



Missouri Department of dnr.mo.gov

NATURAL RESOURCES

Michael L. Parson, Governor

Carol S. Comer, Director

November 19, 2019

Ms. Christine Jump, Project Manager
Superfund Division
United States Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

RE: Review of Draft OU-1 Remedial Design Work Plan and Design Criteria Report,
West Lake Landfill Operable Unit 1, Bridgeton Missouri, dated October 2019

Dear Ms. Jump:

The Missouri Department of Natural Resources' (Department) Federal Facilities Section in coordination with the Department's Waste Management Program has reviewed the above referenced documents.

The comments generated for our concise review is not intended to be exhaustive, but should support our general concerns described in the general comments section. These concerns illustrate our request for comprehensive improvement by the responsible parties of their design development approach to be more transparent and timely in reviewable information.

Thank you for giving us the opportunity to review and provide feedback on this material. If you have any questions or need further clarification, please contact me by phone at (573) 751-8628, or by written correspondence at P.O. Box 176, Jefferson City, MO 65102.

Sincerely,

ENVIRONMENTAL REMEDIATION PROGRAM

Ryan Seabaugh, P.E.
Federal Facilities Section

RS:rl

Enclosure

c: Ms. Christine Jump, Remedial Project Manager, EPA Region 7 (Email)
Mr. Tom Mahler, Remedial Project Manager, EPA Region 7 (Email)
Mr. Chris Nagel, Director, Waste Management Program (Email)



Recycled paper

Comments RDWP and DCR

Dated October 2019

General Comments

1. Geostatistical Model: The original geostatistical model developed during the RIA/FFS took over two years of comments and revisions to gain a basic understanding of the developmental steps and processing techniques that went into modeling the extent of RIM. The final report submitted in December 2017, approximately one month prior to EPA's release of the proposed plan, was approved by EPA to be of sufficient quality for comparing alternatives. With the recent work plan submittal, the responsible parties propose to develop a model "functionally equivalent" to the December 2017 model, and are again at the early stages providing no reviewable insight into what functionally equivalent means in terms of potentially critical parameters affecting how the model processes soft data (CDFs) and what influence each data point has on a location with no data (variance). The purpose (DQOs) of the model is still not defined, but it is anticipated that the model will ultimately need to do more than the prior model to achieve the objectives of the amended ROD. As commented previously, we continue to encourage the responsible parties to provide reviewable information early and often so that model development does not become an impediment to timely development of the remedial design.

2. Unsupported selection of design elements: Similar to the previous submittal, the responsible parties appear to be locking in specific elements of design without submitting supporting information, evaluations, or gaining approval for criteria for the specific design element. Some examples are listed below, and in the specific comments section.
 - a. Leachate/contact water pretreatment – Neither the feasibility study or the ROD amendment described construction of a temporary pre-treatment plant. No explanation has been submitted describing the need for the change in options
 - b. Starter toe berms – No evaluation has been provided supporting the need for starter toe berms, and design elements have not been sufficiently provided to support the concept.
 - c. Geostatistical model – A "functionally equivalent" model described in the DCR is not the same as the December 2017 model described in the statement of work. Insufficient information has been submitted to support an evaluation for use of the new model.
 - d. North Quarry Overlay – Insufficient evaluation has been performed to show that a layer of trash provides equivalent protection to a cover meeting UMTRCA criteria.
 - e. Seismic in design relative to longevity of cover – Other factors and inputs affecting whether the values provided are acceptable have not been submitted. Site factors include, but are not necessarily limited to: geological and site characteristics such as slope geometry; groundwater conditions; and material alteration (faults, joints, discontinuities). Modeling factors such as modeling software, limitations, and assumptions such as scenario condition must also be considered. These factors need to be discussed in order to determine whether 1.0 Safety Factor is sufficient.

- f. Access controls – Evaluations on appropriate institutional and engineering controls to protect health and environment in perpetuity have not yet been assessed. Approval cannot be given to a presumptuous and unsupported expectation.

