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**RESPONSE TO COMMENTS ON THE SOUTH
PLUME GROUNDWATER EXTRACTION SYSTEM
OPERATION AND MAINTENANCE MANUAL**

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LETTER
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Department of Energy
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Mr. James A. Saric, Remedial Project Director
U. S. Environmental Protection Agency
Region V - 5HR-12
230 South Dearborn Street
Chicago, Illinois 60604

Mr. Graham E. Mitchell, DOE Coordinator
Ohio Environmental Protection Agency
40 South Main Street
Dayton, Ohio 45402-2086

Dear Mr. Saric and Mr. Mitchell:

**RESPONSE TO COMMENTS ON THE SOUTH PLUME GROUNDWATER EXTRACTION SYSTEM
OPERATION AND MAINTENANCE MANUAL**

This letter transmits the enclosed comment responses to the South Plume Groundwater Extraction System Operation and Maintenance Manual. Included in this transmittal are the responses to sixteen U.S. EPA comments and ten Ohio EPA comments.

If you or your staff have any questions, please contact me at FTS 774-6159 or (513) 738-6159, or Carlos J. Fermainntt at FTS 774-774-6157 or (513) 738-6157.

Sincerely,

Johnny Resing
for Jack R. Craig
Fernald Remedial Action
Project Manager

FO:Fermainntt

Enclosure: As Stated

cc w/enc.:

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J. J. Fiore, EM-42, TREV
K. A. Hayes, EM-424, TREV
J. Benetti, USEPA-V, 5AR-26
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J. P. Hopper, WEMCO
L. Kahill, Radian
AR Coordinator, WEMCO

**Response to Ohio EPA Comments on the
South Plume Groundwater Extraction System
Operational & Maintenance Manual**

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Commenting Organization: Ohio EPA

Comment #1:

A step test should be conducted prior to initiating the pump test to determine the appropriate pumping rate. Also, Appendix A should be submitted for review. This document is intended to be a work plan for conducting the pump test and model validation which apparently have not been developed at this time.

Response:

This issue is primarily a detail related to the Pump Test and Model Validation Work Plan. This issue will be developed further in the referenced plan. For schedule, see response to U.S. EPA comment #1.

Action:

As noted in response.

Commenting Organization: Ohio EPA

Comment #2:

The single well test should include a monitoring schedule after the pump is turned off to record recovery data. Recovery data may be more useful than pumping data for evaluating aquifer response because effects of the pump and borehole have been removed.

Response:

This is standard practice, and will be utilized during the pump test. See response to comment #1 above.

Action:

As noted in response.

Commenting Organization: Ohio EPA

Comment #3:

Collection of water samples for water quality analysis should be limited to the pumping well. Collection from monitor wells which requires evacuation of borehole water, will interfere with water level monitoring for the test. Water quality data should be collected as separate activity after pumping and recovery data observations are completed.

Response:

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This concept will be included in the Pump Test and Model Validation Work Plan. See response to U.S. EPA comment #3.

Action:

As noted in response.

Commenting Organization: Ohio EPA

Comment #4:

The specifics of the monitoring plan need to be developed and spelled out for groundwater. A draft Figure 4.1 should be prepared and submitted for review. Water level measurements should be collected at a frequency no greater than monthly during the operating of the groundwater extraction system. This is necessary to have an adequate database for the Evaluation and Response Program.

Response:

The frequency of water level measurements have been increased to monthly for the first year to develop the necessary database. After the database is developed over the first year, quarterly readings will be sufficient to monitor seasonal trends in variation.

Action:

Text will be changed in the O&M Manual to incorporate this requirement. Specifics will be included in the South Plume Groundwater Monitoring and Response Plan.

Commenting Organization: Ohio EPA

Comment #5:

VOC's should be analyzed quarterly from the total effluent waste stream along with other parameters required in DOE's NPDES permit.

Response:

This comment is outside the scope of this O&M Manual and will be addressed in the revised Part 2/3 Removal Action Work Plan.

Action:

As noted in response.

Commenting Organization: Ohio EPA

Comment #6:

Section 4.4, Paragraph 4-2, As stated above, geochemical monitoring should be scheduled to prevent interference with aquifer testing. During testing, samples should be collected from the pumping well(s) only.

Response:

See response to Ohio EPA Comment #3.

Action:

As noted in response.

Commenting Organization: Ohio EPA

Comment #7:

Section 5.1, Paragraph 5-1, Certain aspects of the monitoring data should be evaluated immediately to assess potential system problems (see Comment 10) that require rapid response.

Response:

See response to Ohio EPA Comment #10.

Action:

As noted in response.

Commenting Organization: Ohio EPA

Comment #8:

Section 5.2, System Evaluation - The evaluation of the system's performance should be made on a quarterly basis and not semiannually for subsequent years of operation. This is necessary to ensure the system is meeting the objectives of the removal action throughout different seasons.

