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Bob Taft, Governor
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August 1, 2001

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

RE: FORMAL TRANSMITTAL OF COMMENTS ON THREE EPLTS DOCUMENTS

Dear Mr. Reising:

This letter provides as an enclosure Ohio Environmental Protection Agency comments on three Enhanced Permanent Leachate Transmission System documents: the Contingency Plan, the Operations Plan and the Systems Plan. These documents were originally transmitted informally and with no numbers via e-mail on March 7, 2001. We have added numbers to these comments and corrected some spelling and grammatical errors. Otherwise, these comments have not been changed. Our only additional comment follows below:

The deliverables in Section 5 are limited to notifications that the Plan is being implemented and notifications that the Plan is being terminated. The second notification will include a description of the failure, the causes of the failure and a description of the repair. The Plan does not mention the current practice of reporting system checks in the weekly facsimile to the regulators.

The section on deliverables should be expanded to include a table of deliverables. Our comment on action levels contains a number of observation and the corresponding required actions. This comment should be used to develop the table. For many of the observations/actions, reporting in the weekly facsimile will be sufficient. Other more significant occurances, such as a catastrophic leak or failure of a major component should be reported more quickly and followed by written notification.

We are optimistic that the quality of workmanship and the high degree of quality control and assurance will result in system that is highly reliable. That having been said, we take issue with the final sentence in the deliverables section which states, "Note that the OSDF will continue to operate during implementation of the contingency plan". We agree that the contingency plan is designed to allow safe and protective operation of the OSDF but in the event of a major component failure it is our expectation that waste placement would cease

until it could be done in a manner protective of the environment.

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

Sincerely,

Tom Ontko

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

cc: Jim Saric, U.S. EPA
Terry Hagen, Fluor Fernald
Mark Shupe, GeoTrans, Inc.
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Enclosure

Ohio Environmental Protection Agency Comments on the Contingency Plan Collection and Management of Leachate for the OSDF

1) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: general
Comment: Determining action levels has been problematic for all parties. In our informal comments submitted earlier, we offered a discussion that would tie action levels to *uncertainty* in the pressure test method. We considered that uncertainty in the actual pipe temperature would drive uncertainty in the volume of make up water required. We estimated that an error of 5F in estimating the temperature of the pipe would result in an *uncertainty* in the correct volume of make-up water that is an order of magnitude smaller than the action level proposed in the Contingency Plan.

Our concern about uncertainty in the test temperature is not alleviated by the formal submittal of revision 2 of the Contingency Plan. Step 1 of Appendix B states that the temperature of the pipe is measured by placing a thermometer a distance of eight feet inside the containment pipe. We still maintain that the proper test temperature should be the temperature of the water inside the pipe. This water comes from the GMA well located near the borrow area and 50F is generally accepted as ground water temperature. If the assumed test temperature is lower than actual, the relaxation of the pipe will more than estimated. This could result in a false failing test. If the assumed test temperature is higher than actual temperature, the relaxation of the pipe will be less than estimated. This could result in an actual leak being interpreted as being the result of relaxation, i.e. a false passing test.
The AWWA test procedures we have seen do not contain the details that are typically found in ASTM methods, for example. The AWWA provides no information on precision, bias, repeatability or reproducibility. An understanding of the repeatability of the hydrostatic pressure test might give us a handle on the order of magnitude of the action levels. Unfortunately, the AWWA test procedures are no help.
The AWWA does not offer a discussion of the costs/benefits of constructing HDPE drinking water supply systems. Certainly the implications of leaking a few gallons per day of potable water from a system designed to carry millions of gallons are different from the implications of losing several gallons per day of leachate from a low-level waste disposal facility.
The Action levels as proposed have another deficiency in that they really involve only one stage, i.e. the action level triggers a re-test and no further action is proposed if the section passes another pressure test. The proposed action levels are a "one size fits all" approach. We propose a strategy of multiple triggers that call for progressively more aggressive actions depending on the volumes of water that are observed. We also see the need for different courses of action depending on which system (LCS, RLCS, LDS or PS-1 thru -7) is being monitored.
Our strategy for the Pipeline segments (PS) between the various valve houses, the CVH and the PLS is outlined first.
The first trigger should be set at 10% of the values listed in Table A1. The corresponding

action should be chemical analysis of the water for total uranium. This should be performed at the first observation of water in excess of the trigger. Observations of water at these volumes would not require further action (beyond continued monitoring at the weekly intervals) as long as there appears to be no correlation between volumes in the container pipe and the number of times the system surges. If these volumes are erratic (that is the weekly observations do not correlate with the duration that the system was pumping under storm flow conditions), and the total uranium does not appear to correlate with the concentration in the leachate, no further action beyond continued monitoring would be required.

