DRC-2014-005989

STATE OF UTAH
DIVISION OF WATER QUALITY
UTAH WATER QUALITY BOARD
P.O. BOX 16690
SALT LAKE CITY, UTAH 84116-0690

Ground Water Quality Discharge Permit

In compliance with the provisions of the
Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 1953, as amended,

EnergySolutions, LLC
423 West 300 South, Suite 200
Salt Lake City, Utah 84101

hereafter referred to as the "Permittee", is granted a Ground Water Quality Discharge Permit for a Low-Level Radioactive Waste and 11e.(2) Waste Disposal Facility in accordance with conditions set forth herein. This facility currently consists of four separate operable units: a Low-Activity Radioactive Waste (LARW) cell, an 11e.(2) cell, a Mixed Waste cell, a and a Class A West cell, which are located at approximately latitude 40° 41' 18" North, longitude 113° 06' 54" West.

This modified Ground Water Quality Discharge Permit amends and supersedes all other Ground Water Discharge permits for this facility issued previously.

This modified permit shall become effective on October 9, 2014
This permit and the authorization to operate shall expire at midnight, October 9, 2019.

Rusty Lundberg
Director
Division of Radiation Control

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PART I. SPECIFIC PERMIT CONDITIONS

A. Ground Water Classification

Based on ground water quality data submitted by the permit applicant, ground water in the vicinity of the site is defined as Class IV, saline ground water.

B. Background Ground Water Quality

1. Background Quality from Existing Monitoring Wells

Based on ground water quality samples collected through December 2011, the upper boundary of background ground water quality is defined as the mean concentration plus the second standard deviation for any contaminant in any individual well as determined by the Director.

2. Determination and Revision of Background Ground Water Quality

After submittal of additional ground water quality data, background ground water quality values may be revised by the Director.

C. Ground Water Protection Levels

1. Ground Water Protection Levels, LARW cell, and Class A West cell

Based on the types of wastes to be disposed an evaluation of indicator isotopes and their mobility, and the Ground Water Quality Standards (GWQS); ground water protection levels (GWPLs) are defined as either the GWQS or the Background Concentration as listed in Tables 1A and 1B of this Permit. Ground water quality in any compliance monitoring well at the LARW cell, and Class A West cell shall comply with the GWPLs found in Table 1A, unless other GWPLs have been cited on a well and contaminant-specific basis in Table 1B, below.

2 Ground Water Protection Levels, 11e.(2) cell

Based on the types of waste to be disposed of an evaluation of indicator isotopes, their mobility, and the GWQS; GWPLs are defined as either the GWQS or the Background Concentration as listed in Tables 1C and 1D of this Permit. Ground water quality in any compliance monitoring well at the 11e.(2) cell shall comply with the GWPLs found in Table 1C, unless other GWPLs have been cited on a well and contaminant-specific basis in Table 1D, below.

3. Ground Water Protection Levels for Radiologic Parameters, Mixed Waste cell

Based on the type of waste to be disposed an evaluation of indicator isotopes, their mobility, and the GWQS; GWPLs are defined as either the GWQS or the Background Concentration as listed in Table 1E and 1F of this Permit. Ground water quality in any compliance monitoring well at the Mixed Waste cell shall comply with the GWPLs found in Table 1E, unless other GWPLs have been cited on a well and radiologic parameter-specific basis in Table 1F, below.

4 Revision of Ground Water Protection Levels

After submittal of additional ground water quality data, the ground water protection levels may be revised by the Director.

Table 1A: Ground Water Protection Levels (GWPL) – Universal to All LARW, Class A West, and Evaporation Pond Wells

Parameter	GWPL	Parameter	GWPL [1]
Field Parameters)		*Radiologic Parameters – Alpha Emitters [2] (pCi/l)*	
pH (units)	6.5 – 8.5	Neptunium-237 [3]	7
		Strontium-90	42
		Thorium-230	83
Dissolved Metals (mg/l)		Thorium-232	92
		Uranium-233	26
Uranium – total [1]	0.03	Uranium-234	26
		Uranium-235	27
		Uranium-236	27
		Uranium-238	26
		Radiologic Parameters – Beta/Gamma Emitters [4] (pCi/l)	
		Carbon-14	3,200
		Iodine-129 [5]	21
		Technetium-99	3,790
		Tritium	60,900
		Combined Radiologic Parameters (pCi/l)	
		Radium-226 + Radium-228 [6]	5

1. Total uranium GWQS of 0.03 mg/l from EPA final MCL in National Primary Drinking Water Regulations Final Rule for Radionuclides (December 7, 2000 Federal Register, Vol. 65, No. 236, p. 76708). Total uranium mass concentration will be calculated from isotopic uranium data.

