UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 16, 2018

Ms. Elizabeth Connell, Director
Regulatory, Intergovernmental,
and Stakeholder Engagement
Office of Environmental Mgmt.
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

SUBJECT: SUPPLEMENT TO THE 2013 U.S. NUCLEAR REGULATORY COMMISSION SALTSTONE DISPOSAL FACILITY MONITORING PLAN

Dear Ms. Connell:

The purpose of this letter is to inform you that the U.S. Nuclear Regulatory Commission (NRC) has decided to supplement the 2013 NRC Monitoring Plan for the Savannah River Site (SRS) Saltstone Disposal Facility (SDF), Rev. 1, which is available via the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML13100A113. As required by Section 3116(b) of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (NDAA), the NRC, in coordination with the South Carolina Department of Health and Environmental Control, monitors the DOE disposal actions at the SRS SDF.

The changes to the 2013 NRC SDF Monitoring Plan are based on NRC staff recommendations in the following technical review reports (TRR) and later NRC staff recommendations:

On May 17, 2018, the NRC issued the TRR, *Technical Review: Groundwater Monitoring At and Near the Planned Saltstone Disposal Facility* (ADAMS Accession No. ML18117A494). In that NRC TRR, the technical staff recommended adding a new monitoring factor (MF) 8.03 (Identification and Monitoring of Ground Water Plumes in the Z-Area) under Monitoring Area (MA) 8 (Environmental Monitoring) under both Title 10, *Code of Federal Regulations* (10 CFR) Part 61 Performance Objectives (POs) §61.41 and §61.42. After both the TRR was issued and the NRC held the July 2018 SDF Onsite Observation Visit, the technical staff recommended adding MF 8.01 (Leak Detection), MF 8.02 (Groundwater Monitoring) and MF 8.03 (Identification and Monitoring of Ground Water Plumes in the Z-Area) under PO §61.43.

On May 22, 2018, the NRC issued the TRR, *Technical Review: Update on Projected Technetium Release from Saltstone* (ADAMS Accession No. ML18095A122). In that NRC TRR, the technical staff recommended:

- lowering the priority of MF 5.02 (Chemical Reduction of Technetium by Saltstone) from high to medium under both POs §61.41 and §61.42;

- lowering the priority of MF 5.03 (Reducing Capacity of Saltstone) from medium to low under both POs §61.41 and §61.42;

- closing MF 5.05 (Potential for Short-Term Rinse-Release from Saltstone) under both POs §61.41 and §61.42; and

- closing MF 6.02 (Technetium Sorption in Disposal Structure Concrete) under both POs §61.41 and §61.42.

The NRC is implementing those recommendations. Those changes, as well as additional changes in the 2013 NRC SDF Monitoring Plan, are described in more detail in the Enclosure, are effective immediately, and are expected to be included in Revision 2 of the NRC SDF Monitoring Plan. The NRC expects to issue Revision 2 of the NRC SDF Monitoring Plan after the NRC reviews the next revision of the DOE SDF Performance Assessment, which is expected to be submitted in 2020.

The table below provides the number of open and closed monitoring factors for the SRS after the NRC implements the changes described above.

Number of Open and Closed Monitoring Factors for both SRS SDF and SRS Tank Farms

	SRS SDF	*SRS Tank Farms*
Open Monitoring Factors	37	26
Closed Monitoring Factors	5	0

In addition, in the near future, the NRC expects to issue a separate letter to the DOE with a publicly available NRC/DOE Joint Plan for closing the high-priority monitoring factors for the SRS SDF. That Joint Plan will include the DOE-anticipated schedule for providing the NRC with the information needed to close those high-priority monitoring factors.

If you have any questions or need additional information, please contact Harry Felsher of my staff at Harry.Felsher@nrc.gov or at (301) 415-6559.

