

2690

U-007-306.6

**RESPONSES TO COMMENTS ON THE OPERABLE
UNIT (OU) 5 WORK PLAN ADDENDUM FOR
ADDITIONAL MONITORING WELLS**

1-22-92

**DOE/EPA
DOE-719-92
2
LETTER
OU5**



Department of Energy
Fernald Environmental Management Project
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6357

2690

JAN 22 1992
DOE-719-92

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:

**RESPONSES TO COMMENTS ON THE OPERABLE UNIT (OU) 5 WORK PLAN ADDENDUM FOR
ADDITIONAL MONITORING WELLS**

In response to your review of the subject Work Plan Addendum, the Department of Energy (DOE) is transmitting responses to your combined comments; a revised work plan incorporating these responses is being prepared and will be forwarded once approval of the responses is received from the U.S. EPA and Ohio EPA.

If you or your staff have any questions, please contact Carlos Fermaintt, of my staff, at FTS 774-6157 or (513) 738-6157.

Sincerely,

Jack R. Craig
Fernald Remedial Action
Project Manager

FO:Fermaintt

Enclosure: As Stated

1

cc w/enc.:

J. J. Fiore, EM-42, TREV
K. A. Hayes, EM-424, TREV
J. Kwasniewski, OEPA-Columbus
T. Schneider, OEPA-Dayton
J. Benetti, USEPA-V, 5AR-26
M. Butler, USEPA-V, 5CS-TUB-3
E. Schuessler, PRC
L. August, GeoTrans
R. L. Glenn, Parsons
D. J. Carr, WEMCO
S. W. Coyle, WEMCO
J. P. Hopper, WEMCO
J. D. Wood, ASI/IT
J. E. Razor, ASI/IT
AR Coordinator, WEMCO

2690

**RESPONSES TO COMMENTS
ON THE OPERABLE UNIT 5 WORK PLAN ADDENDUM
FOR ADDITIONAL MONITORING WELLS**

December 26, 1991
R. Smith

Date Document Issued October 21, 1991
Date Comments Due November 20, 1991 / Received EPA-November 25, 1991 OEPA-
November 14, 1991
Date Report Due December 26, 1991

1.

Commenting Organization: U.S. EPA	Commentor:
Pg. # 1 Section #	Paragraph # 4 Sent./Line #
Original Comment # 1	

Comment: The text should provide the level of uranium contamination in on-site analysis samples that will necessitate installation of a 3,000-series well.

Response: A value of greater than or equal to 20 micrograms per liter in a 2000-series well will necessitate the installation of a 3000-series well at any given location. Water analyses for total uranium have been very consistent between the on-site laboratory and the contract laboratory. If the contract laboratory value is above 20 µg/l and the on-site laboratory value was not, then the laboratory work will be checked at both laboratories for errors, in keeping with the project QA/QC procedures. If no laboratory errors are found, the well will be resampled and the analysis will be performed on a rush basis at the contract laboratory. If this analysis confirms that the level is greater than 20 µg/l, the 3000-series well will be installed and sampled.

Action: Add the above response to the revised Work Plan.

2.

Commenting Organization: U.S. EPA	Commentor:
Pg. # Section #	Paragraph # Sent./Line #
Original Comment # 2	

Comment: Table 1. Samples from background wells 2679 and 3679 should be analyzed for all RI/FS inorganic parameters in addition to general ground-water quality and radiological parameters.

Response: The specific target analyte list (TAL) has been added to the work plan and is attached to these comment responses. This list includes RI/FS general groundwater and radiological parameters.

Action: Add TAL(s) to the revised Work Plan and clarify in the text.

2690

3. Commenting Organization: U.S. EPA Commentor:
Pg. # Section # Paragraph # Sent./Line #
Original Comment # 3

Comment: Table 1. Background wells should be sampled at least quarterly for 1 year for all parameters indicated in comment no. 2.

Response: We agree that the wells should be sampled quarterly for a year. Once these wells have been installed, developed, and sampled twice, ASI/IT will notify DOE that long term monitoring can begin. DOE will then incorporate this into a long term program.

Action: DOE will address as noted in response.

