



ENERGY AND ENVIRONMENT CABINET

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Leonard K. Peters
Secretary

September 20, 2013

Ms. Rachel Blumenfeld
US Department of Energy
Portsmouth/Paducah Project Site Office
PO Box 1410
Paducah, Kentucky 42002

RE: Submittal of Comments to the Remedial Action Work Plan for In Situ Source Treatment by Deep Soil Mixing of the Southwest Groundwater Plume Volatile Organic Source at the C-747 Oil Landfarm (SWMU 1) (DOE/LX/07-1287&D1)
Paducah Gaseous Diffusion Plant
Paducah, McCracken County, Kentucky
KY8-890-008-982

Ms. Blumenfeld:

The Kentucky Division of Waste Management (Division) received the *Remedial Action Work Plan for In Situ Source Treatment by Deep Soil Mixing of the Southwest Groundwater Plume Volatile Organic Source at the C-747-C Oil Landfarm (SWMU 1)*, dated July 22, 2013. The Division has completed its review of the subject document and is hereby submitting comments as an attachment. Please address these comments in a D2 version of the document.

If you have any questions or require additional information, please contact Brian Begley of my staff at (502) 564-6716, or e-mail at brian.begley@ky.gov.

Sincerely,

A handwritten signature in black ink that reads "April J. Webb".

April J. Webb, P.E., Manager
Hazardous Waste Branch

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DWM File: #1160-E, Graybar ARM20130009 (SW Plume VOC Sources RAWP)

Attachment: Kentucky Comments

Kentucky Division of Waste Management comments pertaining to the
Remedial Action Work Plan for In Situ Source Treatment by Deep Soil Mixing of the
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(SWMU 1)

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General Comments:

- 1) Section 10 presents the data management and implementation plan for the SWMU 1 Remedial Action Work Plan. It is the understanding of this reviewer that the Deep Soil Mixing vendor will generate a large amount of real-time electronic data. Some of the data being captured electronically will be the depth of the auger, steam injection rate, temperature, PID/FID response, GC/MS values for VOCs, etc. All of this data will require management and periodic dissemination amongst the interested parties. Although Section 10 discusses electronic data, it appears to exclusively discuss this form of data in relation to a laboratory. This section does not appear to adequately discuss the real-time electronic data that will be generated from the technology vendor. Please make appropriate changes throughout this section to account for the transfer and management of data being generated from the technology vendor.
- 2) The Remedial Action Work Plan does not allow for the same amount of flexibility as does the RDR with respect to the removal of surface soils greater than 2 foot bgs. Please make changes to account for operational flexibility as presented in the D2/R1 RDR.
- 3) Post remedial soil sampling locations need to be collaboratively reviewed for location and sampling objective, other than being strictly based on former RDSI locations.

Specific Comments:

- 1) **Page 13, 1st paragraph, 4th sentence:**

“RDSI data collected to support the selecting the area of the Oil Landfarm to be soil mixed did not modify this conceptual model.” The sentence is poorly worded. Please revise this sentence.

- 2) **Page 13, 2nd paragraph, last sentence:**

“The RDR contains a detail summary of the EVS modeling performed (DOE pg. 13 2013).” Please check the reference to page 13, which is the last page of Table 1 regarding the RDSI Characterization Data. Provide the appropriate page number or remove ‘p 13’ from the reference.

3) **Page 18, 4th bullet:**

Consider rephrasing the “default 2% ZVI” language to be consistent with the intended rates of application as set forth in the RDR.

4) **Page 21, Section 4.1 Design, 1st bullet:**

“LDA soil mixing with hot air/steam treatment and ZVI amendment will be performed over the approximate 13,500 ft² surface area, as shown in Figure 5 in the RDR (DOE 2013).” All of the references in the RDR for 13,500 ft² define the isoconcentration area >73ug/kg. The use of ‘13,500 ft²’ to describe the area where treatment will be applied is confusing. How was this value (13,500 ft²) calculated? What is the calculated area where treatment will be deployed? Please denote if the total surface area calculation includes overlap with other treatment cells or not. In addition, the reference to Figure 5 in the RDR (DOE 2013) does not appear to be accurate as this figure is the Hydrogeologic unit HU4/HU5 interface map. Please revise.

5) **Page 21, Section 4.1, Design, 4th bullet:**

A list of critical design parameters addressed in the RDR is provided. A critical design parameter that appears to be missing is guar gum concentrations. The application of guar gum does not appear to be addressed as a critical parameter and yet varying application of guar could have an impact on the amount of time required for the guar to dissolve, thereby impacting the time before ZVI treatment begins. Should guar gum application rates be considered a critical parameter and how will the concentrations be determined?

6) **Page 21, Table 2 Contaminant Cleanup Levels, Note:**

“See ROD Tables 17 and 18 for the UCRS Soil Cleanup Levels for VOCs (DOE 2013).” This reference does not appear to be correct. The ROD for SWMU 1 does not have a 2013 date. Please revise.

7) **Page 23, 1st paragraph, last sentence:**

Change the word “regarding” to regrading.

8) **Page 23, Section 4.4 Operations, Maintenance, and Monitoring:**

How will operation and monitoring activities be handled if a particular LDA boring location is not completed during a work day cycle? Are there preferred stopping points in the treatment process or is the intent of the operator to always complete the LDA treatment location during the same day it was started?

9) **Page 29, Table 3:**

Based on lessons learned from other steam and ZVI injection projects it would appear that keeping the injection lines from freezing is a real concern. Assuming field activities were to begin in February 2014, will safeguards be in place to prevent cold temperatures from having an adverse effect on the mixing process and the injection lines?