Sincerely,

/RA/

John R. Tappert, Director
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No. PROJ0734

Enclosure:
Details Supplementing the
2013 NRC SDF Monitoring Plan

cc: J. Folk, DOE
S. Wilson, SCDHEC
WIR Service List
WIR ListServ

SUBJECT: SUPPLEMENT TO THE 2013 U.S. NUCLEAR REGULATORY COMMISSION SALTSTONE DISPOSAL FACILITY MONITORING PLAN **DATE October 16, 2018**

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ADAMS ACCESSION NO.: ML18219B035 ***via email**

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Details Supplementing the 2013 NRC SDF Monitoring Plan

The details of the immediately effective changes in the 2013 U.S. Nuclear Regulatory Commission (NRC) Saltstone Disposal Facility (SDF) Monitoring Plan are based on the recommendations in the NRC technical review reports (TRRs) and later NRC technical staff recommendations, which are described below.

Based on the May 17, 2018, TRR, *Technical Review: Groundwater Monitoring At and Near the Planned Saltstone Disposal Facility* (ADAMS Accession No. ML18117A494), the NRC will add a new monitoring factor (MF) 8.03 (Identification and Monitoring of Groundwater Plumes in the Z-Area) under Monitoring Area (MA) 8 (Environmental Monitoring) as a high-priority monitoring factor under Title 10, *Code of Federal Regulations* (10 CFR) Part 61 Performance Objectives (POs) §61.41 (Protection of the General Population from Releases of Radiation) and §61.42 (Protection of Individuals from Inadvertent Intrusion). As described in more detail in the TRR, the reasons for those changes are the following:

- the locations and the number of groundwater monitoring wells in the Upper Aquifer Zone of the Upper Three Runs Aquifer (UTRA-UAZ) system are inadequate to detect saltstone disposal structure leaks or any release to the subsurface in a timely manner;

- the locations and the number of groundwater monitoring wells are inadequate to follow the development of a plume within the Z-Area; and

- groundwater wells to obtain background concentration values from the Lower Aquifer Zone of the UTRA (UTRA-LAZ) are not present.

In the TRR, the NRC staff recommended adding MF 8.03 under both POs §61.41 and §61.42 because understanding the inventory, fate, and transport of groundwater plumes onsite is necessary for projecting doses for determining the DOE compliance with those two POs. In addition, after the TRR was issued, the NRC staff recommended adding MF 8.03 under PO §61.43 (Protection of Individuals During Operations) as well because PO §61.43 states that, "Operations at the land disposal facility must be conducted in compliance with the standards for radiation protection set out in part 20 of this chapter …", which includes 10 CFR 20 Subpart F, "Surveys and Monitoring" and the NRC monitoring the DOE effluent monitoring system is under that Subpart F. While MF 8.03 is a high-priority monitoring factor because it is important in determining whether the DOE meets the POs, it is not an immediate safety issue because there are currently no access points for a member of public to be exposed to contaminated groundwater.

Also, after the TRR was issued and the NRC held the July 2018 SDF Onsite Observation Visit, the NRC staff recommended adding both MF 8.01 (Leak Detection) and MF 8.02 (Groundwater Monitoring) under PO §61.43 because both of those monitoring factors are important for determining the DOE compliance with that PO.

The NRC will modify Table 1-4 (Link between Monitoring Activities and Performance Objectives) in the 2013 SDF Monitoring Plan to indicate that MA 8 (Environmental Monitoring) is now linked to three POs, which are §61.41, §61.42, and §61.43 for the existing MF 8.01, existing MF 8.02, and new MF 8.03.

Enclosure

In addition, with the new MF 8.03 under PO §61.41, the NRC will add text for the new MF 8.03 in a new Section 3.8.3 under PO §61.41 as follows:

