D H E C
PROMOTE PROTECT PROSPER
C. Earl Hunter, Commissioner
Promoting and protecting the health of the public and the environment.

January 23, 2007

CERTIFIED MAIL
7006 2150 0001 1592 9396

Mr. A. B. Gould
U.S. Department of Energy/Savannah River Site
Post Office Box A
Aiken, SC 29802

RE: Modified Permit for the Savannah River Site (SRS) Z-Area Saltstone Disposal Facility
Facility ID No. 025500-1603
Aiken County

Dear Mr. Gould:

Enclosed is a modified Industrial Solid Waste (ISW) landfill permit for the SRS Z-Area Saltstone Disposal Facility. The permit has been modified to accommodate changes in the salt waste disposal process, including the adoption of a revised groundwater monitoring plan, a revised saltstone sampling strategy, and certification of the saltstone disposal facility as a Class 3 ISW landfill.

Attached is a copy of Regulation 61-107.16, *Industrial Solid Waste Landfills*. Changes are expected in the State's solid waste landfill regulations, and upon implementation of the new regulation(s), this facility will be expected to comply with all applicable portions thereof.

This decision becomes the final agency decision fifteen (15) days from the date of the certified mailing of the decision unless a written request for final review is filed with the Department. This decision may be appealed by complying with the requirements described in the attached *Notice of Appeal Procedure*, provided as a courtesy by the Department.

If you have any questions about the permit, please feel free to contact John McCain of my staff at (803) 896-4067. All other questions should be directed to Dean Ray with the Region 5 – Aiken Environmental Quality Control (EQC) office at (803) 641-7670.

Sincerely,

Arthur D. Braswell, Director
Division of Mining and Solid Waste Management
Bureau of Land and Waste Management

ADB/JMM/jmm

Enclosures

cc: Van Keisler, P.G., Manager – SCDHEC, BLWM, Solid Waste Hydrogeology Section
Marty Lindler, Manager – SCDHEC, BLWM, Solid and Hazardous Waste Compliance Section
Barry Mullinax – SCDHEC, BOW, Wastewater Permitting Section
Dean Ray – SCDHEC, Region 5 EQC, Aiken
Shelly Sherritt, Federal Facilities Liaison – SCDHEC, EQC Administration
Bureau File # 999999

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Notice of Appeal Procedure

The following procedures are in effect beginning July 1, 2006, pursuant to 2006 Act No. 387:

1. This decision of the S.C. Department of Health and Environmental Control (Department) becomes the final agency decision 15 days after notice of the decision has been mailed to the applicant or respondent, unless a written request for final review is filed with the Department by the applicant, permittee, licensee, or affected person.

2. An applicant, permittee, licensee, or affected person who wishes to appeal this decision must file a written request for final review with the Clerk of the Board at the following address or by facsimile at 803-898-3323.

   Clerk of the Board
   SC DHEC
   2600 Bull Street
   Columbia, SC 29201

3. The request for final review should include the following:
   a. the grounds on which the Department's decision is challenged and the specific changes sought in the decision
   b. a statement of any significant issues or factors the Board should consider in deciding how to handle the matter
   c. a copy of the Department's decision or action under review

4. In order to be timely, a request for final review must be received by the Clerk of the Board within 15 days after notice of the decision has been mailed to the applicant or respondent. If the 15th day occurs on a weekend or State holiday, the request is due to be received by the Clerk of the Board on the next working day. The request for final review must be received by the Clerk of the Board by 5:00 p.m. on the date it is due.

5. If a timely request for final review is filed with the Clerk of the Board, the Clerk will provide additional information regarding procedures.

6. The Board of Health and Environmental Control has 60 days from the date of receipt of a request for final review to conduct a final review conference. The conference may be conducted by the Board, its designee, or a committee of three members of the Board appointed by the chair.

7. If a final review conference is not conducted within 60 days, the Department decision becomes the final agency decision, and a party may request a contested case hearing before the Administrative Law Court within 30 days after the deadline for the final review conference.

The above information is provided as a courtesy; parties are responsible for complying with all applicable legal requirements.