Response to EPA Comments

3. EPA comment #4 regarding state permit areas partially or wholly contained within OU1: This comment has not been addressed. As previously stated, the Department's Waste Management Program maintains solid waste permits for former waste disposal units either partially or completely within boundaries under EPA Superfund authority. The work plan needs to specifically identify these permits and describe how the permit requirements will be addressed under the superfund action. This is needed to maintain the closure and post-closure record on these permits and eliminate the need for duplicative long-term stewardship responsibilities. Within OU-1 Area 2 are two former waste disposal areas under MoDNR permit 218903 (areas 1 & 5). Within OU-1 Area 1 are portions of two former waste disposal areas under MoDNR permit 281903 (areas 2 & 6), Permit 118906, and Permit 118912. It needs to be clearly understood how the remedy will address the affected portions of these permits.

Comment: Specifically identify each affected permit and discuss how the remedy will address requirements of each permit.

4. Response to EPA comment #45 regarding Table 5: Some citations continue to be incorrect. For example, under Chemical Specific ARARs, 10 CSR 80-3.010(11)B.4.; Appendix 1; and Appendix 2 are Solid Waste Management Rules for Sanitary Landfills, not Water Quality Standards.

Comment: Correct ARAR reference errors.

5. Response to EPA comment 80: Section 11.3.3. retains the citation for 10 CSR 80-3.010(17)(C)4. which contains two sets of regulatory requirements - those for sanitary landfills without composite liners (subpart A.) and those with composite liners (subpart B.)

Comment: Please cite the appropriate regulatory citation.

Specific Comments

Remedial Design Work Plan

6. Section 1.3.2. Updated RAOs for Buffer Zone..., page 1-3: *"Historic erosion of the landfill berm along the north side of Area 2 resulted in deposition of radiologically impacted soil on the surface of the Buffer Zone and Lot 2A2 of the Crossroads Industrial Park (also known as the former Ford Property)."* While erosion of the landfill berm was the likely initial cause of deposition in the Buffer Zone and Lot 2A2 area, there is still documented and may be undocumented natural or anthropogenic activities affecting RIM extent in and around the Buffer Zone/Lot 2A2. The design investigation should account for the potential movement of RIM from sources other than the initial "historic erosion".

Comment: Ensure appropriate work plan documents design appropriate investigation to address the additional uncertainties.

7. Section 2.2.1. RIM Investigations, page 2-1: *“An analysis of pre-excavation confirmation sampling, including examples of where it has been used on other sites, discussion of criteria to use for proposing lateral and vertical distribution of confirmation samples, rationales for how this approach would achieve the objectives in the RODA, and an evaluation of various methods for confirmation sampling and the pros and cons will be provided in the 30% RD Report.”* Based on the schedule provided by the responsible parties, the Design investigation work plan will be developed prior to the 30% RD report submittal. If pre-excavation confirmation sampling is allowed in the same mobilization as the design investigation, the described evaluation will be necessary prior to approving the DIWP, it is expected that reviewing agencies will be provided enough time to review proposals and rationales prior to submittal of resulting documents that utilize the information.

Comment: This discussion should appear in the Preliminary Excavation Plan if planning to conduct confirmatory sampling during the same mobilization as the Design Investigation, and further developed in the DIWP, prior to the 30% RD.

8. Section 2.2.1 RIM Investigations, page 2-1: *“For this shallow sampling in Areas 1 and 2, several investigation techniques will be considered to select a method that will provide a high recovery ratio. Proposed sampling locations, investigation techniques and procedures will be presented in the DIWP.”* The DQO's for the DIWP need to also be considered in the Site Management Plan and Preliminary Excavation Plan, and should be developed earlier in support of proposed sampling locations, investigation techniques and procedures being presented in the DIWP.

Comment: Provide the purpose and initial development of investigations in the preliminary excavation plan submittal, then provide further development in the DIWP.

9. Section 2.2.1 RIM Investigations, page 2-1: *“The margins of Area 2 will be evaluated for the presence of RIM to define the edge of final cover, especially along the boundaries of the inactive sanitary and C&D landfills.”* Boundaries of RIM need to be evaluated for all of OU1.

Comment: Revise the statement to include both areas.