> "**3.8.3. MF 8.03: Identification and Monitoring of Groundwater Plumes in the Z-Area**
>
> Assessment of disposal site performance requires accurate knowledge of the initial conditions of a disposal facility. If parameter ranges used for simulating the disposal site are inaccurate, then the simulated results may lead to mistaken confidence that regulatory limits have been met or erroneous concerns that the limits have not been met. The groundwater plume from Saltstone Disposal Structure (SDS) 4 is a good example of initial assumed conditions for the disposal structure and for contaminant transport needing to be modified due to results obtained from groundwater monitoring.
> The NRC staff has the following concerns regarding the groundwater monitoring system in the Z-Area: (1) the locations and the number of groundwater monitoring wells in the Upper Aquifer Zone of the Upper Three Runs Aquifer (UTRA-UAZ) system are inadequate to detect saltstone disposal structure leaks or any release to the subsurface in a timely manner; (2) the locations and the number of groundwater monitoring wells are inadequate to follow the development of a plume within the Z-Area, and (3) groundwater wells to obtain background concentration values from the Lower Aquifer Zone of the UTRA (UTRA-LAZ) are not present.
>
> *The NRC expects to close MF 8.03 (Identification and Monitoring of Groundwater Plumes in the Z-Area) under POs §61.41 when the NRC staff determines that the groundwater monitoring system in the Z-Area can: (1) identify saltstone contaminants in the groundwater in the SDF at no more than 150 ft [46 m] from a disposal structure; and (2) track the movements of the groundwater plume (e.g., know the horizontal and vertical extent of the plume; be able to follow the approximate path of the peak of the plume)."*

Also, with the new MF 8.03 under PO §61.42, the NRC will add text for the new MF 8.03 in a new Section 4.8.3 under PO §61.42 as follows:

> "**4.8.3. MF 8.03: Identification and Monitoring of Groundwater Plumes in the Z-Area**
>
> The information in Section 4.8.3 (MF 8.03 – Identification and Monitoring of Groundwater Plumes in the Z-Area) for §61.42 is the same as the information in Section 3.8.3 (MF 8.03 – Identification and Monitoring of Groundwater Plumes in the Z-Area) for §61.41.
>
> *The NRC expects to close MF 8.03 (Identification and Monitoring of Groundwater Plumes in the Z-Area) under POs §61.42 when the NRC staff determines that the groundwater monitoring system in the Z-Area can: (1) identify saltstone contaminants in the groundwater in the SDF at no more than 150 ft [46 m] from a disposal structure; and (2) track the movements of the groundwater plume (e.g., know the horizontal and vertical extent of the plume; be able to follow the approximate path of the peak of the plume)."*

Additionally, based on the NRC monitoring of the SDF since 2007 and with the new MF 8.03 under PO §61.43, the NRC determined that it was appropriate to:

- renumber Sections 5.1, 5.1.1 and 5.1.2 in the 2013 NRC SDF Monitoring Plan to Sections 5.2, 5.2.1, and 5.2.2, respectively, with the new subtitles as follows:
    - 5.2. MA 11 – Radiation Protection Program
    - 5.2.1. MF 11.01: Dose to Individuals During Operations
    - 5.2.2. MF 11.02: Air Monitoring

- update the new Section 5.2 by: (1) updating the second paragraph in the Radiation Protection Program section (current Section 5.1); and (2) deleting the outdated third paragraph in the Radiation Protection Program section (current Section 5.1) because it no longer represents how the NRC will assess DOE compliance with PO §61.43. This means that Section 5.2 will now be as follows:

    "**5.2. MA 11 – Radiation Protection Program**

    The DOE has a radiation protection program in place to ensure the protection of individuals during operations. In the DOE 2006 Final WD, the DOE provided a crosswalk of the relevant DOE regulation or limit consistent with 10 CFR Part 20. In the NRC 2005 TER *(NRC, 2005)*, the NRC determined that, during operations, individuals were protected by the DOE regulations, which provided protection comparable to 10 CFR Part 20. Thus, the NRC concluded that there was reasonable assurance that the PO §61.43 could be met by the DOE.

    During onsite observation visits in October 2007 and March 2008, the NRC staff reviewed aspects of the DOE radiation protection program, including the air monitoring program. In the 2012 TER, the NRC determined that the results of the NRC's review in its 2005 TER (*NRC, 2005*), October 2007 and March 2008 onsite observations visits, and the NRC's review of the annual SRS Environmental Reports provided reasonable assurance that the PO §61.43 would be met during SDF operations. The NRC will continue to assess the DOE radiation protection program through future monitoring activities."

