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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
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ATLANTA, GEORGIA 30303-8960

December 8, 2022

VIA ELECTRONIC MAIL

Mr. Roger B. Petrie
Federal Facility Agreement Manager
Oak Ridge Office for Environmental Management
Department of Energy
Post Office Box 2001
Oak Ridge, Tennessee 37831

Dear Mr. Petrie:

The U.S. Environmental Protection Agency has completed review of the *Addendum to the Remedial Design Report for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste, Oak Ridge, Tennessee, Work Plan for Groundwater Monitoring Wells West of EMWMF* (DOE/OR/01-1873&D4/A2) submitted on October 24, 2022.

The work plan is for the installation of three new groundwater monitoring wells located at the west side of the Environmental Management Waste Management Facility (EMWMF). These new wells will augment the existing detection monitoring network by monitoring groundwater west-southwest from the EMWMF, generally along geologic strike from the six EMWMF disposal cells. The additional wells are expected to be installed as soon as practicable. The functionality of each of the three new monitoring wells will be evaluated during operation to determine if they are suitable locations for post-closure detection monitoring.

Comments are attached and must be resolved before a revised document is submitted.

If you have any questions or concerns regarding this matter or require additional information, then please contact me at (404) 562-8550, or electronically at froede.carl@epa.gov.

Sincerely,

Froede, Carl
Digitally signed by Froede, Carl
Date: 2022.12.08 10:59:01 -05'00'

Carl R. Froede Jr.
Senior Remedial Project Manager
Restoration & DOE Coordination Section
Restoration & Site Evaluation Branch
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Received 12/08/2022

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EPA Comments on the Addendum to the Remedial Design Report for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste, Oak Ridge, Tennessee, Work Plan for Groundwater Monitoring Wells West of EMWMF (DOE/OR/01-1873&D4/A2)

GENERAL COMMENTS

1. DOE plans to install three new monitoring wells at the EMWMF that will monitor shallow groundwater. However, shallow groundwater daylights into NT-5 adjacent to the EMWMF on top of bedrock. At minimum, this would necessitate the installation of shallow bedrock wells at both the "Middle Location" and the "Southern Location." This work plan does not mention this problem and only focusses on shallow groundwater. If any of these new monitoring wells are to be installed in the shallow bedrock then make that clear along with the expectation that in shallow bedrock the new monitoring well(s) will be able to collect groundwater moving along geologic strike from beneath the EMWMF. Modify the text as necessary.

2. Add a discussion of what is to be expected in constructing shallow bedrock monitoring wells. Is the intent to screen across the saprolite/bedrock contact or to set the screened interval in one zone or the other? What zone(s) would be most effective at each location to monitor possible groundwater contamination? Please explain within the revised document.

3. If a new monitoring well is installed in shallow bedrock, then what are the expected geologic conditions (e.g., fractures, vugs, faults, etc.) and how will these features aid/prevent the function of a groundwater monitoring well? Please explain in the revised document.

4. A cross-section figure should be added that shows the elevation of the base of the waste adjacent to the three proposed monitoring well locations and the proposed screened interval of the wells to help the reader understand the proper screen placement for shallow groundwater monitoring. Indicate which wells may need to extend into the shallow bedrock. Please explain within the revised document.

5. The proposed middle well location is about 400 feet west of the landfill margin. This distance is much too far to be an effective detection monitoring well. This location needs to be closer to the landfill margin. Please explain how this location can meet the groundwater monitoring requirements identified in RCRA regulations.

6. There is no schedule in this work plan. The revised document must include a schedule showing when these new wells will be installed and are expected to be operational. The EPA has requested the extension of the Resource Conservation and Recovery Act groundwater monitoring network for several years around the EMWMF – a prerequisite in operating a hazardous waste landfill. DOE needs to make the installation of these monitoring wells a priority.

SPECIFIC COMMENTS

1. Table of Contents, p. iii: The text cites a "MIDDLE LOCATION" which is used in several places in the document. However, in Section 3 the text cites a "Central Location." Please be consistent and use one identifier for the monitoring well. Please change the text.