2. All GWPL values for alpha-emitting radionuclides based on 1E-4 lifetime cancer mortality risk concentration levels provided in 1991 EPA draft MCL values for drinking water (July 18, 1991 Federal Register, Vol. 56, No. 138, pp. 33078-9, 33100-3, and Appendix C).
3. Neptunium-237, as determined by Total Radioactive Neptunium, EPA Method 907.0.
4. All GWPL values for beta/gamma emitting radionuclide parameters based on a 4 millirem/year equivalent dosage, as per 1991 EPA draft MCL values for drinking water (July 18, 1991 Federal Register, Vol. 56, No. 138, pp. 33078, 33103, and Appendix B).
5. Iodine-129, as determined by Total Radioactive Iodine, EPA Method 902.0.
6. GWQS of 5 pCi/l for combined radium-226 + radium-228 from final EPA MCL in National Primary Drinking Water Regulations Final Rule for Radionuclides (December 7, 2000 Federal Register, Vol. 65, No. 236, p. 76708).

Table 1B: Ground Water Protection Level Exceptions[1] – LARW, Class A West, and Evaporation Pond Wells

Well ID	Parameter	GWPL [2]	Well ID	Parameter	GWPL [2]
Inorganic/Metal Parameters (mg/l)					
GW-94	Uranium – total	0.035			
GW-95	Uranium – total	0.0320			
GW-100	Uranium – total	0.117	P3-95 SWC	Uranium – total	0.180
	Thallium	0.00422			
GW-24	Selenium	0.0634			
GW-103	Selenium	0.0580			
GW-137	Total Uranium	0.0371			
GW-138	Selenium	0.0695			
GW-141	Selenium	0.0705			
Radiologic Parameters (pCi/l)					
GW-20	Ra-226+Ra-228	5.49	GW-100	Uranium-234	68.6
				Uranium-238	43.0
GW-24	Ra-226+Ra-228	5.81			
			GW-105	Ra-226+Ra-228	6.03
GW-29	Ra-226+Ra-228	5.59			
			GW-58	Uranium-234	31.2
GW-56R	Ra-226+Ra-228	5.31			
			GW-36	Uranium-234	36.4
GW-64	Ra-226+Ra-228	5.63			
			GW-112	Ra-226+Ra-228	6.72
GW-77	Ra-226+Ra-228	5.46			
			P3-95 SWC	Uranium-234	48
GW-84	Ra-226+Ra-228	6.01		Uranium-238	79
				Ra-226+Ra-228	7.63
GW-85	Ra-226+Ra-228	7.77			
			GW-66R	Ra-226 + Ra-228	5.47
GW-86	Ra-226+Ra-228	6.19	GW-137	Ra-226+Ra228	5.54
			GW-138	Ra-226+Ra228	5.51
GW-88	Ra-226+Ra-228	5.04			
GW-89	Ra-226+Ra-228	5.04			
GW-90	Ra-226+Ra-228	5.85			
GW-91	Ra-226+Ra-228	5.92			
GW-93	Ra-226+Ra-228	5.54			

1. Table 1B exceptions constitute specific wells and parameters determined to have natural background ground water quality concentrations above GWQS, or as otherwise specified below. Background concentration is defined as the mean concentration plus the second standard deviation for any contaminant in any individual well. GW-100, GW-24, GW-103, GW-137, GW-138, and GW-141 are currently in an accelerated monitoring status for some dissolved metals, and will remain in the Permit until such time as the Director determines to remove them. This table may be blank if no GWPL exceptions are set for LARW, Class A, and Pond wells.

2. The number of significant figures used for all GWPLs determined by laboratory results previously reported by the Permittee.

