedious and tortuous process that we believed was warranted due to the inherent limitations of continuing to pump and truck leachate. We hope that future situations do not compel us to conclude that this fast-track approach is needed again.

In spite of the lack of a review and comment cycle, we have a high degree of confidence in the butt fusion joints used to join the lengths of HDPE pipe. The level of CQA/CQC employed was very high and the quality of workmanship employed was exemplary. All of the workers deserve high praise for their achievements. We are satisfied that the at-and-below grade lay-out will perform adequately and the soil cover addresses our concerns about temperature differentials between the carrier and container pipe.

One noteworthy construction concern was the presence of a "fold" in the slip liner at the manhole junctions. It is our understanding that the slightly smaller inner diameter of the SDR 11 pipe used at the manholes prevented the liner from conforming exactly to the inside of the pipe. Videos of the liner taken after installation show that the liner does fit tightly within the SDR 26 pipe which comprises the majority of the length.

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Lessons learned dictate that several aspects of the Leachate Management Contingency Plan will have to change. The Plan calls for covering the catchment areas of the cells with plastic to minimize infiltration of rainwater. Winds would destroy the plastic allowing unimpeded infiltration. Another method to limit rainwater infiltration will need to be developed. Secondly, the Plan as written requires one additional manhole located down gradient from the last cell that has impacted material placed in it. This additional cell functions as a sump from which leachate is pumped. In other words, if and when waste is placed in Cell 3 near the end of this construction year, Manhole 4 is needed to serve as a sump. Safety concerns do not allow the operator to enter Manhole 3 and manipulate valves to allow leachate to enter at his feet. An alternative Plan should be developed.

If you have any questions, please contact Tom Ontko or me.

Sincerely,

Michelle Walker
for

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

cc: Jim Saric, U.S. EPA
Terry Hagen, FDF
Mark Shupe, HSI GeoTrans
Francie Hodge, Tetra Tech EM Inc.
Ruth Vandergrift, ODH

Ohio Environmental Protection Agency Comments on the
On-Site Disposal Facility
Leachate Conveyance System Modification

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Construction Drawings

1.) Commenting Organization: Ohio EPA Commentor: OFFO
Drawing #: Plan and Profile Sheet #: 1 of 3 Section #: Code: c
Comment: The guideposts referred to in Note 6 have not been installed.

2.) Commenting Organization: Ohio EPA Commentor: OFFO
Drawing #: Civil details Sheet #: Section #: Code:
Comment: Detail 3 shows that the butterfly valve would remain. It has been removed and is no longer a part of the Interim Gravity Line (IGL). This valve would typically be "Locked and tagged" in the shut position before workers would enter to perform maintenance on the PLS. Without this valve, the valves at MH-1, MH2, (and MH-3 after impacted materials are placed in Cell 3) plus the pump at the Equipment Wash sump will all have to be locked shut before workers enter the PLS. We predict that this butterfly valve will be seriously missed long before the IGL is replaced by the permanent line.

3.) Commenting Organization: Ohio EPA Commentor: OFFO
Drawing #: Civil details Sheet #: detail 11 Section #: Code:
Comment: The Plan shows that the IGL follows the centerline of the existing concrete trench with steel grating. The IGL was built so that it "snakes" to the east of the trench.

4.) Commenting Organization: Ohio EPA Commentor: OFFO
Drawing #: Civil details Sheet #: detail 11 Section #: Code:
Comment: Note 2 states that 80 mil HDPE liner will be placed over the trench. The IGL as built does not include the liner.

5.) Commenting Organization: Ohio EPA Commentor: OFFO
Drawing #: Plan and Profile Sheet #: 3 of 3 Section #: Code:
Comment: The dumped rock fill was not placed as specified in the enlarged plan on this sheet.

6.) Commenting Organization: Ohio EPA Commentor: OFFO
Drawing #: Plan and profile Sheet #: 1 of 3 Section #: Code:
Comment: The sheet does not show the rip rap that was placed at both the north and south ends of the RIMIA culvert.

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Specifications Section 02955 Pipe Lining

7.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.01B Pg #: 02955-5 Line #: Code:
Comment: The specifications call for "...a neat, tight-fitting installation". The installer was not able to accommodate the varying internal diameters of both the SDR11 and the SDR 26 pipe. The slightly smaller i.d. of the SDR 11 pipe prevented the liner from completely flattening out. The liner has a fold which looked to be over one inch high in the photographs we saw. We await the results of calculations to show if the pipe will still carry the design flows.

8.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.02B Pg #: 02955-6 Line #: Code:
Comment: The liner material procured by the contractor did not contain carbon black as required. Unless a convincing technical argument can be made that the polymer has an expected life consistent with the design criteria package, the system from Manhole 1 to Manhole 3 should be replaced as part of the construction of the permanent leachate system.

9.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.03 Pg #: 02955-9 Line #: item K Code: c
Comment: Provide a description of the end terminations. We are particularly interested in how the "folds" in the liner were sealed.

10.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.05 Pg #: 02955-10 Line #: item A Code: c
Comment: During the construction meeting on May 21, 1999 the sliplining contractor expressed reluctance to pressure test at 50 psi because of concerns of point loads on the liner at the clean outs. A pressure test of 15 psi was eventually settled on.
The Package as submitted does not make note of the absence of the cleanouts at the up-gradient end of each manhole. The inability to access the cleanouts without compromising the integrity of the liner will be another consideration when determining if the repairs meet the design criteria.