4. Commenting Organization: U.S. EPA Commentor:
Pg. # 8 Section # Paragraph # 4 Sent./Line #
Original Comment # 4

Comment: Leachate from the inactive flyash pile with a potential uranium concentration of 900 micrograms per liter ($\mu\text{g/L}$) is a concern. Collecting additional samples from surface soil around the flyash pile or sediment from Paddy's Run should be considered.

Response: Both recommended options have been considered and rejected. The inactive fly ash pile is draped over the edge of the glacial overburden and is resting on the flood plain deposits of Paddys Run. This provides a subsurface pathway for leachate from the fly ash to migrate directly into the aquifer without having to enter Paddys Run or be present as surface seepage.

The sampling program, recently completed for Operable Unit 2, included borings and one monitoring well in the inactive flyash pile. When the results of the sampling of this well are available they will provide a direct measurement of leachate concentrations in the inactive flyash.

Action: None required.

5. Commenting Organization: U.S. EPA Commentor:
Pg. # 14 Section # Paragraph # 2 Sent./Line #
Original Comment # 5

Comment: According to the work plan addendum, because ground-water samples from wells at location-055 do not show elevated uranium concentrations, no uranium appears to be migrating from the waste storage area to wells at

location-013. This conclusion is questionable considering that well location-055 is about 1,400 feet upgradient of well location-013. This much area could contain numerous contamination sources. Data from the Facilities Testing Program should be presented to support this conclusion.

Response: The issue is now a moot point because the television survey has been completed and it clearly shows that leakage into the wells was occurring at each joint in each of the pre-RI/FS wells. A plan to remove the four pre-RI/FS wells is currently being implemented. DOE is planning television surveys of all the other pre-RI/FS wells to evaluate the condition of the casing in these wells.

There are very few candidate sources for contamination in the aquifer between wells at Location 055 and 013. The Production and Additional Suspect Areas investigation found that there was very little perched water in this area except between the scrap metal pile and the wells at Location 013. Location 013 is also on the eastern edge of an area of known surface contamination from drum bailing activities in the 1950s.

In the Production and Additional Suspect Areas investigation, Piezometer 1291 has an average uranium concentration of 436 $\mu\text{g}/\text{l}$. Piezometer 1291 is located about 150 feet to the west of Location 013. Piezometer 1281, installed 250 feet north of Piezometer 1291, has had an average concentration of 142 $\mu\text{g}/\text{l}$ total uranium. Other borings to the west and south of these two piezometers did not encounter perched water so piezometers were not installed.

Action: None required.

6. **Commenting Organization:** OEPA **Commentor:**
Pg. # **Section #** **Paragraph #** **Sent./Line #**
Original Comment # 1

Comment: The location of the new monitoring wells and the rationale behind their location is acceptable to Ohio EPA. However, this document may indicate that ground water models and hydrogeologic assumptions are being made without the use of site specific hydrogeologic data. It is recommended that DOE supply all results of any slug tests, pump tests, and aquifer material testing to Ohio EPA for review. This document should be prepared in a form which discusses the technical aspects of these tests, and the use of these tests by DOE to characterize the facility.

Response: A large scale pump test was conducted by the USGS when the SOWC wells were constructed. This test, along with subsequent work by GeoTrans, provides an adequate estimation of the aquifer properties for the purposes of

2630

the RI/FS. The data used in modeling groundwater at the site is contained in the draft Groundwater Report which was issued to the Ohio EPA for informational purposes in August of 1991. Please refer to Part IV - Groundwater Modeling, Sections 18 through 22 for a complete discussion of the modeling at the site.

Action: None required.

7. Commenting Organization: OEPA Commentor:
Pg. # 1 Section # Paragraph # 1 Sent./Line #
Original Comment # 2

Comment: Change the work plan to state that the recommendations are also the result of additional information gained during the remedial process.

Response: The statement will be added to the first paragraph.

Action: Noted in the response.

8. Commenting Organization: OEPA Commentor:
Pg. # 1 Section # Paragraph # 3 Sent./Line #
Original Comment # 3

Comment: Due to the locations and justifications for all the proposed additional wells, DOE should analyze for the full HSL during the initial round of sampling at each well. Background wells should be analyzed for at least all the naturally occurring constituents on the HSL, so that DOE has sufficient background data for the risk assessments.