10. Section 2.2.2. Geotechnical Investigation, page 2-2: *“The technical specifications for these materials will be developed during the RD to determine selection criteria to meet the ARARs.”*

Comment: State where in the RD phase that selection criteria will be developed to meet ARARs.

11. Section 3.1.1.2. Preliminary Excavation Plan, page 3-1 through 3-2: Many of the statements presented in this section cannot be reviewed for appropriateness due to the lack of reviewable information to support the statements and the premature nature of much of the information. The reviewable information is scheduled to be submitted for review at a later date within other submittals, therefore acceptance of these statements will be determined through review of those later submittals.

For example, there is no requirement for the geostatistical model be functionally equivalent to the December 22, 2017 model. There has been no review of the December 22, 2017 model as to its ability or appropriateness to meet RD WP objectives. For these reasons, reference to using a model functionally equivalent to the December 22, 2017 model is premature. Acknowledging

that there have been some meetings to discuss preliminary thoughts about the use of a functionally equivalent model to meet RD WP objectives, there has been no resulting submittal of reviewable information that can be used to accept all of the language in this section.

Comment 11-1: Until reviewable information is submitted to allow agreement on these items, the section should be edited to eliminate specific actions. Specific edits include:

"The Preliminary Excavation Plan and drawings will be based on a geostatistical model ~~based on and functionally equivalent to the model used for the December 22, 2017, 3D Extent of RIM Report~~. The proposed geometry of the excavation design (Section 3.3.1) will be presented in the preliminary excavation plan and the excavation design will be clarified in subsequent design submittals. The excavation plan will be prepared in AutoCAD Civil3D. The most recent available site topographic survey will be used to define the current ground surface for use in the Preliminary Excavation Plan. It will be submitted to USEPA for approval and will include:

- ~~The updated~~A geostatistical model based on the data presented in the RIA ~~and its calibration to the previous established geostatistical model used in the December 22, 2017 3D Extent of RIM Report~~ will be described in a technical memorandum that will be included with the Preliminary Excavation Plan and subsequently incorporated into the 30% RD Report. This technical memorandum will be developed to demonstrate the requirements of Section 12.2.1 of the RODA are satisfied;
- An evaluation of location of RIM greater than 52.9 pCi/g requiring removal as part of the remedy, subject to optimization as discussed below;
- Identification of and evaluation of the optimized excavation locations using the criteria provided in Section 12.2 in the RODA including:
 - Isolated pockets between 8 and 12 feet below the 2005 topographic surface that, if excavated, would require excavation of large volumes of non-RIM waste as overburden and setback; and
 - Higher concentrations of RIM greater than 12 feet and less than 20 feet below the 2005 topographic surface to be excavated in order to remove the activity represented by RIM greater than 52.9 pCi/g between the surface and 16 feet.
- Preliminary estimates of the radioactivity and volume of RIM to be excavated demonstrating the requirements of Section 12.2.1 of the RODA are satisfied. ~~The computation of the excavated activity required in Section 12.2.1 of the RODA will be developed on a volumetric basis by calculating the average radioactivity in each computational cell, multiplying it by the volume of that cell, and summing the total radioactivity computer for each cell across all the cells in the excavation limits for both the FFS Alternative 4 and the optimized Selected Remedy excavation.~~
 - A preliminary estimate of the volume of all other waste (non-RIM) that must be excavated to access the RIM.

- An evaluation of data gaps and proposed additional boring locations for the investigation based on variances identified by the geostatistical model and other observations.”

Comment 11-2: Delete the last two paragraphs of this section starting with “The initial geostatistical evaluation to support the Preliminary Excavation Plan...” and ending with “determining the proposed excavation geometry.”

12. Section 3.1.2.13. Institutional Controls Implementation and Assurance Plan: The first paragraph of this section refers to the feasibility study, however Section 12.2.7 of the ROD describes what is needed to establish effective Institutional controls.

Comment: Replace the first paragraph with ROD language and expand the discussion from there.