The second trigger would occur if either a strong correlation with the surge frequency or if the total uranium in the water is indicative of leachate. This would trigger a hydrostatic pressure test. If the pressure test is completed satisfactorily, no additional response would be required. A failing pressure test would trigger fixing the pipe unless all parties could agree that the leak is de minimis. We envision the water volumes at this range to be roughly the same as the first trigger, i.e. 10% of the volumes in Table A1.

A third trigger would occur when three things happen.

1.) Leak quantities approach those in Table A1.
2.) Uranium concentrations are consistent with the liquid being leachate.
3.) There is a strong correlation between quantity of water observed and duration that the system operated under surge conditions.

These observations would trigger repairs to the system.

The discussion above is most applicable to the sections between the valve houses. The LDS lines are not subjected to the surge pressures as long as the check valves in the lines operate as intended. Quantities of water found in the container pipe would not be expected to correlate with surges in the EPLTS but with water found in the LDS.

Triggers applicable to the LDS lines should be developed considering the volume and chemical analysis of water in the LDS line. We propose the following:

> Action levels for the LDS are 20 gallons per acre per day. So during the one week period between monitoring the LDS container pipe, at most (20 gpad X 7 days X 7 acres=)980 gallons of water have flowed . An action level of 0.6 gallons seems quite easily achievable under these conditions of low-volume, gravity flow. If a correlation is found between the total uranium content of the water in the LDS container and the water in the LDS carrier, this should trigger an evaluation of the feasibility of repairing the pipe.

The LCS line is susceptible to surge pressures whereas the redundant LCS line (assuming it is in the stand-by position where it doesn't carry flows) is not subject to surges. The following discussion applies to only the LCS line unless the RLCS has been made operational per the Systems Plan:

> The first trigger should be set at 10% of the values listed in Table A1. The corresponding action should be chemical analysis of the water for total uranium. This should be performed at the first observation of water in excess of the trigger.

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Observations of water at these volumes would not require further action (beyond continued monitoring at the weekly intervals) as long as there appears to be no correlation between volumes in the container pipe and the time the system was operating under surge conditions.

The second trigger would occur if either a strong correlation with the surge frequency or if the total uranium in the water is indicative of leachate. This would trigger a hydrostatic pressure test. If the pressure test is completed satisfactorily, no additional response would be required. A failing pressure test would trigger fixing the pipe unless all parties could agree that the leak is de minimis. The water volumes to drive implementation of the second trigger would be the same as the first trigger, i.e. 10% of the volumes in Table A1. A third trigger would occur when three things happen.

1.) Leak quantities approach those in Table A1.
2.) Uranium concentrations are consistent with the liquid being leachate.
3.) There is a strong correlation between quantity of water observed and duration that the system operated under surge conditions.

These observations would trigger repairs to the system.

2) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: general
Comment: A schematic similar but less detailed than Figure 1 should be developed. It should show the various components of the leachate management system and indicate which of the temporary operating modes that a failure in that component would trigger. The schematic would show, for example, that a failure in the 10-inch containment pipe in section PS-7 would trigger temporary operating mode C2.

3) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: general
Comment: The text does not mention chemical analysis of the liquids that are found in the containment pipe segments. In the past, the uranium content of the water has provided clues whether the water is leaked leachate or infiltration of perched water from the outside of the system. The text should be revised to mention that chemical analysis for total uranium will be performed to assist in diagnosing the origination of water found in the containment piping.

4) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.2 Pg #: 8 Line #: 1st complete paragraph Code: c
Comment: The text lists three options to repair failed containment pipes; 1) installing a new 8-inch containment pipe inside the existing 10-inch containment pipe and then installing a new 4-inch carrier pipe; 2) slip lining the containment pipe, or;3) patching the existing containment pipe from the outside of the pipe.
Option 1 is only appropriate for sections of the LTS that are up-gradient of open cells

because of the greatly limited flow capacity of the replacement line. At the current stage of filling the OSDF, this option would only be acceptable for PS-1 because the completely filled cell 1 is the only cell that drains through PS-1. This option must in any case be supported by calculations (or measured flows) that show the new 4-inch line is capable of handling the flow.
Option 2 has been successfully performed at the FEMP and this option is probably the preferred option in any of the scenarios we can imagine.
Option 3 is only implementable if the location of the failure in the containment piping is known. Barring an obvious accident, we believe that it would be quicker and cheaper to slip line the container pipe than to search for the leak.

5) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.1.3 Pg #: 8 Line #: step 2 Code: c
Comment: The text does not state explicitly that the carrier pipe will be repaired.

6) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.3.1 Pg #: 10 Line #: Code: c
Comment: This section describes the temporary operation when there is a failure in the section of pipe from the Control Valve House to the Permanent Lift Station. The temporary mode involves placing a 3-inch hose into the container pipe. What is the capacity of the 3-inch hose? What are the plans to throttle flows from the several LCS lines that supply water to this hose to prevent surcharging the system?
The motor control valve will be removed from the system. What will prevent the PLS from being overwhelmed by the flows. Calculations should be performed to demonstrate that the maximum flow through the system as it is restricted by the 3-inch hose will not exceed the capacity of the PLS.

7) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 4.3.2 Pg #: 11 Line #: Code: c
Comment: We commented on Section 4.1.2 that we did not consider Option #1 viable because the 4-inch line will not carry the design flow. Our doubts that Option #3 are implementable also apply here.
Option #2 looks to be the only viable option.

Ohio Environmental Protection Agency Comments on the ARWWP Project Procedure for Operation of the EPLTS

1) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: general
Comment: The attachments to this plan address "Baseline valve line-up for uncapped cells" (Attachment D) and "Baseline valve line-up for capped cells" (Attachment E). We

see a need for valve line-ups for two more situations:

1. New cell with high flows in the LDS from draining construction water. We see the need for two examples of this scenario if clean water prior to waste placement by-passes treatment.
2. Storm flow conditions when the entire system is throttled to achieve the 200 gpm storm flow volume.

2) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Attachment D Pg #: 18 of 31 Line #: Code: c
Comment: This and the other valve line-up tables use the term "leachate detection system". This is the first time that we have seen the "leak detection system" called by this name. We believe this could lead to confusion and we suggest revising the entire document and replacing all uses of the term "leachate detection system" with "leak detection system".

3) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Attachment D Pg #: 18 of 31 Line #: Code: c
Comment: The tables in this section show that the 3 inch ball valve to the 300 gallon containment tank (V-*15) are closed. Why isn't this valve in the "open" position to allow water in the LDS line to drain unimpeded into the collection tank? These valves are in fact "open" in the Attachment E Capped cells scenario.

4) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Attachment A Pg #: 15 of 31 Line #: Code: c
Comment: The valve house round sheet does not have a line to inspect or test the check valves. These have failed in the past on more than one occasion. Are there simple tests that can be performed on a regular basis to evaluate whether the valves are working properly?
We devised a scheme to test check valves in the LDS and LCS lines using leachate to surcharge the system. This test is beyond the scope that an operator would be expected to perform alone during weekly rounds but we believe it could be easily implemented on a regular basis.
To test the check valves in Cells 2 and 3:

1. Close ball valves from cell laterals (V-*14 in LCS and V-*34 in LDS) for all three cells 1, 2 and 3
2. Drain the lines at V-*17 and V-*37
3. Close the knife valve in Cell 3
4. Open the valve from the LCS line in Cell 1(V-114) to surcharge the LTS upstream of the closed valve in Cell 3.
5. Look for leaks from the drain valves V-*17 and V-*37

This scheme uses leachate from Cell 1 to surcharge the system. To test the check valves

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in VH-1, the system could be surcharged using clean water introduced through the vent at the high point in VH-1.
Whatever test is chosen should be performed at a regular interval.

Ohio Environmental Protection Agency Comments on the Systems Plan
Collection and Management of Leachate for the OSDF

1) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Pg #: Line #: Code: general
Comment: The text states that the LTS is monitored at the Control Valve House. Provide a more detailed description of the operation of the system. Indicate the information available to the AWWT operator (alarms and details of displays, etc.). Also indicate which information is available at the Control Valve House and which information must be obtained at the individual valve houses. Also indicate the frequency which operators inspect the valve houses.

2) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.5 Pg #: 1-2 Line #: Code: c
Comment: This section describes the responsibilities of the various departments. We note that the Hydrogeology Manager is responsible for measuring flow rates and the Operations Manager is responsible for operations, maintenance, inspection, etc. This seems to be a cumbersome organization. For example, the Hydrogeology Department is responsible for measuring LCS flows but the Operations Department is responsible for adjusting the individual flows so that the total flow is 200 gpm

3) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 1.5 Pg #: 1-2Line #: 1st bullet under Operations Mgr. responsibilities
Code: c
Comment: This bullet lists monitoring as one of the Operations Manager responsibilities. What specifically does the Operations department monitor?

4) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1 Pg #: 3-1 Line #: 4th bullet Code: c
Comment: This bullet explains that LDS flows can be directed to the LTS when construction water is draining. The flows from the LDS can be subsequently routed to the containment tank when these flows decrease. The second bullet in Section 3.2 states that when the LDS flow is less than 10 gpm, waste can be placed in the cell and operations can be turned over to the ARWWP.
Comment #1: Where (to treatment or discharge) will the flows from the LDS and LCS be directed prior to waste placement?

Comment #2: A strategy should be developed to measure the flow of construction water from the LDS. These flows should be compared to the accumulated rainfall that accumulates in the LDS drainage layer during construction.

5) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1 Pg #: 3-1 Line #: 6th bullet Code: c
Comment: The text states "Flow may need to be regulated during OSDF construction, impacted material placement, periods of gravity line maintenance, extension, repair, etc." We find this sentence confusing. Delete it and replace it with "Flow may need to be regulated during storm flow conditions and when the LTS lines are down for reasons of maintenance, extension, repair, etc."

6) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.1 Pg #: 3-2 Line #: 5th bullet Code: c
Comment: This bullet is a more-or-less general statement of the operational intent of the EPLTS. It is not specific enough for an operator to know what to do in a storm flow condition.
Suppose a one inch rainfall occurs as the OSDF is configured today. This would result in over a half million gallons of rainwater. At 200 gpm, it would take nearly two days for the PLS to pump out the flow. Based on this scenario, we have the following questions;

1) What are the initial valve settings during non-storm flow conditions? That is, are the valves typically maintained in the wide open position?
2) Are we correct in our understanding that flows will be throttled with the ball valves in the LCS lines in each Valve House?
3) Are we correct in our understanding that the design intent of the OSDF is to store excess water within the confines of the cells rather than in the LTS lines? If this is the case, how is it determined that flows are not backed up in the LTS line from the PLS to the cells?
4) When would the operator adjust the valves? Every shift or every day? Would adjustments be made based on weather forecasts of a storm? Can the operation of the PLS pumps be monitored at the AWWT control room?

7) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Figure 3-1 Pg #: 3-3 Line #: Code: c
Comment: It would be helpful to have valve house schematics which show the positions of the valves in different operational scenarios. Scenarios of interest are:

- prior to waste placement when construction water is draining through the LDS lines
- after LDS flows have stabilized and the LDS collection tank is in use
- during storm flow conditions. Indicate which of the ball valves is used to throttle flows.

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8) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-4 Line #: 2nd bullet Code: c
Comment: It is not clear who operates the the system prior to turnover to the FEMP.

9) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-4 Line #: 2nd bullet Code: c
Comment: From the design of the valve houses we infer that LDS water prior to the placement of wastes in the OSDF is routed to treatment via the LMS. What are the considerations which prevent this water from by-passing treatment?

10) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-4 Line #: 3rd bullet Code: c
Comment: At 0.5 gpm, the 300 gallon tank would fill every 10 hours. How frequently are the Valve Houses inspected by an operator?

11) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-4 Line #: 7th and 8th bullets Code: c
Comment: We commented on the third bullet in this section that the tank will fill every 10 hours yet bullets 7 and 8 imply that inspections will be performed daily. Either the inspection frequency or the timing of the deployment of the LCS tank must be modified.

12) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.2 Pg #: 3-6 Line #: 1st bullet Code: c
Comment: This Spring the flow through the catchment area into the LCS was greatly enhanced by power washing the filter fabric. This option should be explored prior to making the determination that the catchment area is clogged.

13) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 3-1 Pg #: Line #: Code: c
Comment: The remedy for finding liquid in the annular spaces is to check for the source of the leak. The liquid should be analyzed for total uranium to help assess the source of the liquid.

14) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 3-2 Pg #: 3-11 Line #: Code: c
Comment: The top row of the table states that valve houses will be checked weekly during the active period. This conflicts with the text which indicated the valve houses will be inspected daily.

15) Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 3-2 Pg #: 3-11 Line #: Code: c
Comment: The bottom row of the table states that the condition of level transmitters, flow meters, ventilation systems, alarms, etc will be checked semi-annually. This is confusing. Rephrase the text so that it is clear that these devices are being checked to verify that they are operating properly.