2. Introduction, p. 1: The work plan states:

> Surface water sampling is performed in conjunction with the groundwater monitoring because groundwater in the shallow flow system (uppermost aquifer) discharges into surface drainage features such as North Tributary (NT)-5. **The NT-5 monitoring location EMWNT-05 collects shallow groundwater along the western boundary of EMWMF and is an appropriate detection monitoring location.** (Bold/Underlining added)

Comment: Surface water sample collected at the EMWNT-05 weir is down dip from the along-strike path of groundwater as it moves beneath the EMWMF. Any contamination that might discharge into NT-5 would be diluted moving down stream with the addition of groundwater and surface water flowing southward to the weir at EMWNT-05.

This is why EPA is requesting DOE locate new monitoring wells closer to the EMWMF – one which is accomplished with the proposed addition of the "Southern Location" monitoring well. Change the text cited above to reflect the need for the new southern location monitoring well due to the possibility that contaminant dilution along NT-5 in surface water might occur when measured at the EMWNT-05 weir.

3. Figure 1, p. 2: The figure shows the EMWMF site layout and includes features that are presumably existing groundwater monitoring wells. There are three different symbols shown that appear to represent different wells. The figure needs to include a legend that defines what each symbol represents along with a north arrow and scale. Please make these changes.

4. Well Installation, p. 5: The work plan states:

> The well screens will be placed to monitor the shallow groundwater flow path towards the west-southwest, generally along strike from the EMWMF disposal cells. The well screen interval for the Central Location well was selected to capture shallow groundwater along strike from the EMWMF; deeper groundwater in this area is potentially impacted from other sources (see Chap. 2). However, prior to installation, the well screen interval will be selected to be below the base of NT-5 in the area adjacent to the piezometer to avoid influence from surface water.

Comment: The new Middle Location (ML) monitoring well will be located on the west side of NT-5. The work plan does not show what portion of NT-5 flows across bedrock to determine if the new CL monitoring well will need to be constructed into shallow bedrock. The DOE concern that the new monitoring well may contain contamination from upgradient (of the EMWMF) locations has never been identified for surface water flowing along NT-5 and measured at the EMWNT-05 weir. This work plan must be revised to clarify the position of bedrock along NT-5 and the likely screened interval necessary to ensure that groundwater moving along geologic strike from beneath the EMWMF can be measured and monitored at this location. Additionally, if groundwater contamination is found in the ML monitoring well then, this work plan should discuss possible actions to be taken to determine where the contamination originated. DOE must plan for contingencies if it believes that contamination might be identified following construction and during monitor well sampling.

5. Well Installation, p. 5: The text states:

> "… boreholes will be drilled to approximately 10 ft above the target screened interval… split spoon samples will be collected through the target interval, as possible, to collect additional lithological data."

Comment: The text should state what additional lithological data will be collected and the purpose for obtaining such data. The collection of split spoon samples through the proposed target interval indicates the wells will be completed above the bedrock, which again brings up the question whether groundwater above the bedrock moves in a strike-parallel direction. Please clarify the text.

6. Well Installation, p. 5 (see Figure 2, p. 6): The proposed northern well location is approximately at the western corner of the EMWMF. In this location the well will potentially monitor groundwater that is not downgradient of the landfill footprint, but rather is downgradient of the area outside the landfill margin. This well location must be shifted southward to collect groundwater moving below the EMWMF footprint.

7. Monitoring and Reporting, p. 7: The work plan states:

> Well installation details will be reported in the PCCR for the year when the wells were completed.

Comment: Change the text to more correctly state the results of the many activities will be shared with the project team following incremental project completion (e.g., well installation and each of the four sampling results) and then sampling results will be reported in the PCCR thereafter. The EPA will not wait until a future PCCR is submitted to find out what was conducted and the sum of the quarterly sampling results from each of the new monitoring wells. Please changed the text to reflect an active level of communication among project team members.

8. Monitoring and Reporting, p. 7: The third and fourth paragraphs of Section 4 contain apparently contradictory language. The third paragraph indicates that new wells may not be appropriate for inclusion in the detection monitoring network. The fourth paragraph indicates the new wells will become part of the detection monitoring network. Please correct this error.

(End of Comments)