13. Section 3.1.2.14. Other Plans, page 3-11: *“We expect that a Stormwater Pollution Prevention Plan based on the state and federal regulations governing construction sites will be developed during the 90% RD for use as guidance by the RA Contractor.”*

Comment: The work plan needs to clarify development during the remedial design and the remedial action, and what is meant by “guidance for the RA contractor.”

14. Section 3.2 Site Preparation and Controls, page 3-11: The entire section presents details for the first time in the 90% stage of the document.

Comment: Seeing entire concepts for the first time at 90% design is not recommended.

15. Section 3.3.1. Excavation Design, page 3-12: This section talks about removal of surface contamination in BZ/L2A2, but not sediment sampling and removal in other off-property locations.

Comment: Describe how design of off-property excavation is incorporated into the work plan and DCR.

16. Section 3.3.3. Final Cover Design, page 3-13: *“A starter berm at the toe of the waste in Areas 1 and 2. The design of the starter berm will include configuration of the berm (berm height, side slopes, and crest width), materials that will be used to construct the berm, and the surface finish of the berm for an extended design life and protection against flooding;”* Evaluation has not yet been submitted to demonstrate acceptability of a starter berm, so the referenced bullet is premature, and are unable to agree to inclusion.

Comment: Delete.

17. Section 3.5. Post-RA Flood Protection, page 3-15: *“The primary focus of the design will be stability of the closed slopes and the starter berm at the toe of waste slope.”* Insufficient evaluation has been submitted for review to come to agreement on a starter berm as a design element.

Comment: Delete “and the starter berm at the toe of waste slope”

18. Section 3.2. Site Preparation and Controls, page 3-11: Last two bullets describing decontamination processes and access requirements.

Comment: Provide details on when they will be provided in deliverables including determination of threshold criteria for determining clearance for decontaminated equipment.

19. Section 4.4. Missouri Solid Waste Rules for Sanitary landfills, page 4-3: The second paragraph describes the requirement of coefficient of permeability of 1×10^{-7} cm/sec from the ROD amendment, but does not compare to the state ARAR for permeability requirement.

Comment: Add a statement citing the state ARAR for permeability, and indicating that the required minimum permeability exceeds the state ARAR.

20. Section 4.4. Missouri Solid Waste Rules for Sanitary Landfills, page 4-3: *"The maximum sloping requirements will be met at elevations within the limits of waste and/or for slopes containing geosynthetics parallel to the slope surface, such as geomembranes. Perimeter or starter toe berms are built out of soil or rock outside of the limit of waste and are not part of the final cover system. Their maximum exterior slopes will be based on geotechnical analyses to be presented in the 30% and Pre-Final (90%) RD Reports."* Insufficient evaluation has been submitted for review for reviewer agreement on the use of "starter toe berms"

Comment: Revise the quoted statements to state "The maximum sloping requirements of the ARAR will be met."

21. Section 4.4. Missouri Solid Waste Rules for Sanitary Landfills, page 4-3: *"Potential and previously identified leachate seeps from the slopes of Areas 1 and 2 will be evaluated during the design investigation and counter-measures developed in the 90% RD."* This discussion does not appear to resolve EPA Comment 35.a requiring substantive discussion on leachate ARARs. A portion of the state ARAR under 10 CSR 80-3.030(9) deals with leachate management for landfills with bottom liners. Since there is no bottom liner under these landfills, it is expected that the responsible parties should develop equivalent prevention techniques to monitor and prevent subsurface migration of leachate.

Comment: Address EPA comment 35.a. addressing how the leachate RAO will be met, and how state ARARs fit into the design strategy.

22. Table 5.: General reference should be made to the effective date of the regulations being referenced, as regulations may be updated or revised.

Comment: Provide references to the effective date of cited regulations

23. Table 5.: Separate regulations exist for Demolition Landfills (10 CSR 80-4.010) which may affect groundwater monitoring requirements, and permit requirements (refer to comment 3.)

Comment: Include demolition landfill citations in the table as needed.

Design Criteria Report

24. General Comment, Design Criteria Report: The comments for this document are not intended to be exhaustive. Due to time constraints, the RD work plan comments that are applicable to the

design criteria report may not have been repeated. General Comments #1. Through #3. continue to be applicable.