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

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

OFFICE OF ENVIRONMENTAL QUALITY CONTROL
BUREAU OF LAND AND WASTE MANAGEMENT
INDUSTRIAL SOLID WASTE PERMIT
FACILITY ID # 025500-1603

Date of Original Issuance: October 31, 1986

Date of Issuance of Modification: January 23, 2007 Effective Date of Modification: February 7, 2007

Permission is hereby granted to:

Name of Facility:	Savannah River Site Z-Area Saltstone Disposal Facility
Permittee:	U.S. DOE/Savannah River Site
Address:	Post Office Box A
	Aiken, SC 29802
Supervisor:	A. B. Gould
Phone:	(803) 952-9323

for the operation of an industrial waste disposal facility located in Z-Area at the U.S. DOE/Savannah River Site, Aiken County, South Carolina.

This permit is issued pursuant to Sections 44-96-10 *et seq.* (Supp. 2006), 25A S.C. Code Regs. 61-107.16 (Supp. 2006), and Section 3116 of the 2005 National Defense Authorization Act. The authority granted hereunder is subject to the requirements of the aforementioned laws and regulations and the attached conditions.

Arthur D. Braswell, Director

R. Craig Kennedy, P.G., Assistant Director

Division of Mining and Solid Waste Management
Bureau of Land and Waste Management

SRS Z-AREA SALTSTONE
INDUSTRIAL SOLID WASTE LANDFILL
FACILITY ID # 025500-1603

A. SPECIAL CONDITIONS

1. Subject to Condition A.2, DOE shall implement liquid waste disposition activities at the Savannah River Site (SRS) as specified in the Liquid Waste Disposition Processing Strategy, LWO-PIT-2006-00017, Rev. 0, dated September 21, 2006. Specifically, DOE shall:

   a. Treat and dispose of waste from Tank 41H in the following way:
      i. Waste treated solely by the Deliquification, Dissolution and Adjustment (DDA) Process shall be limited to that contained in Tank 41H as of June 9, 2003 (approximately 1.23 million gallons) and associated low level waste streams used to adjust salt to meet processing requirements [e.g., waste in Tank 23H, Defense Waste Processing Facility (DWPF) recycle waste, Effluent Treatment Project (ETP) waste, and H-Canyon low level waste]. (The waste contained in Tank 41H as of June 9, 2003 and the associated low level waste streams used to adjust salt for processing requirements contain a total of 1.0 – 1.7 million curies. This range results solely from the uncertainty in the salt waste characterization.)
      ii. DOE shall limit disposal in the Saltstone Disposal Facility (SDF) of waste treated solely by the DDA Process to that contained in Tank 41H as of June 9, 2003 (approximately 1.23 million gallons) and associated low level waste streams used to adjust salt to meet processing requirements [e.g., waste in Tank 23H, Defense Waste Processing Facility (DWPF) recycle waste, Effluent Treatment Project (ETP) waste, and H-Canyon low level waste]. (The waste contained in Tank 41H as of June 9, 2003 and the associated low level waste streams used to adjust salt for processing requirements contain a total of 1.0 – 1.7 million curies. This range results solely from the uncertainty in the salt waste characterization.)

   b.
      i. Treat and dispose of waste from Tank 48H through treatment and destruction of organic materials in the waste resident in Tank 48H. (Tank 48H is estimated to contain 235,000 gallons and 800,000 curies of waste.)
      ii. If Condition A.1.b.i. above is not feasible, use of the contingency approach to aggregate the waste from Tank 48H with other low-level waste will be subject to SCDHEC agreement under the mutual agreement provision of Condition A.2.

   c. Complete the following activities in support of the Actinide Removal Process (ARP) and Modular Caustic Side Solvent Extraction Unit (MCU) Process and continue operations to support the other elements of permit Condition A.1.

i. Initiate radiological operations (Integrated Runs) of the 241-96H Actinide Removal Process Monosodium Titanate (MST) Strike Facility by September 30, 2007.
ii. Initiate radiological operations (Integrated Runs) of the 512-S Actinide Removal Process Filter Facility by September 30, 2007.
iii. Initiate radiological operations (Integrated Runs) of the Modular Caustic Side Solvent Extraction Facility by September 30, 2007.

d. Complete the following activities in support of the Salt Waste Processing Facility:
   i. Begin operation of Waste Transfer Lines associated with the Salt Waste Processing facility by September 30, 2011
   ii. Begin operation of the Alpha Sorption Process by September 30, 2011
   iii. Begin operation of the Caustic Side Solvent Extraction Process by September 30, 2011
e. Complete the closure process already initiated for Tanks 18F and 19F.
f. Complete waste removal and closure for other tanks in accordance with the Federal Facility Agreement.
g. Continue operations of the Defense Waste Processing Facility in support of conditions A.1.a – A.1.f.