Furthermore, since there were no previous monitoring factors for MA 8 under PO §61.43 and now the three monitoring factors MF 8.01, MF 8.02, and MF 8.03 will be under MA 8 under PO §61.43, the NRC will add a new Section 5.1 (MA 8 – Environmental Monitoring) under PO §61.43 and will add text for Section 5.1 as follows:

"**5.1. MA 8 – Environmental Monitoring**

PO §61.43 states that, "Operations at the land disposal facility must be conducted in compliance with the standards for radiation protection set out in part 20 of this chapter …", which includes §20.1501. Licensee are to make surveys of areas, including the subsurface, such as the magnitude and extent of radiation levels, the concentrations or quantities of residual radioactivity, and the potential radiological hazards of the radiation levels and residual radioactivity detected. The DOE conducts an effluent monitoring and environmental surveillance program on an ongoing basis at the SRS. The data obtained

through that program are summarized in an annual environmental report. A variety of environmental media, including groundwater; surface water; rainwater; air; vegetation; deer and hog meat; and soil, are monitored through that program. In addition, the leak detectors beneath SDS 3A may provide important information regarding the early performance of the saltstone waste form and disposal structures. The NRC will continue to focus on monitoring the leak detection systems and groundwater monitoring in order to assess the DOE compliance with PO §61.43 through the end of the institutional control period."

Moreover, since the existing MF 8.01 is now being added under PO §61.43, the NRC will add a new Section 5.1.1 (MF 8.01: Leak Detection) under PO §61.43 and will add text for Section 5.1.1 as follows:

"**5.1.1. MF 8.01: Leak Detection**

The information in Section 5.1.1 (MF 8.01 – Leak Detection) for §61.43 is the same as the information in Section 3.8.1 (MF 8.01 – Leak Detection) for §61.41.

The NRC expects to close MF 8.01 (Leak Detection) under PO §61.43 no later than the end of the institutional control period."

In addition, since the existing MF 8.02 is now being added under PO §61.43, the NRC will add a new Section 5.1.2 (MF 8.02, Groundwater Monitoring) under PO §61.43 and will add text for Section 5.1.2 as follows:

"**5.1.2. MF 8.02: Groundwater Monitoring**

The information in Section 5.1.2 (MF 8.02 – Groundwater Monitoring) for §61.43 is the same as the information in Section 3.8.2 (MF 8.02 – Groundwater Monitoring) for §61.41.

The NRC expects to close MF 8.02 (Groundwater Monitoring) under PO §61.43 no later than the end of the institutional control period."

Also, since MF 8.03 is a new monitoring factor that will be under POs §61.41, §61.42, and §61.43, the NRC will add a new Section 5.1.3 (MF 8.03: Identification and Monitoring of Groundwater Plumes in the Z-Area) under PO §61.43 and will add text for Section 5.1.3 as follows:

"**5.1.3. MF 8.03: Identification and Monitoring of Groundwater Plumes in the Z-Area**

The information in Section 5.1.3 (MF 8.03 – Identification and Monitoring of Groundwater Plumes in the Z-Area) for §61.43 is the same as the information in the new Section 3.8.3 (MF 8.03 – Identification and Monitoring of Groundwater Plumes in the Z-Area) for §61.41.

The NRC expects to close MF 8.03 (Identification and Monitoring of Groundwater Plumes in the Z-Area) under POs §61.43 when whichever the following comes first: (1) when the institutional control period ends; or (2) when the NRC staff determines that the groundwater monitoring system in the Z-Area can: (a) identify saltstone contaminants in the groundwater in the SDF at no more than 150 ft [46 m] from a disposal structure; and (b) track the movements of the groundwater plume (e.g., know the horizontal and vertical extent of the plume; be able to follow the approximate path of the peak of the plume).”