Response: Sampling results from the FEMP RCRA program do not indicate that there is any need for sampling for HSL constituents from these wells as they are installed. The primary need for the wells is driven by the need to define the total uranium plume. The TALs attached to these responses and incorporated in the revised Work Plan show the specific analytes to be tested for.

Action: Add TAL(s) to the revised Work Plan and clarify in the text.

9. Commenting Organization: OEPA Commentor:
Pg. # 1 Section # Paragraph # 4 Sent./Line #
Original Comment # 4

Comment: a) Define the threshold total uranium content that will determine the need to install deeper wells. b) DOE must make provisions for installing wells if the RI/FS contract laboratory detects concentrations of uranium at or above the pre-determined threshold value (see part a of this comment).

2690

Response: Water analyses for total uranium have been very consistent between the on-site laboratory and the contract laboratory. If the contract laboratory value is above 20 µg/l and the on-site laboratory value was not, then the laboratory work will be checked at both laboratories for errors, in keeping with the project QA/QC procedures. If no laboratory errors are found, the well will be resampled and the analysis done at the contract laboratory on a rush basis. If this analysis confirms that the level is greater than 20 µg/l, the 3000-series well will be required.

Action: Add the above response to the revised Work Plan.

10. **Commenting Organization:** OEPA **Commentor:**
Pg. # 6 Section # Paragraph # 1 Sent./Line #
Original Comment # 5

Comment: It is unknown to Ohio EPA where DOE obtained the "properties of the aquifer". This information should be submitted to Ohio EPA for review.

Response: The information on the properties of the aquifer were supplied to the Ohio EPA in August, 1991 when DOE supplied a draft copy of the Groundwater Report. Please refer to the Groundwater Report Section 13 for hydraulic parameter estimation and Part IV- Groundwater Modeling, Sections 18 through 22 of for a complete discussion of the modeling at the site.

Action: None required.

11. **Commenting Organization:** OEPA **Commentor:**
Pg. # 6 Section # Paragraph # 1 Sent./Line #
Original Comment # 6

Comment: DOE does not reference any technical support for the choice of an attenuation value of 12 for uranium at this facility. This information should be submitted to Ohio EPA for review.

Response: The technical data is in the draft Groundwater Report sections referenced in comment response 10 (OEPA Comment No. 5).

Action: None required.

12. **Commenting Organization:** OEPA **Commentor:**
Pg. # 7 Section # Paragraph # 4 Sent./Line #
Original Comment # 7

2000

Comment: Ohio EPA has not been provided with the site specific hydrogeologic data used for the particle tracking model. This data, and supporting rational for all assumptions should be submitted to Ohio EPA for review.

Response: Beginning on page two, paragraph three of the October version of this Work Plan, particle tracking was discussed with reference to Section 12 of the draft Groundwater Report. The reference will remain in the revised Work Plan.

Action: None required.

13.	Commenting Organization: OEPA	Commentor:
	Pg. # 7 Section #	Paragraph # 3
	Original Comment # 8	Sent./Line #

Comment: This paragraph should discuss the fact that significant contamination has already passed Willey Road forming the South Plume. The text should explain that these wells will monitor for a "different" plume which would lie east of the existing plume.

Response: While it is true that a significant amount of uranium is already south of Willey Road, the plume east of the outfall ditch is a part of the same plume. What was not realized until the water table monitoring revealed it, is the impact of the recharge from Paddys Run in creating seasonal flow patterns. When Paddys Run is flowing it becomes the groundwater divide between the groundwater flowing to the east to the Great Miami and groundwater flowing south to the Great Miami. When Paddys Run is not flowing the groundwater divide is much further to the northeast. Particle tracking by the SWIFT III model for this area was presented in the South Groundwater Contamination Plume EE/CA. The tracks show that in the area of the FEMP south of the Production Area and west of the entrance road, net groundwater and contamination will be from Paddys Run or the Outfall Ditch to the east and then turn to the south.

These wells monitor the eastern edge of the south plume which is a continuous plume beginning along Paddys Run and the Outfall Ditch. The uranium associated with recharge from the Outfall Ditch is moving a little farther to the east before turning and migrating to the south than was originally expected. Please refer to the Groundwater Uranium Concentration Maps, Appendix L, in the draft Groundwater Report for a delineation of the continuous plume under the site and the south plume.