2. Changes to the requirements in Condition A.1 above shall be subject to mutual agreement by DOE and SCDHEC or as warranted based on Force Majeure. Changes subject to mutual agreement by DOE and SCDHEC may be prompted by emerging issues or the realization of technical risks which would be addressed through the Liquid Waste Disposition Processing Strategy revision process defined in the strategy document. "Force Majeure" shall mean any event arising from causes beyond the control of DOE that causes a delay in or prevents the performance of actions stipulated in Condition A.1 above, including, but not limited to:

   a. Acts of God; fire; war; insurrection; civil disturbance; or explosion;
   b. Restraint by court order;
   c. Adverse weather conditions that could not be reasonably anticipated;
   d. Any strike or other labor dispute, whether or not within DOE control;
   e. Insufficient availability of appropriated funds which have been diligently sought and timely efforts have been made to obtain such funds as part of the Federal budgetary process;
   f. Unanticipated breakage or accident to machinery, equipment or pipe lines despite reasonably diligent maintenance;
   g. Unusual delay in transportation;
   h. Restraint by order of public authority;
   i. Inability to obtain, at reasonable cost and after exercise of reasonable diligence and timely submittal of all applicable applications, all necessary authorizations, approvals, permits or licenses due to action or inaction of any governmental agency or authority other than DOE; and
   j. Delays caused by compliance with applicable statutes or regulations governing contracting, procurement or acquisition procedures, despite the exercise of reasonable diligence.

SCDHEC specifically reserves the right to determine which extensions based on f-j above are not entirely beyond the control of DOE. DOE reserves the right to contest SCDHEC's determination.

3. DOE shall provide opportunities for SCDHEC to remain aware of progress toward meeting Conditions A.1.a – A.1.g above by providing for briefings, reports and field observations as described below.

    a. DOE shall provide SCDHEC a quarterly or as needed written report on its progress in implementing the SRS Liquid Waste Disposition Processing Strategy and will keep SCDHEC fully informed of the status of all risks and issues. The objective of these reports will be to allow SCDHEC to evaluate progress and keep abreast of any issues that arise that have any potential to impact on satisfactory execution of Conditions A.1.a – A.1.g above. In the event of emerging issues or risks that may impact satisfactory execution of Conditions A.1.a – A.1.g above, SCDHEC will be informed at the earliest opportunity.
    b. DOE and the Salt Waste Processing Facility (SWPF) contractor shall provide SCDHEC with a quarterly or as needed written report of progress in SWPF design, construction, and/or start-up as appropriate. These reviews will include a review of technical, cost and schedule performance, as well as a discussion of the status of all documented risks and risk mitigation activities. The objective of these reports will be to allow SCDHEC to evaluate progress and keep abreast of any issues that arise that have any potential to impact on satisfactory execution of the SWPF project.
    c. At any time and upon request by SCDHEC, DOE will host SCDHEC for in-the-field walkdowns of liquid waste disposition activities. The purpose of these walkdowns will be to demonstrate continued timely progress on activities associated with Conditions A.1.a – A.1.g above.
    d. DOE shall submit quarterly reports of cumulative radionuclides and curies disposed in the Saltstone Disposal Facility beginning with initiation of the Deliquification, Dissolution and Adjustment process.

4. During development of DOE's Budget for submittal to the Office of Management and Budget (OMB) each year (which reflects funding priorities for the coming year), DOE shall brief SCDHEC on its content and implications for meeting Conditions A.1.a – A.1.g. These briefings shall be timed to occur as SRS submits its budget request to DOE Headquarters and as DOE submits its request to the OMB.

5. Consistent with Congressional limitations on future funding, DOE shall take all necessary steps and use its best efforts to obtain timely funding to meet Conditions A.1.a – A.1.g of this permit, including but not limited to the submission of timely budget requests.

6. Upon approval of the Annual Budget by Congress and allocation of budgeted funds to SRS, DOE shall brief SCDHEC on the budget allocation and, in

particular, on the adequacy of funding provided to SRS to support the SRS Liquid Waste Disposition Processing Strategy and to meet Conditions A.1.a – A.1.g above. It is recognized that DOE cannot obligate payment of funds in violation of the Anti-Deficiency Act, 31 USC Section 1341.