Response:

As presently defined, the system evaluation will be performed quarterly for the first year and semiannually thereafter. It is considered that this frequency of evaluation is sufficient to assess seasonal variation. After the first year of operation, the system should approach steady state. Semiannual evaluations will be based on monitoring data collected quarterly. Therefore, a mechanism exists to see and react to the quarterly seasonal variations.

Action:

As noted in response.

Commenting Organization: Ohio EPA

Comment #9:

Section 5, Monitoring wells around the extraction wells should be analyzed on a regular schedule for the organic and inorganic compounds associated with the Paddys Run Road site.

Response:

Monitoring wells south of the extraction wells will be monitored for PRRS parameters. The South Plume Groundwater Monitoring and Response Plan (Appendix B to the O&M Manual) will describe this monitoring.

Action:

As noted in response.

Commenting Organization: Ohio EPA

Comment #10:

Section 5.3, Paragraph 5-3, A general time frame should be added to the System Modification process. A mechanism should be added to at least differentiate system problems (e.g., unacceptable level of VOCs in discharge) from system optimization issues (e.g., pumping cycles). System problems should be addressed on an accelerated basis.

Response:

Text will be modified in the O&M Manual to differentiate response efforts to system problems versus system optimization issues. A general time frame will also be stated. However, these time frames will be based on the type of system modification (for example, a pump rate change versus drilling a new well) and will allow contingencies for unforeseen issues.

**Response to U.S. EPA Comments on the
South Plume Groundwater Extraction System
Operation and Maintenance Manual**

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Commenting Organization: U.S. EPA

Comment #1:

DOE states in the O&M manual that much of the information needed to describe the complete O&M program has not been included in the draft because the design has not been completed. In addition, the O&M manual lists several work plans and reports that will contain this information. This is acceptable at this time; however, DOE should specify when this information will be submitted to U.S. EPA.

Response:

The O&M manual will be revised to update the text and contain an outline of the technical appendices by March 15, 1992. The revised O&M manual will also contain a schedule for completion of the appendices.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #2:

Section 1.4, Page 1-7: DOE should specify submittal dates for the Model Validation Work Plan, Model Validation Report, and Model Recalibration Report.

Response:

Consistent with schedule response for Comment #1.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #3:

Section 3.2, Page 3-2: Water samples obtained during the pump test should also be analyzed for inorganic and organic hazardous substance list (HSL) parameters present at the Paddy's Run Road Site (PRRS).

Response:

Analysis for PRRS parameters would generally be unnecessary based on the relatively short duration of the test and the defined distance to the PRRS plumes. However, in an effort to verify that the PRRS parameters do not exist in this area the U.S. EPA HSL "short list", consistent with that in the Part 2/3 Work Plan will be analyzed. Sampling and analysis for pH and specific conductance will be conducted at the pumping well at the same frequency as uranium analysis to detect gross changes in water chemistry. The high conductivity is a characteristic of the closer PRRS inorganic plume, and such chemistry changes will be detected during the pump test. The following is the HSL "short list" that has been approved by U.S. EPA for the PRRS:

- HSL pesticides/PCBs - all analytes listed for this category
- HSL semi-volatiles - all analytes listed for this category
- HSL inorganics - Arsenic (As), Sodium (Na) and Potassium (K)
- Additional analytes - Ammonia, Phosphates, Sulfates and K⁴⁰

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #4:

Section 3.2, Page 3-2: The specific location of each monitoring well should be provided to U.S. EPA. If specific locations cannot be provided, DOE should supply the location selection criteria or rationale as well as the data needs the wells will fulfill.

Response:

A new South Plume Groundwater Monitoring and Response Plan will answer this comment. This plan will be added as Appendix B of Volume I of the O&M manual. This plan will include locations of the monitoring wells.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #5:

Section 3.4, Page 3-4: DOE has not submitted an RI/FS Model Work Plan. This work plan should be submitted if DOE intends to follow procedures referenced in it.

Response:

The necessary criteria will be established in the South Plume Pump Test and Model Validation Work Plan. The reference to the RI/FS Model Work Plan will be deleted.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #6:

Section 4.1, Page 4-1: DOE should specify when it will submit the Site-Wide Monitoring Program to U.S. EPA.

Response:

The reference to the Site-Wide Monitoring Program will be deleted. The South Plume Groundwater Monitoring and Response Plan will be prepared. See response to comment #4.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #7

Section 4.3, Page 4-2: Evaluation of the extraction system, as described in the manual appears to be inadequate to thoroughly evaluate system performance. The recommendations in Procedures in Performance Evaluation of Pump and Treat Remediations, EPA/540/4-89/005 (Keely, 1989), should be considered when designating the pump and treat evaluation monitoring system.