Finally, with the changes to MA 8, the NRC will revise the text of the Technical Notes in Section A.8 to add Technical Notes for MF 8.03 as:

“A.8 Monitoring Area – Environmental Monitoring

Technical Notes for MF 8.03: Identification and Monitoring of Groundwater Plumes in the Z-Area

The NRC staff determined that the number of groundwater monitoring wells does not allow adequate monitoring of the plume caused by the release of contaminants from SDS 4. Based on a 2016 DOE document, the SDS 4 Plume began in 1997 when disposal into SDS 4 began. The number and location of groundwater monitoring wells are not sufficient to: (1) delineate the lateral and vertical boundaries of the current plume; (2) identify the current location of the peak of the plume; and (3) predict the future development of the plume. In addition, the NRC staff is interested in information identifying the source of the current groundwater plume and where the peak of the plume is currently and in what direction it is heading. That information would provide insights on how groundwater flows and radionuclides behave in the Z-Area and also allow a better evaluation of the potential safety concerns emanating from the plume.

In addition, the NRC staff determined that the number of groundwater monitoring wells in the UTRA-UAZ is not adequate. Although contaminants from saltstone would first appear in the UTRA-UAZ, groundwater monitoring wells located near SDS 2, SDS 3, SDS 4, and SDS 5 are only located in the UTRA-LAZ. Due to the findings in the DOE 2015 Z-Area groundwater characterization study (SRNS-RP-2015-00902) and given the hydrogeological influence of the Tan Clay Confinement Zone (TCCZ), groundwater monitoring wells near saltstone disposal structures should be located in both the UTRA-UAZ and the UTRA-LAZ.

The NRC staff is aware of the significance of the TCCZ on flow and transport of radioactive material and had stated in the Groundwater Monitoring TRR that the DOE should provide additional information about the extent, thickness, and topography of the TCCZ in the entire Z-Area, including information on the vertical gradient within the TCCZ within the Z-Area, if the UTRA-UAZ is partially saturated.

The NRC staff determined that the DOE 2015 Z-Area groundwater characterization study (SRNS-RP-2015-00902) demonstrated that the UTRA-UAZ and the UTRA-LAZ are separate hydrogeologic units and, as such, background monitoring wells are needed for both units. Background wells currently exist for the UTRA-UAZ. However, the

current number of groundwater monitoring wells to obtain background concentration values for the UTRA-LAZ is not adequate because no monitoring wells are currently obtaining background values for the UTRA-LAZ, although 11 of the 20 groundwater monitoring wells are located in the UTRA-LAZ. The UTRA-UAZ and the UTRA-LAZ should be treated as separate hydrogeologic units. As such, the DOE should: (1) create a water table map by using actual water table measurements from the UTRA-UAZ; and (2) create a separate potentiometric surface map by using potentiometric measurements from the UTRA-LAZ.

The NRC staff agrees with the DOE decision to use site-specific plumes to obtain parameter values. The DOE should simulate the past behavior of the SDS 4 plume and use the current position and concentrations of the plume as a calibration target. Successfully calibrating the concentration and position of the plume would provide additional confidence in the accuracy of the DOE current models."

Based on the May 22, 2018, TRR, *Technical Review: Update on Projected Technetium Release from Saltstone* (ADAMS Accession No. ML18095A122), the NRC will: (1) lower the priority of MF 5.02 (Chemical Reduction of Technetium by Saltstone) from high to medium under both POs §61.41 and §61.42; (2) lower the priority of MF 5.03 (Reducing Capacity of Saltstone) from medium to low under both POs §61.41 and §61.42; (3) close MF 5.05 (Potential for Short-Term Rinse-Release from Saltstone) under both POs §61.41 and §61.42; and (4) close MF 6.02 (Technetium Sorption in Disposal Structure Concrete) under both POs §61.41 and §61.42. As described in more detail in the TRR, the reasons for those changes are the following:

- lowering the priority of MF 5.02 because:
    - the research results that originally prompted the NRC staff to develop MF 5.02 have been reinterpreted by the NRC staff based on the recent DOE research results and the NRC staff concern based on the original DOE research results that the redox state of technetium (Tc) is sensitive to trace quantities of oxygen has been reduced;
    - data from experiments conducted by the DOE with cores of field-emplaced saltstone showed that both cores leached with deareated liquid and cores leached with liquid equilibrated with laboratory air released similar concentrations of Tc and those concentrations were consistent with releases from reduced Tc solid phases;
    - based on the current knowledge of the inventory, solubility, and sorption of Tc in saltstone, a barrier analysis by the NRC staff showed that Tc mobilization in reduced saltstone is expected to be as or more important to performance than Tc mobilization in oxidized saltstone unless there is significant saltstone oxidation prior to contact with water (e.g., from oxygen transport in unsaturated fractures) or significant channelization of flow in oxidized areas of saltstone; and
    - the bypass sensitivity analysis provided by the DOE in the Fiscal Year (FY) 2014 SDF Special Analysis Document bounds the effects of Tc re-reduction in a range

that is consistent with how the NRC staff decides that a monitoring factor is medium-priority.

- lowering the priority of MF 5.03 because:

    - sensitivity analyses provided by the DOE in the DOE response to the NRC Request for Additional Information (RAI) on the FY 2014 SDF Special Analysis Document (SRR-CWDA-2016-00004, Rev.1) indicated that projected releases of Tc-99 from the SDF are relatively insensitive to changes in the assumed reduction capacity of saltstone within the range of uncertainty of that parameter.

- closing MF 5.05 because:

    - the NRC staff re-evaluated the studies cited as a basis for creating MF 5.05 in the 2013 NRC SDF Monitoring Plan and determined that there were alternative explanations for the results that had appeared to show rinse-release;

    - an NRC staff calculation that scaled up the results of a Pacific Northwest National Laboratory experiment with intact simulated grouted waste samples similar to saltstone data showed that the projected peak fractional releases were small (i.e., less than 1 millirem/year), even if a rinse of the entire surface area of the saltstone in a disposal structure occurred in one year, which is not expected by the NRC staff because of the limited amount of water infiltration projected at early times; and

    - the DOE core samples of field-emplaced saltstone showed Tc releases consistent with the DOE conceptual model that Tc release from reduced saltstone is governed by the solubility of $TcO_2 \cdot 1.6\ H_2O$ or $TcO_2 \cdot 2\ H_2O$; and therefore, it does not appear that any additional volumetric release mechanisms, such as elevated releases from a “first flush” of the saltstone pore volume, releases from a “persistent oxidized fraction” of saltstone, or other unidentified volumetric release mechanism are needed to represent Tc release from field-emplaced saltstone.

- closing MF 6.02 because:

    - the DOE addressed the NRC staff concerns that underlined the development of MF 6.02 by using an appropriate K_d value, discontinuing the average-K_d approach, and modeling fast pathways in disposal structure floors in the SDF models that supported the FY 2014 SDF Special Analysis Document; and

    - in the FY 2013 SDF Special Analysis Document, the DOE demonstrated that the projected Tc transport through disposal structure concrete does not have a significant effect on projected dose in the 2013 Evaluation Case and, although that demonstration was not repeated in the FY 2014 SDF Special Analysis Document, the NRC staff expects those results to be applicable to the models that the DOE used to support the FY SDF 2014 Special Analysis Document

because of close similarities in the modeling approaches used and the relevant features of the 150-foot and 375-foot disposal structures.

Based on the June 29, 2018, TRR, *Technical Review: Summary of Activities Related to the Review of the U.S. Department of Energy Savannah River Site Fiscal Year 2013 and Fiscal Year 2014 Special Analysis Documents for the Saltstone Disposal Facility* (ADAMS Accession No. ML18158A172, the NRC will replace the three tables of NRC prioritization of monitoring factors (i.e., Table 1-6, Table 1-7, Table 1-8 in the 2013 NRC SDF Monitoring Plan) with two new monitoring factor prioritization tables (i.e., one table covering monitoring factors in MA 1 through MA 6, another table covering monitoring factors in MA 7 through MA 11) that reflect the current status of the SDF monitoring factors. Those tables are expected to change as the NRC, in coordination with the NDAA-Covered state of South Carolina, performs NDAA monitoring of DOE disposal actions at the SDF. Please see the current versions of those two new tables of NRC prioritization of monitoring factors below.