7. Since, prior to treatment, the wastes being managed in the Liquid Waste Tanks at the Savannah River Site contain hazardous constituents, DOE shall be subject to pay to SCDHEC the stipulated amount of $10,000 under the Solid Waste Policy and Management Act and $25,000 under the Hazardous Waste Management Act per occurrence for each day that DOE fails to meet any enumerated part of Conditions A.1.a – A.1.g, A.3, A.4, A.5 and A.6 in accordance with the schedules therein, taking into account any extension of time for compliance authorized in writing by SCDHEC per Condition A.2.

B. GENERAL CONDITIONS

1. The Permittee shall adhere to the following approved documents, unless permit conditions state otherwise:

    a. Site shall be constructed and operated in accordance with the permit application dated May 19, 1986, and revised July 30, 1986; the application for modification approved on December 12, 1995; and the design modifications described in the letters from WSRC to SCDHEC dated April 30, 2003 (SRS Document # CBU-ENG-2003-00103) and October 26, 2004 (SRS Document # CBU-ENG-2004-00258).
    b. The design equivalency package dated September 2002 (revised January 2003 and April 2003), and addendum for seismic analysis dated March 31, 2003.
    c. The Closure Plan dated May 11, 2005, as it applies specifically to Vaults 1 and 4 (SRS Document # WSP-SSF-2005-00022).
    d. The influent waste stream (i.e. saltstone) characterization as described in the letter from WSRC to SCDHEC dated July 8, 2005 (SRS Document # ESH-EPG-2005-00131), excerpt included within this permit as Attachment III.
    e. The influent waste stream (i.e. saltstone) sampling and analysis plan as described in the letter from WSRC to SCDHEC dated December 7, 2004 (SRS Document # ESH-EPG-2004-00318).

2. The site is restricted to the disposal of saltstone generated by the Z-Area Industrial Wastewater Treatment Facility (Saltstone Production Facility) as listed in Attachment II of this permit. It is the Permittee's responsibility to ensure that no other material is disposed of at the site. Prior to disposal of waste in existing Vault #1 and future vaults, the Permittee must first obtain approval from SCDHEC.

3. No hazardous waste as defined by the South Carolina Hazardous Waste Management Regulations shall be disposed at this facility at any time. If it is determined that a hazardous waste has been disposed into this facility, all disposal activities shall be stopped and this office notified immediately.

4. SCDHEC shall be notified immediately if the radioactive composition of the Z-Area Saltstone is anticipated to exceed the maximum expected levels identified in Attachment III.

5. The Permittee shall submit to SCDHEC on a quarterly basis a report containing the following information:

    a. Cumulative process volume of salt waste disposed to date;
    b. Process volume of saltstone grout disposed and vault location (i.e. provide cell identity) for the reporting period;
    c. Cumulative process volume of saltstone grout disposed to date;
    d. Remaining vault volume;
    e. Curies disposed and vault location for the reporting period;
    f. Cumulative inventory of curies disposed to date;
    g. Curies of highly radioactive radionuclides (as defined in *Section 3116 Determination for Salt Waste Disposal*) disposed and vault location for the reporting period; and
    h. Cumulative inventory of curies of highly radioactive radionuclides (as defined in *Section 3116 Determination for Salt Waste Disposal*) disposed to date.

    This report shall be submitted to SCDHEC within 30 days of the end of each calendar quarter.

6. The Permittee shall sample the saltstone grout per the methods and frequencies provided in the letter from WSRC to SCDHEC dated December 7, 2004 (SRS Document # ESH-EPG-2004-00318).

7. Future waste streams from the proposed MCU/ARP and SWPF facilities shall be sampled for characterization within 15 days from the start of disposal into the Saltstone Disposal Facility according to R.61-107.16 and an approved Sampling and Analysis Plan. The characterization report shall be submitted to SCDHEC within 180 days from the date of sampling. SCDHEC shall be notified in writing prior to the start of disposal of these waste streams into the Saltstone Disposal Facility and when the samples have been collected. The facility shall cease acceptance of any of these waste streams if the deadlines in this condition are not met, if the Permittee does not respond satisfactorily to any Department request for further information, or if the characterization report indicates that the waste does not meet the criteria for disposal in a Class III ISW landfill.