Table 1C: Ground Water Protection Levels – Universal for all 11e.(2) Wells

Parameter	GWPL	Parameter	GWPL [1]
Field Parameters		*Organic Parameters – Specific to 11e.(2) (mg/l)*	
pH (units)	6.5 – 8.5		
Dissolved Metals (mg/l)			
Uranium – total[1]	0.03	Naphthalene [2]	0.02
		Diethyl Phthalate [3]	5.0
		2-Methylnaphthalene [4]	0.004
		Benzo(a)anthrancene	0.01
		Benzo(a)pyrene	0.01
		Benzo(k)fluoranthene	0.01
		Chlordane	0.002
		Chrysene	0.01
Combined Radiologic Parameters (pC/l)			
Radium-226+radium-228	5		
Radiologic Parameters (pC/l)			
Thorium-230	83		
Thorium-232	92		

1. Total uranium mass concentration will be calculated from isotopic uranium data.
2. Naphthalene GWQS derived from final EPA drinking water LHA (ibid.).
3. GWQS for diethyl phthalate based on draft EPA drinking water LHA (ibid.).
4. GWQS for 2-methylnaphthalene could not be located or determined, thanks to a lack of reference dosage information in the technical literature. Consequently, a detection monitoring approach has been taken and the GWPL set equal to the minimum achievable detection limit for the compound as a result of matrix interferences from high TDS content of Clive ground water. As health-based risk or other reference dosage information becomes available, the Director may modify the Permit and set a GWQS for 2-methlynaphthalene.

Table 1D: Ground Water Protection Level Exceptions [1] – 11e.(2) Wells

Well ID	Parameter	GWPL [2]	Well ID	Parameter	GWPL [2]
Inorganic/Metal Parameters (mg/l)					
GW-19A			GW-27	Uranium – total	0.039
			GW-36	Uranium – total	0.058
GW-25	Uranium – total	0.146	GW-58	Uranium – total	0.046
GW-26	Uranium – total	0.037			
	Thalliun	0.00255			

1. Table 1D exceptions constitute specific wells and parameters determined to have natural background ground water quality concentrations above GWQS, or as otherwise specified below. Background concentration is defined as the mean concentration plus the second standard deviation for any contaminant in any individual well. GW-26 is currently in an accelerated monitoring status for dissolved metal, Thallium and will remain in the Permit until such time as the Director determines to remove it. This table may be blank if no GWPL exceptions are set for 11e.(2) wells.
2. The number of significant figures used for all GWPLs determined by data evaluation and review of analytical method sensitivity.

Table 1E: Ground Water Protection Levels Universal to All Mixed Waste Wells

Parameter	GWPL	Parameter	GWPL
Dissolved Metals (mg/l)			
Uranium – total [1]	0.03		
Radiologic Parameters (pCi/l)			
Alpha Emitters [2]		*Beta/Gamma Emitters* [4]	
		Carbon-14	3,200
Neptunium-237 [3]	7	Iodine-129 [5]	21
Strontium-90	42	Technetium-99	3,790
Thorium-230	83	Tritium	60,900
Thorium-232	92		
Uranium-233	26		
Uranium-234	26	*Combined Radiologic Parameters (pCi/l)*	
Uranium-235	27	Radium-226 + Radium-228 [6]	5
Uranium-236	27		
Uranium-238	26		

1. Total uranium GWQS of 0.03 mg/l from EPA final MCL in National Primary Drinking Water Regulations Final Rule for Radionuclides (December 7, 2000 Federal Register, Vol. 65, No. 236, p. 76708). Total uranium mass concentration will be calculated from isotopic uranium data.
2. All GWPL values for alpha-emitting radionuclides based on 1E-4 lifetime cancer mortality risk concentration levels provided in 1991 EPA draft MCL values for drinking water (July 18, 1991 Federal Register, Vol. 56, No. 138, pp. 33078-9, 33100-3, and Appendix C).
3. Neptunium-237, as determined by Total Radioactive Neptunium, EPA Method 907.0.
4. All GWPL values for beta/gamma emitting radionuclide parameters based on a 4 millirem/year equivalent dosage, as per 1991 EPA draft MCL values for drinking water (July 18, 1991 Federal Register, Vol. 56, No. 138, pp. 33078, 33103, and Appendix B).
5. Iodine-129, as determined by Total Radioactive Iodine, EPA Method 902.0.
6. GWQS of 5 pCi/l for combined radium-226 + radium-228 from final EPA MCL in National Primary Drinking Water Regulations Final Rule for Radionuclides (December 7, 2000 Federal Register, Vol. 65, No.236,p.76708).