10) **Page 48-49, Figures 9 & 10:**

The depiction of TCE concentration is not consistent with similar figures found in the RDR. The overall shape and concentration distributions are not consistent with maps presented in the RDR. Overlay the most recent TCE isoconcentration lines onto this figure.

11) **Page 49, Figure 10:**

In order to be consistent with agreements made during the course of D2 RDR review (i.e., deferring the selection of monitoring well locations until after treatment data are obtained and reviewed) Kentucky would like the Figure 10 caption to reflect that the number of monitoring wells and their depicted locations are tentative.

12) **Page 51, Section 8.1.1, Continuous Electrical Conductivity and Temperature Survey, last sentence:**

“In addition to the primary goals of the electrical conductivity and temperature surveys, these logs can be used to anticipate the need for additional soil subsamples and to guide the selection of PPE for the sampling crew.” What is the criteria/trigger for potentially collecting additional soil subsamples? How many additional subsamples are assumed for budgeting purposes?

13) **Page 52, Section 8.1.2, Sampling Analysis and Schedule, last sentence:**

“An assessment of the level of biodegradation activity may be of interest in the future if follow-on RA is required.” Will samples need to be collected prior to adding steam, ZVI, and guar gum? If the assessment of the level of biodegradation activity is determined to be of interest, how and when will that assessment be performed?

14) **Page 53, Section 8.1.2, Sampling Analysis and Schedule, 1st paragraph:**

This paragraph provides a diminished monitoring schedule over time for the collection of VOC water samples. The expected travel time from the treated areas to the monitoring well locations is required in order to assess whether quarterly sampling should be continued beyond the first year. If travel times from the treated area to the monitoring wells exceed one year, then quarterly sampling during year two should also be considered.

15) **Page 54, Section 8.3.1 Contained-In/Contaminated-With Determinations:**

Please revise Table 6 and text in the last paragraph on page 54 so as to correctly identify 30 ppb as the health-based levels for TCE concentrations in aqueous solutions.

16) **Page 78, Section 11.4.7 PCB Waste Management, 2nd paragraph:**

This paragraph mentions that soils outside of the soil mixing treatment area have been identified in the Soils OU RI (DOE 2012b) as containing in excess of 50 ppm PCBs. According to the Soils OU RI, grid 001-028 surface soil is contaminated with PCBs greater than the action level. This grid is not included in the SW plume treatment area portion of SWMU 1. Please include in the document how employee exposure and the spread of

contamination from this grid will be prevented. A similar concern was also expressed by Kentucky (specific comment # 16) during the D1 Soils OU RI.

17) Page 78, Section 11.4.7 PCB Waste Management, 3rd sentence:

“A portion of the soils identified in DOE 201b, grid 001-014 will be characterized and disposed of due to the expected PCBs level of > 1 ppm.” How will the vertical and horizontal extent of soils to be removed be determined?

18) Page 86, Section 12.2.9:

Please remove “(break)” in the discussion of guar degradation. The word is confusing and unnecessary. Perhaps the word ‘break down’ would be a better choice.

19) Page 91, Section 13, References:

Please provide the Division with an electronic version of the COE (U.S. Army Corps of Engineers) 2012 – In Situ Thermal Treatment Using Large-Diameter Auger Soil Mixing and Zero-Valent Iron Results, ITSI Gilbane, Lakewood, CO, September. This can be added to the appendix or transmitted separately.

---End of Division of Waste Management Comments---

Radiation Health Branch Comments pertaining to the
Remedial Action Work Plan for In Situ Source Treatment by Deep Soil Mixing of the
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(SWMU 1)

Paducah Gaseous Diffusion Plant, Paducah, Kentucky

DOE/LX/07-1287&D1

September 20, 2013

General Comments:

1. Additional research has revealed that during the Remedial Investigation Report for WAG 27 trenching, there was significant contamination found in subsurface soils at the site. An area of most concern had a count rate 180 times the recorded background and excavated material containing nearly 300 pCi/g of enriched uranium. This data is not adequately addressed by this document. Please thoroughly discuss these historical findings, including the composition and inventory of the expected contaminated material, and coordinate with the FFA parties to develop and justify a method of ensuring that the spread of uranium contamination is minimized in the process of remediating VOC contamination at SWMU 1.
2. In the document it is stated that VOCs/semi-volatiles/radionuclides do not exceed NALs in surface soils, yet surface soils are planned to be removed due to expected PCB contamination. Please add appropriate information concerning contaminants that may be found in the treatment area soils after the initial two-foot soil removal occurs.

---End of Radiation Health Branch Comments---

**Kentucky Division of Air Quality Comments pertaining to the
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Southwest Groundwater Plume Volatile Organic Source at the C-747-C Oil Landfarm
(SWMU 1)***

Paducah Gaseous Diffusion Plant, Paducah, Kentucky

DOE/LX/07-1287&D1

September 20, 2013

Specific Comments:

1) Section 11.4.1 Fugitive Dust Emissions, 1st paragraph, 3rd sentence:

The reference to the *Fugitives* regulation should be 401 KAR 63.010. The last “0” is missing. Please correct.

2) Section 11.4.1, 4th sentence:

The document refers to 40 CFR 61.92, which is specific to the Standard (10 mrem), only. It might be better to refer to the subpart, rather than a single section in the subpart because there are compliance requirements DOE will have to consider (i.e. DOE must ensure its calculations of radionuclide exposure from the soil remediation are included in the annual DOE/USEC calculations.). Consider using the citation “**40 CFR, Subpart H**-National Emission Standards for Emissions of Radionuclides Other than Radon From Department of Energy Facilities (substantive requirements, only)” rather than “40 CFR § 61.92.”

---End of Division of Air Quality Comments---