25. Section 4.2. Discharge and Detention Requirements: *"These discharge locations will be upgraded to manage increased flows if necessary."*

Comment: Replace "if" with "as"

26. Section 4.2 Discharge and Detention Requirements: *"If temporary sediment basins or similar features are required prior to discharge during periods of active ground disturbance, they will be designed for a 2-year, 24-hour storm per the Missouri General Permit for Construction or Land Disturbance substantive requirements. The primary purpose of a sedimentation basin is to reduce particulate solids leaving the Site. Per NOAA Atlas 14, Volume 8, Version 2, the estimated precipitation with a 90% confidence interval for the 2-year, 24-hours storm is 3.16 inches."*
Insufficient evaluation and ARAR discussion has been provided to determine if these specific criteria are appropriate.

Comment: Delete, and indicate when enough information will be provided to reviewing agencies to allow agreement to specific criteria.

27. Section 4.2 Discharge and Detention Requirements: *"If stormwater calculations indicate that temporary construction conditions will increase peak stormwater flow discharges from the Site, then the need for providing detention basin(s) in addition to sedimentation basin(s) will be evaluated and designed."*

Comment: Indicate when calculations will be provided to reviewing agencies for determination of this potential need.

28. Section 5.2 Definition of Buffer Zone/Lot 2A2 Excavation Boundaries: *"Background sampling will be conducted in areas that appear to have the same general characteristics of the Buffer Zone and Lot 2A2."*

Comment: Define characteristics for selection of background locations that establish an "appearance" of similarity, and indicate where these characteristics will be presented to reviewing agencies.

29. Section 5.2 Definition of Buffer Zone/Lot 2A2 Excavation Boundaries: *"The background samples will provide a range of results that will be assumed to represent naturally occurring activities."*

Comment: Define how the assumption will be validated, and indicate where the decision process will be presented to reviewing agencies.

30. Section 5.2 Definition of Buffer Zone/Lot 2A2 Excavation Boundaries: *"The averages of the results of various samples obtained from individual survey units of 2,000 square meters or less will be compared to the range of background values to define materials that are distinctly elevated above the background range that will require removal."* There has not been sufficient explanation to reviewing agencies to make a determination on the acceptability of selecting an average versus a median value, or understanding and accepting a process of using "the range of background values to define materials that are distinctly elevated above the background range"

Comment: Explain why the average is selected as opposed to the median, and provide information on the statistical methodologies that will be employed to determine a statistically valid background concentration and range.

31. Section 5.2 Definition of Buffer Zone/Lot 2A2 Excavation Boundaries, page 5-2: *“The 99% upper confidence limit is proposed to define the upper limit of the background range as it would be expected that contamination from the site should have a distinctly different signature and magnitude than the naturally occurring conditions in the area, The specific methodology and proposed background sample locations will be provided in the DIWP and associated plans.”* There has not been sufficient communication on sampling, methodologies and statistical analysis with reviewing agencies to make any specific determinations/values, and according to this paragraph that isn’t planned until the DIWP.

Comment: Delete the statement.

32. Section 5.3 Confirmation Sampling, page 5-2: *“The confirmation sampling will be input into the RD geostatistical model to confirm the model accuracy of the excavation boundary depiction and estimation of the total radioactivity and RIM volumes to be removed from the site by observing if the new data cause significant modifications in the geostatistics-derived geometry of the proposed excavation. Sampling methodologies and strategies will be evaluated to identify techniques and locations most likely to prevent false positives and false negatives that could lead to inaccurate results during confirmation sampling. The confirmation sampling strategy will also be evaluated to identify an approach that is most likely to minimize open excavations and delays. We anticipate that the confirmation sampling will be best executed during the RD and additional confirmation sampling would not be required in the RA.”* These statements rely on a number of underlying assumptions that have not been evaluated or submitted to reviewing agencies to determine if the assumptions are valid.

Comment: Delete.