Action: None required.

2800

14. Commenting Organization: OEPA Commentor:
Pg. # 8 Section # Paragraph # 5 Sent./Line #
Original Comment # 9

Comment: The DOE should provide Ohio EPA with any information detailing the condition(s) which make it possible for the flyash (uranium concentration of 150 ppb) to produce concentrations of 900 ppb uranium.

Response: The OEPA has misinterpreted the text. The text states: "150 $\mu\text{g/g}$," which is parts per million (ppm) not parts per billion (ppb).

Action: None required.

15. Commenting Organization: OEPA Commentor:
Pg. # 9 Section # Paragraph # 6 Sent./Line #
Original Comment # 10

Comment: The "surprising" presence of uranium in Well 2120 may represent the inaccuracy of an attenuation factor of 12. Variation in geochemical and/or hydrogeologic conditions may cause the attenuation factor to change throughout the site and throughout time.

Response: The "surprise" in finding uranium in Well 2120 was not due to a computer modeling error. The surprise occurred because the upgradient wells showed only 33 or less $\mu\text{g/L}$ of total uranium. As an empirical observation, there are steep total uranium gradients along Paddys Run; therefore, it was a "surprise" to see so wide a plume emanating from what are elevated but low levels of uranium under Plant 6. This suggests that the source of the contamination was either at higher concentrations in the past or has been continuing for a very long time.

If this condition is true for this large, highly permeable, and very homogeneous aquifer then modeling at the FEMP would not be beneficial. However, modeling to date shows that an average retardation factor of 12 works well.

Action: None required.

16. Commenting Organization: OEPA Commentor:
Pg. # 11 Section # Paragraph # 2 Sent./Line #
Original Comment # 11

Comment: The sentence stating that well 2417 will be placed in an area of known surface soil contamination and the sentence stating that well 2417 will be a "clean downgradient monitoring well" for Plant 6 are contradictory. DOE must

2600

discuss the extent of known soil contamination in the area of the proposed well and provide justification for the belief that this will be a "clean" downgradient well.

Response: The reference to the soil contamination is "The well should be placed at the western edge of the area where soil contamination is known to exist." This is to ensure that the surface contamination is not detected in the well in the aquifer. The soil contamination was documented in 1987 and 1988 in the radiological walkover survey and surface soil sampling program.

Given the data to date, it is anticipated that this will be a clean downgradient well; however, that will not be known until the well is installed and sampled.

Action: None required.

17. Commenting Organization: OEPA Commentor:
Pg. # 14 Section # Paragraph # 3 and 4 Sent./Line #
Original Comment # 12

Comment: The work plan states that in all four wells at Location 013, a number of couplings between casing sections have deteriorated and are potentially leaking. In the following paragraph, no corrective action is proposed for the 4000 series well. Discuss actions that will be taken to prevent leaking and cross contamination at this well (i.e., proper abandonment).

Response: As indicated in Paragraph 3, there were four wells installed prior to the RI/FS. Two of these wells are in the glacial overburden and have never had more than a few inches of water in them. The other two wells, 2013 and 3013, are the wells of primary concern. Well 4013 is the fifth well at the location and was installed under the RI/FS QAPP and is not at present in question. Thus of the five wells at the location, four are to be abandoned.

DOE has completed the television survey and has found that the four wells in question do have leaks at the joints in the PVC casing. Based on the intensity of staining it appears that the leaks were the most severe in Well 3013. A work plan to properly abandon or remove these wells is under review by DOE at this time.

Action: None required.

18. Commenting Organization: OEPA Commentor:
 Pg. # 16 Section # Paragraph # First Partial Sent./Line #
 Original Comment # 13

Comment: For the old administration building well located southwest of the fire training area, provide information about its present condition and plans for proper abandonment or sampling of the well.

Response: As stated, there is a pump lodged in the well and thus it is not available for sampling. The site is planning a TV inspection and then attempts will be made to remove the stuck pump and sample the well, provided that the well is in good condition. If the well is not in good condition, it will be properly plugged and abandoned.

Action: None required.