Table 1 – Current Status of Monitoring Factors in Monitoring Areas 1 through 6

MA 1 Inventory	MA 2 Infiltration and Erosion Control	MA 3 Waste Form Hydraulic Performance	MA 4 Waste Form Physical Degradation	MA 5 Waste Form Chemical Degradation	MA 6 Disposal Structure Performance
- 1.01 - Inventory in Disposal Structures §	- 2.01 - Hydraulic Performance of Closure Cap ‡	~~- 3.01 - Hydraulic Conductivity of Field-Emplaced Saltstone ±~~	- 4.01 - Waste Form Matrix Degradation ±	- 5.01 - Radionuclide Release from Field-Emplaced Saltstone ±	- 6.01 - Certain Risk-Significant K_d Values in Disposal Structure Concrete ‡
- 1.02 - Methods Used to Assess Inventory ‡	- 2.02 - Erosion Control of the SDF Engineered Surface Cover and Adjacent Area.†	~~- 3.02 - Variability of Field-Emplaced Saltstone ±~~	- 4.02 - Waste Form Macroscopic Fracturing ±	- 5.02 - Chemical Reduction of Tc by Saltstone ±	~~- 6.02 - Tc Sorption in Disposal Structure Concrete ±~~
		- 3.03 - Applicability of Laboratory Data to Field-Emplaced Saltstone ±		- 5.03 - Reducing Capacity of Saltstone †	- 6.03 - Performance of Disposal Structure Roofs and HDPE/GCL Layers ‡
		~~- 3.04 - Effect of Curing Temperature on Saltstone Hydraulic Properties ±~~		- 5.04 - Certain Risk-Significant K_d Values for Saltstone ‡	- 6.04 - Disposal Structure Concrete Fracturing ‡
				~~- 5.05 - Potential for Short-Term Rinse-Release from Saltstone ‡~~	- 6.05 - Integrity of Non-cementitious Materials ‡

§ Periodic Monitoring Factors (i.e., MFs related to data that NRC staff expects to review on a periodic basis)

† Low Priority

‡ Medium Priority

± High Priority

~~*Closed*~~

Table 2 – Current Status of Monitoring Factors in Monitoring Areas 7 through 11

MA 7 Subsurface Transport	MA 8 Environmental Monitoring	MA 9 Site Stability	MA 10 Performance Assessment Model Revisions	MA 11 Radiation Protection Program
- 7.01 - Certain Risk-Significant K_d Values in Site Sand and Clay ‡	- 8.01 - Leak Detection §	- 9.01 - Settlement Due to Increased Overburden ‡	- 10.01 - Implementation of Conceptual Models ±	- 11.01 - Dose to Individuals During Operations §
	- 8.02 - Groundwater Monitoring §	- 9.02 - Settlement Due to Dissolution of Calcareous Sediment ‡	- 10.02 - Defensibility of Conceptual Models ±	- 11.02 - Air Monitoring §
			- 10.03 - Diffusivity in Degraded Saltstone ‡	
	- 8.03 - Identification and Monitoring of Groundwater Plumes in the Z Area ±		- 10.04 - K_d Values for Saltstone †	
			- 10.05 - Moisture Characteristic Curves †	
			- 10.06 - K_d Values for Disposal Structure Concrete †	
			- 10.07 - Calculation of Build-Up in Biosphere Soil †	
			- 10.08 - Consumption Factors and Uncertainty Distributions for Transfer Factors ‡	
			- 10.09 - K_d Values for SRS Soil †	
			- 10.10 - Far-Field Model Calibration ‡	
			- 10.11 - Far-Field Model Source Loading Approach ‡	
			- 10.12 - Far-Field Model Dispersion ‡	
			- 10.13 - Impact of Calcareous Zones on Contaminant Flow and Transport †	
			- 10.14 - Scenario Development and Defensibility ‡	

§ Periodic Monitoring Factors (i.e., MFs related to data that NRC staff expects to review on a periodic basis)

† Low Priority

‡ Medium Priority

± High Priority