Response:

The referenced document was utilized in writing Sections 4 and 5 of the O&M manual. This comment is general in nature, and is difficult to provide a response. We assumed this comment was meant as a general lead-in comment to specific Comments 8 through 14 below. See response to comments 8 through 14 below.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #8:

Section 4.3, Page 4-2: DOE should provide the specific well location and screened interval for each well to be used in the performance monitoring system.

Response:

See response to comment #4

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #9:

Section 4.4, Page 4-3: DOE should justify selecting uranium as the only contaminant for fast-turnaround analysis. It is critical that DOE monitor the effects of the extraction system on the contaminant plume originating at PRRS. This will require fast-turnaround analysis for both HSL inorganic and organic contaminants present at PRRS.

Response:

The text will be revised to indicate that PRRS barrier monitoring wells located south of the extraction wells will utilize fast-turnaround analysis for PRRS parameters.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #10:

Section 4.4, Page 4-3: The geochemical monitoring program should also include collecting and analyzing groundwater samples from monitoring wells downgradient of the extraction system.

Response:

See response to comment #4.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #11:

Section 5.2, Page 5-1: The system evaluation presented is described as using "qualitative or perhaps semi-quantitative" criteria to evaluate the performance of the extraction system. Quantitative evaluation criteria should be used to evaluate extraction system performance in meeting removal action objectives. For example, a statistical approach involving a two-step procedure may be appropriate: Step 1 would determine whether a trend exists or corrective action should be required.

Response:

As written, the O&M manual left technical judgement as the primary mechanism for making these evaluations and it is preferred to leave the process like this. Operating experience from the recovery system, will become the primary source of performance measurement.

To satisfy this comment, Volume 1 of the O&M manual will provide some general quantitative criteria for performance measurement. U.S. EPA should recognize that it is difficult to prevent false positives considering the potential variation and cross dependencies of the data sets.

This evaluation criteria will be described in the South Plume Groundwater Monitoring and Response Plan (Appendix B)

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #12:

Section 5.2, Page 5-2: The manual states that statistical procedures will be used when appropriate. Because quantitative evaluation of system performance is needed, statistical procedures are appropriate. Specific statistical procedures to be used to determine whether the extraction system is meeting removal action objectives should be presented along with the rationale for their selection. The manual should also present criteria for determining whether the extraction system is meeting removal action objectives.

Response:

See response to comment #11.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #13:

Section 5.2, Page 5-3: The manual should state that the system evaluation report will be prepared quarterly and submitted to U.S. EPA for review and approval.

Response:

Section 5.1, Page 5-1 states that the system evaluation report will be prepared quarterly in the first year of operation, and semi-annually thereafter. Approval of this report appears unnecessary, since its intent is only to record and inform on system performance.

Sections 5.1 and 5.3 will be revised to clearly state that the report will be submitted to U.S. EPA for information.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #14:

Section 5.3.1, Page 5-3: The system modification report should be submitted to U.S. EPA for review and approval.

Response:

This requirement will be incorporated into the document.

Action:

As noted in response.

Commenting Organization: U.S. EPA

Comment #15:

Section 5.3.2, Page 5-4: Detailed design activities and procurement of easements for the South Plume removal action have historically taken years to complete. It may be necessary to modify the extraction system quickly to correct an "out of control" situation and prevent further degradation of the aquifer. Therefore, DOE should present an evaluation monitoring program specifying actions to be taken depending on the data collected during the monitoring phase. This program should include specific criteria which will (1) detect that the system may not be meeting the objectives, (2) monitor the system to determine if corrective action is necessary, and (3) verify that corrective action is successful in bringing the system back into compliance with the objectives. DOE should also present specific actions to be taken which are tied into specific timetables for implementing this type of program. DOE should also present goals for the time required for implementing corrective actions.

Response:

Except for the issues regarding schedule, DOE considers that the O&M manual has set up a program to do what the comment requests. Specific criteria is lacking on a detailed response to specific findings because of the many variables involved. (See response to comment #11.) A reliance on technical judgement based on a consideration of the many variables is the approach presently assumed in the O&M manual. Certain of these specifics will be incorporated into the South Plume Groundwater Monitoring and Response Plan. However, it will be difficult to demonstrate in a plan that activities can be done quickly.

While there are extreme difficulties in presenting schedule and criteria for expansion, DOE has incorporated provisions in the design to facilitate system changes. The pumping system is being designed to allow for "quick" changes in pumping rates of monitoring indicates such a change is necessary. Additionally, the pumping system piping is "oversized" to allow expansion of the system (i.e., more pumping wells), and blind stubs are being left to facilitate expansion. Also, it is DOE's intention to obtain adequate easement for system expansion. However, the normal time necessary to install and outfit equipment in the additional wells will be required.

Action:

As noted in response.

Commenting Organization: U.S.EPA

Comment #16:

Sections 5.3.3, Page 5-4: Any change to the monitoring program should be submitted to U.S. EPA for review and approval.

Response:

This requirement will be incorporated as requested.

Action:

As noted in response.