Table 1F: Ground Water Protection Level Exceptions [1] – Mixed Waste Wells

Well ID	Parameter	GWPL [2]	Well ID	Parameter	GWPL [2]

1. Table 1F exceptions constitute specific wells and parameters determined to have natural background ground water quality concentrations above GWQS, or as otherwise specified below. Background concentration is defined as the mean concentration plus the second standard deviation for any contaminant in any individual well. This table may be blank if no GWPL exceptions are set for Mixed Waste wells.
2. The number of significant figures used for all GWPLs determined by laboratory results previously reported by the Permittee.

D. Best Available Technology (BAT) Design Standard

1. Discharge Technology Performance Criteria

Best available technology for the facility will incorporate discharge technology based on the use of earthen materials in both the bottom liner and final cover. However, under no circumstances shall the facility cause ground water at the compliance monitoring wells (Part I.F.1) to exceed the ground water protection levels in Part I.C for the following minimum periods of time:

Disposal Cell	Contaminant Group	Performance Standard*
LARW, and Class A West	Heavy metals Inorganics Organics Mobile and non-mobile Radionuclides	200 years 200 years 200 years 500 years
11e.(2)	Heavy metals Inorganics Organics	200 years 200 years 200 years
Mixed Waste	Mobile and non-mobile	500 years

* Said performance standards shall be measured from the following initial startup dates: 1988 [LARW Cell], 1992 [Mixed Waste Cell], 1994 [11e.(2) Cells], and 2000 [Class A West Cell]

If after review of any environmental monitoring data collected at the facility, the Director determines that the ground water protection levels in Part I.C of the Permit may be exceeded at the compliance monitoring wells before completion of the above-minimum time periods, said potential shall constitute a violation of the Best Available Technology requirements of this Permit.

2. Authorized LARW Cell Engineering Design and Specifications

Final cover construction over the entire LARW cell was completed in October 2005. The engineering plans in Table 2A, below, are provided for reference to the cell engineering design.

Table 2A: Approved LARW Cell Engineering Design Drawings

Drawing	Last Revision Date	Subject
9407-2, Rev. E	July 28, 1998	LARW Disposal Cell – Cell Location and Excavation Limits
9407-4, Rev. V	February 1, 2005	LARW Disposal Cell – LARW Cell Closure
9407-4A, Rev. L	May 16, 2003	LARW Disposal Cell – LARW Cell Closure
9407-4B, Rev. J	May 16, 2003	LARW Disposal Cell – LARW Cell Closure
9407-5, Rev. I	February 4, 1999	LARW Disposal Cell – Site Layout
9407-6, Rev. E	July 28, 1998	LARW Disposal Cell – Site Layout
9407-7, Rev. A	June 27, 1994	Drainage Plan – Plan View
9407-7A, Rev. A	June 27, 1994	Drainage Plan – Details
9407-8, Rev. C	October 16, 1998	LARW Disposal Cell Wedge Expansion Cross Section
03046A-VO1 Rev. -	August 1, 2003	LARW Disposal Cell Closure – Plan and Details
03046A-VO2 Rev. 1	August 1, 2005	LARW Disposal Cell Closure – Sections and Details
03046A-VO3 Rev. -	August 1, 2003	LARW Disposal Cell – Radon Barrier Redesign Sections and Details
03046A-VO4 Rev. -	August 1, 2003	LARW Disposal Cell – Radon Barrier Redesign Sections and Details
03046A-VO5 Rev. -	August 1, 2003	LARW Disposal Cell – Radon Barrier Redesign Section and Details
L9	July 21, 1993	Fence Details

3. 11e.(2) Disposal Cell Design

The best available technology design standard shall be defined by, and construction of the 11e.(2) cell shall conform to the approved engineering design summarized in Table 2B, below, and the specifications listed in the currently approved LLRW and 11e.(2) CQA/QC Manual