33. Section 5.3 Confirmation sampling, page 5-2: *“This will be further addressed in the 30% RD report with follow up in the Final Excavation Plan, 90% and Final RD reports for discussion with USEPA.”* If considering pre-excavation confirmation sampling, the DIWP, which is submitted prior to the 30%RD, needs to address sampling needs. As a result, the evaluation needs to occur prior to submittal of the DIWP.

Comment: If planning confirmatory sampling during the same mobilization as the design investigation, this discussion should begin in the Preliminary Excavation Plan and further developed in the DI WP, prior to the 30% RD.

34. Section 9.3. Sludge and Treatment Media Disposal, page 9-1: Sludge and treatment media are generated process waste, and there appears to be no provision on the ROD allowing disposal of new waste into a closed landfill.

Comment: Revise the section to dispose of process waste offsite.

35. Section 10.2 Placement and Grading, page 10-1: *“The backfill materials will be placed in horizontal lifts and compacted with a landfill trash compactor.”* Appropriate evaluation on

settlement/displacement factors has not been submitted to be able to concur with a specific method of compaction.

Comment: Delete the statement, and discuss placement and grading relative to other influencing ARARs and factors.

36. Section 11.3.3. North Quarry Overlay, page 11-2: *"The hybrid final cover system used to accomplish the short- and long-term objectives of the ARARs will be installed within the defined boundaries of OU-1 Areas 1 and 2 except for the portion of Area 1 covered with the Bridgeton Landfill North Quarry Overlay. A different final cover system will be proposed for the portion of the North Quarry overlying RIM which will use the thick non-RIM refuse over the RIM as an UMTRCA radon attenuation barrier, and a solid waste final cover meeting the standards of 10 CSR § 80-3.010(17)(C)4 over the non-RIM waste."* Insufficient evaluation has been submitted to determine if an exception can be made for the portion of Area 1 covered with the Bridgeton Landfill North Quarry Overlay.

Comment: Replace the exception statement with an evaluation statement to be submitted with sufficient time to allow review and approval by reviewing agencies.

37. Section 11.4. Seismic, page 11-3: *"If the pseudo-static slope stability analyses have a factor of safety of 1.0 or greater, no additional analyses will be required per the guidance. If the factor of safety is less than 1.0, then additional analyses will be conducted per the guidance recommendations."* Insufficient information has been submitted to determine the appropriateness of the stated safety factor.

Comment: Replace the value with an evaluation statement demonstrating the appropriate safety factor with sufficient time to allow review and approval by reviewing agencies.

38. Section 11.5. Landfill Gas, page 11-3: *"The RD will design a gas management system to meet the ARARs listed in Section 11.6 and will be developed in the 30% RD with detailing presented in the 90% and Final RD reports."*

Comment: Insert "also" before "meet the ARARs..."

39. Section 11.7 Restoration, page 11-4: State ARAR 10 CSR 80-3.010(17)(A) requires cover to be applied to minimize fire hazards. Vegetation may be considered part of the cover, and consideration should be given to potential presence of methane.

Comment: Vegetative species that require burning in order to maintain an established cover should be excluded.

40. Section 11.8 Access, page 11-4: *"Site access is expected to be limited to the existing gates."* No evaluation has been submitted to reviewing agencies to determine if existing site access restrictions are sufficiently protective.

Comment: Delete and provide information on when the evaluation will be provided for review.

41. Section 12.3 Erosion and Sediment Control..., page 12-1: *"The spacing of swales on the final cover will be based on the USDA Revised Universal Soil Loss Equation assuming a permissible annual average soil loss of 2.0 tons per acre per year. The permissible stress method will be used*

to evaluate the maximum flow rates the swales and down chutes will be designed to prevent erosion in the base of the swales and down chutes. These methods are deemed appropriate as the Site is anticipated to vegetate quickly in the temperate, moist climate with rapid deep rooting by the prairie grasses.” The criteria specified in this statement do not appear to have gone through sufficient ARAR assessment to consider requirements such as longevity to meet UMRCA.

Comment: Replace the statement with “Permanent stormwater and erosion control BMPs will be developed to minimize erosion and sediment loss consistent with requirements and ARARs.” And further indicate when that development will occur.