8. It is the Permittee's responsibility to adhere to all applicable Federal, State, and local zoning, land use and local ordinances and ensure all other necessary permits and/or approvals have been obtained prior to the receipt of any waste at the referenced facility.

9. It is the Permittee's responsibility to ensure that no other waste is disposed at this site. If the Permittee determines the need to dispose of any waste other than that identified in Condition B.2., prior written approval must be obtained from the

Bureau of Land and Waste Management. Each request shall be made in writing to the attention:

Director, Division of Mining and Solid Waste Management
Bureau of Land and Waste Management
SC Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

10. A minimum buffer zone of two (2) feet must be maintained between the seasonal high water table and/or bedrock and the lowest elevation of the disposal area. No material may be disposed into an area of standing water. If a disposal area should become inundated with water, all water must be removed before continuing disposal of waste.

11. The Permittee shall perform routine remote and visual inspections (at a minimum of each day of active grout pouring) in order to verify the condition of the Vault #4 exterior for those cells which are being used for the waste disposition activities described in Special Condition A.1. above. Should the visual inspections show weeping of liquid from cracks the Permittee will notify SCDHEC and evaluate the extent and take appropriate action in accordance with the Permittee's contingency plan (said plan must be submitted to SCDHEC within 30 days of the effective date of this permit, and upon plan revision thereafter). Records of inspections and responses must be kept at the Facility and must be made available to SCDHEC personnel upon request.

12. The Permittee will address the final disposition of the Vault #4 sheet drain systems and any residual liquid remaining in the vault in the implementation of the Final Closure Plan for the Saltstone Disposal Facility.

13. A sealant (Xytex or equivalent) is to be applied to the bottom two (2) feet of the exterior walls of any cell in Vault 4 prior to receiving waste as specified in Special Condition A.1. of this permit.

C. ENVIRONMENTAL MONITORING CONDITIONS

1. GROUNDWATER DETECTION MONITORING SYSTEM

a. The Permittee shall maintain a groundwater detection monitoring system consistent with the requirements of R. 61-107.16.52 Subpart E. The groundwater detection monitoring system shall consist of monitoring wells designated ZBG-1, ZBG-2, ZBG-3, ZBG-4, ZBG-5, ZBG-6, ZBG-7, ZBG-8 and any other monitoring wells specified by SCDHEC. Modifications to the current groundwater detection monitoring system shall be in accordance with the requirements of R. 61-107.16.52.

b. The Permittee shall evaluate analytical results in accordance with the approved statistical analysis plan, dated 1992, and the requirements of R.61-107.16.53 and any subsequent modifications required by SCDHEC.

c. The Permittee shall collect groundwater samples in accordance with the approved Groundwater Monitoring Plan, dated September 2006; Procedure Manual WSRC – 3Q5 *Hydrogeologic Data Collection*; the requirements of R.61-107.16.53; and any subsequent modifications required by SCDHEC.

d. Groundwater samples shall be analyzed by a laboratory certified in the State of South Carolina.

2. ASSESSMENT OF GROUNDWATER IMPACT

The Permittee shall perform any necessary assessment and corrective actions consistent with the requirements of R.61-107.16 Subpart E.

3. REPORTING

a. The Permittee shall analyze groundwater samples for the constituents outlined in Attachment I and submit these groundwater data on semi-annual and biennial bases in accordance with the following schedule:

Sampling Period	Results Due
January-June (Semi-annual)	July 15 (groundwater data)
July-December (Semi-annual)	January 15 (annual report)
Biennial Sampling	To be submitted every two years in the annual report

b. The Permittee shall submit an annual report signed by a qualified groundwater professional summarizing the semi-annual determinations of groundwater flow direction and rate as required by R. 61-107.16. The annual report shall summarize the semi-annual and biennial determinations of groundwater elevation, flow direction shown on a potentiometric map of each event, flow rate, analytical results, statistical analyses results, with a discussion of the results and any exceedances. A determination of the ability of the groundwater monitoring well network to effectively detect a release from the facility shall also be included. The annual report shall be submitted in accordance with the schedule presented in Condition C.3.a.

c. The established background values and the data collected by the implementation of the groundwater monitoring program as specified in this permit shall be submitted to the SCDHEC, Bureau of Land and Waste Management, Division of Hydrogeology, Solid Waste Hydrogeology Section and to the SCDHEC, Region 5 Environmental Quality Control (EQC) Office in Aiken, South Carolina.

