



C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

May 20, 2010

Ms. P.M. Allen, Manager
Environmental, Safety, Health, Quality Assurance,
and Contractor Assurance
Savannah River Remediation, LLC
Savannah River Site, Building 730-4B
Aiken, SC 29808

**RE: Application for Modification – Construction of Disposal Cells 3 and 5
Savannah River Site Z-Area Saltstone Disposal Facility
Permit # 025500-1603
Aiken County**

References: 1. *Savannah River Site Z-Area Saltstone Disposal Facility Engineering Report for Disposal Cell Construction*, (SRR-ESH-2009-00006), Revision 0 (7/17/2009).
2. *Saltstone Disposal Cells No. 3 and 5 Geotechnical Engineering Report* (K-ESR-Z-00002), Revision 0, July 2009.

Dear Ms. Allen:

The Department is in the process of reviewing the above-referenced documents for compliance with the requirements of Regulation 61-107.19, Part V. At this time, the Department has identified potential deficiencies, and as a result, provides the following comments for your review and response:

1. Section 4.2 on Page 14 of the Engineering Report (Reference 1) indicates that Cells 3 and 5 will be buried (i.e., backfilled) in place the same as Cell 2. However, Section 4.6 on Page 17 indicates backfilling is an option, and Section 4.17 on Page 24 indicates backfill will be placed only if required for radiation shielding. Please correct these discrepancies by removing any non-definitive statements on whether backfill will be utilized.
2. As discussed in Comment #1, if the backfilling option is not selected, please revise the seismic stability calculations in Attachment #7 to account for the non-backfill scenario.
3. The last sentence of Section 4.5 on Page 16 of the Engineering Report also indicates that soil backfill will be placed around both Cells 3 and 5, resulting in “hoop compression that will serve to keep the panel joints closed and maintain the structural integrity over time.” As mentioned in Comment #1, this report must definitively state whether soil backfill

will be utilized, and if not, the structural integrity of the disposal cells must be reevaluated.

4. Item f. in Section 4.5 on Page 16 of the Engineering Report indicates both Cells 3 and 5 will have the capability for collecting liquid samples from between the bottom of the cell and above the geosynthetic clay liner (GCL). However, Reference 15 of the Engineering Report only requires this capability starting with Cell 3A and every fifth cell thereafter. Please provide a definitive statement as to which disposal cells will be outfitted with this liquid sampling system. Also, the capability should be for collecting samples between the bottom of the cell and above the flexible membrane liner (FML)/GCL composite liner system. Please revise this statement accordingly.
5. The last sentence of Section 4.7 on Page 17, the third sentence of Section 4.8 on Page 18, and the third sentence of Section 4.9 on Page 19 of the Engineering Report specify that the hydraulic conductivity of the Class 3 sulfate-resistant concrete to be used in construction of the disposal cells will have a "hydraulic conductivity of at least 1.0×10^{-07} cm/sec." Please revise these statements to read "hydraulic conductivity of no greater than 1.0×10^{-07} cm/sec."
6. The description of the placement of thermocouples in Section 4.19 on Page 24 of the Engineering Report is not clear. Please provide a simple illustration of this configuration.
7. The second sentence of Section 1 on Page 1 of the Geotechnical Investigation Report (GIR) (Reference 2) states definitively that soil will be backfilled around the disposal cells. Please revise this statement accordingly, if necessary, to be consistent with Comments # 1-3 above.
8. The calculation found in Section 5.13 on Page 8 of the GIR uses a value of 16,900 psf for the design bearing capacity; however, in the same section the design bearing capacity is reported as 30,200 psf. Please explain this discrepancy.
9. Section 5.6 on Page 16 of the GIR indicates a minimum Factor of Safety (FOS) against slope failure for the post-closure condition of 1.0 under seismic conditions. The minimum acceptable FOS required under Regulation 61-107.19, Part V, Subpart D.258.40.r is 1.2. Although Table 1 of Appendix F indicates that for all 11 cases evaluated, a FOS of at least 1.2 was obtained, the text in this report should be revised to be consistent with the requirements of the Regulation.
10. Section 6.6 on Page 19 of the GIR provides a recommendation that a detailed footing inspection be conducted prior to forming or placing concrete for a mud mat or for the mat foundation, and that a proof roll of the excavation be conducted prior to placement of the mud mat or form work for the mat foundation. The Department requires the assurance that these precautions will be taken; therefore, language such as "highly recommended" and "should be conducted" needs to be replaced with the more definitive "shall be conducted."

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11. Please provide more specific information for the drainage material that is to be used directly beneath the Class 3 sulfate resistant mudmat, as depicted in Attachment # 11 (page 40) of the Engineering Report. Furthermore, the Engineering Report should include an analysis of the selected drainage material's capacity to support the anticipated load of a full disposal cell and closure cap.
12. The last page of the drawings submitted as part of this application for modification should be revised to show the actual disposal cells that are to be constructed (Cells 3A, 3B, 5A, and 5B). This drawing (or drawings, as necessary) should show the actual construction elevations for each cell with respect to the probable maximum water table elevation that corresponds to the location of that cell.
13. Attachment #8 of the Engineering Report, which contains the approved (Schweitzer to Wells, 9/18/2006) Groundwater Detection Monitoring Plan, should be revised to reflect the construction of Cells 3 and 5. These revisions to the Groundwater Detection Monitoring Plan should include (but not be limited to) a new groundwater monitoring well system, installation sequence, changes to the well depths and changes in the groundwater contaminant sampling constituent list (if applicable). Any questions regarding this comment should be directed to Roger Schweitzer, Hydrogeologist, at (803) 896-4023.

Once you have made the necessary revisions as specified above, please resubmit them for further review. Also, the Department is very interested in the results and conclusions that are to be drawn from the hydraulic performance tests on Cells 2A and 2B currently in progress. Should these tests indicate inadequacies in the Cell 2 design, the Department may have additional comments on the design of Cells 3 and 5. Upon conclusion of the Cell 2 hydraulic testing, the Department requests a report on the outcome of these tests, along with any implications and/or recommendations on the design of Cells 3 and 5.

Should you have any questions about any of these comments, or wish to discuss these or other related matters, please feel free to contact me at (803) 896-4067.

Sincerely,



John M. McCain, Associate Engineer
Solid Waste Permitting Section
Division of Mining and Solid Waste Management
Bureau of Land and Waste Management

JMM/jmm

cc: Keith Collinworth, P.G., Manager – BLWM, Solid Waste Groundwater Section
Marty Lindler, Manager – BLWM, Solid and Hazardous Waste Compliance Section
Keith Liner – Savannah River Remediation, LLC
Jason Shirley – BES, Region 5 EQC, Aiken office
Bureau File # 999999