HDPE Pipes and Fittings Section 02605A

11.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.04 Pg #: 02955-5 Line #: 3.04B.2.a. Code: c
Comment: The specifications state that the pipe is to be tested prior to placing fill

over the pipe. Some sections of the pipe were covered prior to testing.

12.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.04 Pg #: 02955-5 Line #: Code: c
Comment: This section does not mention the pneumatic soap test of all butt fusion joints.

Systems Plan

13.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1 Pg #: 3-1 Line #: 21 Code: c
Comment: Provide a copy of Leachate Conveyance System Operation, site procedure 43-C-365 to Ohio EPA.

14.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-2 Line #: 36 Code: c
Comment: Has the set point for the liquid level alarm in the LCS manhole been adjusted from the 2 inches specified in this Plan?

15.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-3 Line #: 22 and 27 Code: c
Comment: Delete these two bulleted items. They refer to the temporary line which will not be used again.

16.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-6 Line #: 5 Code: c
Comment: It is not clear why the cell operation subcontractor should need to request that the normally-closed redundant LCS carrier pipe valve should be opened. The AWWT crew charged with operating the interim gravity line should be empowered to make these determinations.

17.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-6 Line #: 15 Code: c
Comment: The phrase "as soon as practicable" should be replaced with something more specific such as "the next daytime shift where maintenance personnel are scheduled to work" or similar language. Our intent here is not to be overly restrictive while at the same time reducing ambiguity.

18.) Commenting Organization: Ohio EPA Commentor: OFFO Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.4 Pg #: 3-7 Line #: Code: c
Comment: Page 3-7 is blank except for the section number and title. The text on page 3-8 begins "The LCS and LDS shall be inspected and maintained in accordance with the schedule and activity requirements outlined in Table 3-1..." Do we have a complete copy of the text?

19.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: #.4 Pg #: 3-8 Line #: 21 Code: c
Comment: If major repairs are needed to the LCS or LDS pipe, the repairs should be submitted to the Regulators for review and approval.

20.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.5 Pg #: 3-11 Line #: Code: c
Comment: This section should contain a commitment to comply with the Ohio ARAR requiring that a contingency plan for leachate management be developed in the event of problems with the IGL.

21.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.6 Pg #: 3-16 Line #: 27 Code: c
Comment: This commitment to correct deficiencies using a procedure is too vague.

22.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.7 Pg #: 3-17 Line #: 4 Code: c
Comment: Insert language here to commit to a time frame to respond to alarms.

Hydrostatic Pipe Test Procedure

23.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 1 Pg #: 5 Line #: Code: c
Comment: This table contains allowances for expansion under test pressure. The table appears to be a "one size fits all " approach. It does not specify different allowances for pipes with different wall thicknesses nor does it allow for different test pressures. Since a pipe will expand more as both test pressure and SDR increase, provide justification that the test is appropriate for both the test pressures used.

Pneumatic Pipe Test Procedure
The Ohio EPA has no comments on this.

Addendum to Final Design Criteria Package

24.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.0 Pg #: 4 of 6 Line #: 2nd bullet Code: c
Comment: The sentence that begins "Electrofusion couplings should only ..." should be deleted.

Calculations Package

25.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code:
Comment: The calculation "Estimation of installed length of pipe" by GeoSyntech assumes a pipe temperature of 100 degrees F. Ohio EPA observed measurements made by the Lee's tech rep with an infrared thermometer the indicated a pipe temperature of 120 degrees F on a sunny day with an ambient temperature in the low 70's. He informed us that a pipe temperature the previous day was 140 degrees F. Using the measured temperature and the same night temperature, you get a delta T of 90 degrees F instead rather than the 50 degrees F used by GeoSyntech. The calculated delta L now becomes 1.08 feet per 100 feet of pipe. Call it 101.1 feet of pipe required.
Going to the "Snake configuration" calculation, a "snake off-set" of 4 feet corresponds to a pipe length of 101.27 feet. Using the given assumptions, a "snake off-set' of 4 feet appears more appropriate than the 3 feet estimated in the Package.
We acknowledge that the calculation is made using straight line and is the worst case. In the field, the pipe will have to bend in more gradual curves and the actual length as laid in the field will be longer than calculated. We expect that the 3 foot off-set will perform satisfactorily.
Since the pipe will be covered, the temperature variations are only relevant during construction.

26.) Commenting Organization: OEPA Commentor: HSI GeoTrans
Section #: Appendix B Pg #: B-3 Item: 4 Code: C
Comment: The equation that is used in this calculation is for pipe that is fully supported by surrounding soil, which is not the case for the 6-inch diameter carrier pipe. Rather than this equation, Chart 14 on page 25 of the Driscopipe System Design Manual should have been used. This chart identifies the allowable pressure on an unsupported pipe. This chart indicates that the 6-inch SDR 26 pipe would buckle with an exterior pressure of only 8 psi, which is far less than the 17.2 psi that was calculated

to be the critical pressure calculated on page B-3.

27.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code:
Comment: The calculations show that a 6 inch diameter pipe at the given slope will carry the design flow (200 gpm). Provide an estimate of flow for the pipe with the sliplining as built, that is with the sliplining folded at the where it could not conform tightly to the inside of the SDR 11 pipe.

28.) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code:
Comment: The design criteria package stated that pull lengths of the carrier pipe would be based on manufacturers recommendation. We could not find the pull length documented in the calculations package.