4. ASSESSMENT OF ENVIRONMENTAL RELEASE AND CORRECTIVE ACTION

   a. Upon obtaining data indicating that there may be environmental and/or human health problems associated with the Saltstone disposal vaults the Permittee must immediately notify SCDHEC. Corrective action may be required by SCDHEC, as appropriate, to ensure protection of human health and the environment.

Attachment I

DETECTION MONITORING PARAMETERS

SEMIANNUAL:

pH (field & lab)
Specific Conductance (field)
Groundwater Levels in M.S.L. (tenth/feet)
Nitrate
Nitrite
Gross Alpha
Gross Beta
Gamma Emitters
I-129
Tritium

BIENNIAL:

Ra-226
Ra-228
Tc-99
Benzene
Toluene
Tetrachloroethylene
Trichloroethylene

Attachment II

LIST OF APPROVED WASTE STREAMS

Industrial Waste

Waste Generator	Waste
1. Z-Area Industrial Wastewater Treatment Facility (Saltstone Production Facility)	DDA waste stream (Tank # 41) MCU waste stream* SWPF waste stream* Solidfied saltstone from sampling and maintenance activities
2. Laboratories involved in analysis of saltstone samples	Solidfied saltstone from analysis activities

* Conditional upon satisfying General Condition B.7. above.

Attachment III

SALTSTONE CHEMICAL AND RADIOLOGICAL COMPOSITION TABLES

Table 1: Maximum Expected and Nominal Concentrations of Chemicals in the Saltstone[1]

Chemical Name [symbol]	Molecular Weight (g/mole)	Nominal Concentration Wt%[2]	Nominal Concentration (mg/L)	Maximum Expected Concentration (mg/L)
Major Constituents				
Water [H_2O]	18.02	25.7	4.37E+05	9.35E+05
Class F Flyash	---	25.0	4.25E+05	6.80E+05
Grade 100/120 Slag	---	25.0	4.25E+05	6.80E+05
Portland (II) Cement	---	3.0	5.10E+04	1.70E+05
Solvated Ions				
Aluminate [$Al(OH)_4^-$]	95.01	0.9	1.60E+04	4.23E+05
Carbonate [CO_3^{2-}]	60.01	0.8	1.28E+04	1.23E+05
Chloride [Cl^-]	35.45	<0.1	6.39E+02	8.25E+03
Fluoride [F^-]	19.00	<0.1	6.39E+02	4.21E+03
Hydroxide [OH^-]	17.01	1.9	3.20E+04	1.63E+05
Nitrate [NO_3^-]	62.01	8.7	1.47E+05	4.51E+05
Nitrite [NO_2^-]	46.01	1.9	3.20E+04	2.21E+05
Sulfate [SO_4^{2-}]	96.06	0.9	1.60E+04	5.87E+04
RCRA Hazardous Metals				
Arsenic [As]	74.92	<0.1	6.39E+01	6.39E+02
Barium [Ba]	137.33	<0.1	1.92E+00	6.39E+02
Cadmium [Cd]	112.41	<0.1	6.39E+00	3.20E+02
Chromium [Cr]	52.00	<0.1	2.56E+02	1.28E+03
Lead [Pb]	207.20	<0.1	2.56E+01	6.39E+02
Mercury [Hg]	200.59	<0.1	6.39E+01	2.08E+02
Selenium [Se]	78.96	<0.1	6.39E+01	3.20E+02
Silver [Ag]	107.87	<0.1	1.92E+00	6.39E+02
Other Metals				
Aluminum [Al]	26.98	0.9	1.60E+04	1.20E+05
Boron [B]	10.81	<0.1	6.39E+00	7.67E+02
Cobalt [Co]	58.93	<0.1	1.92E+00	7.67E+02
Copper [Cu]	63.55	<0.1	1.28E+00	7.67E+02
Iron [Fe]	55.85	<0.1	6.39E+02	5.11E+03
Lithium [Li]	6.94	<0.1	8.31E+01	7.67E+02
Manganese [Mn]	54.94	<0.1	1.92E+01	7.67E+02
Molybdenum [Mo]	95.94	<0.1	1.92E+00	7.67E+02
Nickel [Ni]	58.71	<0.1	6.39E+00	7.67E+02
Sodium [Na]	22.99	5.2	8.82E+04	2.91E+05
Strontium [Sr]	87.62	<0.1	6.39E+00	7.67E+02
Zinc [Zn]	65.39	<0.1	6.39E+01	8.31E+02
Organic Compounds				
Tetraphenylborate [$B(C_6H_5)_4^-$]	319.22	<0.1	1.28E+01	1.92E+01
Total Organic Carbon (minus formate and oxalate)	---	<0.1	3.20E+03	3.84E+03

Note 1: Values reported in this table represent the chemical composition of cured Saltstone.
Note 2: Weight percent calculated assuming a Saltstone density of 1.7E+06 mg/L.

Attachment III (Continued)

Table 2: Maximum Expected and Nominal Concentrations of Radionuclides in the Saltstone[1]

Radionuclide	Nominal Concentration nCi/g	Nominal Concentration (μCi/cm^3)	Maximum Expected Concentration nCi/g	Maximum Expected Concentration (μCi/cm^3)
H-3 NRC Class A limit = 40 μCi/cm^3	4.7	(0.008)	235	(0.4)
C-14 NRC Class A limit = 0.8 μCi/cm^3	0.05	(0.00009)	47	(0.08)
Co-60 NRC Class A limit = 700 μCi/cm^3	7.5	(0.013)	470	(0.8)
Ni-59	0.47	(0.0008)	47	(0.08)
Ni-63 NRC Class A limit = 3.5 μCi/cm^3	0.05	(0.00008)	47	(0.08)
Se-79	0.47	(0.0008)	47	(0.08)
Sr-90 NRC Class A limit = 0.04 μCi/cm^3 NRC Class C limit = 7,000 μCi/cm^3	1765	(3.0)	9400	(16)
Y-90	1765	(3.0)	9400	(16)
Tc-99 NRC Class A limit = 0.3 μCi/cm^3	1.2	(0.002)	176	(0.3)
Ru-106	0.47	(0.0008)	470	(0.8)
Rh-106	0.47	(0.0008)	470	(0.8)
Sb-125	11.3	(0.02)	940	(1.6)
Te-125m	11.3	(0.02)	940	(1.6)
I-129 NRC Class A limit = 0.008 μCi/cm^3	0.006	(0.00001)	0.47	(0.0008)
Cs-134	0.47	(0.0008)	470	(0.8)
Cs-137 NRC Class A limit = 1 μCi/cm^3 NRC Class C limit = 4,600 μCi/cm^3	15,882	(27.0)	23,500	(40)
Ba-137m	15,882	(27.0)	23,500	(40)
Ce-144	0.47	(0.0008)	47	(0.08)
Pr-144	0.47	(0.0008)	47	(0.08)
Pm-147	235	(0.4)	2350	(4.0)
Eu-154	56	(0.1)	940	(1.6)
Np-237 (α) ($t_{1/2}$ > 5 yr)	0.47	(0.0008)	94	(0.16)
Pu-238 (α) ($t_{1/2}$ > 5 yr)	47	(0.08)	94	(0.16)
Pu-239 (α) ($t_{1/2}$ > 5 yr)	1.0	(0.0017)	94	(0.16)
Pu-240 (α) ($t_{1/2}$ > 5 yr)	1.0	(0.0017)	94	(0.16)
Pu-241 NRC Class A limit = 350 nCi/g	19	(0.03)	350	(0.6)
Pu-242 (α) ($t_{1/2}$ > 5 yr)	0.47	(0.0008)	94	(0.16)
Am-241 (α) ($t_{1/2}$ > 5 yr)	6.77	(0.012)	94	(0.16)
Am-242m	15	(0.026)	188	(0.32)
Cm-242 (α)	15	(0.026)	188	(0.32)
Cm-244 (α) ($t_{1/2}$ > 5 yr)	6.77	(0.012)	94	(0.16)
Cm-245 (α) ($t_{1/2}$ > 5 yr)	0.47	(0.0008)	94	(0.16)
Total Transuranic Alpha Emitters with half-live ($t_{1/2}$) > 5 years NRC Class A limit = 10 nCi/g NRC Class C limit = 100 nCi/g	64	(0.11)	100[2]	(0.17)

Note 1: Values reported in this table represent the chemical composition of cured Saltstone.

Note 2: Not only must the waste be below the Maximum Expected Value for any individual radionuclide, but the combined total for all "Total Transuranic Alpha Emitters" must also meet the 100 nCi/g value.