Table 2B: Approved 11e.(2) Cell Engineering Design Drawings

Drawing	Last Revision Date	Subject
9420-4, Rev. F	March 4, 2002	11e.(2) Disposal Cell, Layout
9420-5, Rev. D	February 21, 2002	11e.(2) Disposal Cell, Cross Sections
9420-6, Rev. D	December 21, 2002	11e.(2) Disposal Cell, Ditch Cross Sections

Said 11e.(2) cell engineering design shall include, but is not limited to, the following elements:

a) Cover System – shall include the following materials, as described from the top down:

1) Top-slope Area – the top-slope shall consist of the following materials, from the top down:

i) Riprap Erosion Barrier – a 12-inch thick layer of rock armor material with a particle size ranging from 0.75 to 4.50 inches in diameter with an average diameter between 1.125 and 3.0 inches.

ii) Filter Zone – a single 12-inch thick layer of granular material with a particle size ranging from 0.3125 to 3.0 inches in diameter (coarse sand to fine cobble) and a minimum hydraulic conductivity of 42 cm/sec.

iii) Upper Radon Barrier – a layer of clay material at least 12 inches thick with a field hydraulic conductivity of 5.0E-8 cm/sec or less.

iv) Lower Radon Barrier – a layer of clay material at least 3 feet thick with a field hydraulic conductivity of 1.0E-6 cm/sec or less.

The minimum slope for top-slope areas shall be 2.1%.

2) Side-slope Area – the side-slope area shall consist of the following materials, from the top down:

A. Riprap Erosion Barrier – an 18-inch thick layer of rock armor material with a particle size ranging from 2.0 to 16.0 inches in diameter with an average diameter between 4.5 and 8.0 inches.

B. Filter Zone – a single 12-inch thick layer of granular material with a particle size ranging from 0.3125 to 3.0 inches in diameter (coarse sand to fine cobble) and a minimum hydraulic conductivity of 42 cm/sec.

C. Upper Radon Barrier – a layer of clay material at least 12 inches thick with a field hydraulic conductivity of 5.0E-8 cm/sec or less.

D. Lower Radon Barrier – a layer of clay material at least 2.5 feet thick with a field hydraulic conductivity of 1.0E-6 cm/sec or less.

The slope for side-slope areas shall be approximately 20%.

b) 11e.(2) Waste Layer – the 11e.(2) waste shall not exceed a final thickness of 47 feet above the bottom clay liner.

c) Bottom Clay Liner –The clay liner shall be a minimum of 2 feet thick, measured perpendicular to the slope, and have a field hydraulic conductivity of 1.0E-6 cm/sec or less.

4. Final Authorized Class A West Cell Engineering Design and Specifications

The best available technology design standard shall be defined by, and construction of the Class A West facility shall conform to the engineering plans summarized in Table 2C, below, and the specifications listed in the approved LLRW and 11e.(2) CQA/QC Manual:

For the Class A West cells, this engineering design includes, but is not limited to, the following elements:

a) Cover System – top-slope and side-slope areas shall include the following materials or as specified by the approved LLRW and 11e.(2) CQA/QC Manual, from the top down:

1) An 24-inch thick erosion barrier consisting of a 1.25-inch, or greater, average diameter rock material over the top-slope area, and a 4.5-inch, or greater average diameter rock material over the side-slope area, as specified on the approved engineering drawing number 10017-C04,

2) A 6-inch thick upper (Type A) filter zone consisting of sandy gravel material,

3) A 12-inch compacted thickness of sacrificial soil with a minimum Residual Moisture Content of 3.5 % (by weight). Such Residual Moisture Content shall be the asymptotic value measured by ASTM Methods D-3152 and D-2325 at soil tensions above 15 bars, If the fines content (#200 sieve) of the sacrificial soil is greater than or equal to 15%, residual moisture content testing is not required,

4) A 6-inch lower (Type B) filter zone on the top slope and 18-inch on the side slope, consisting of sandy gravel material with a minimum permeability of 3.5 cm/sec,

5) A 2-foot thick clay radon barrier measured perpendicular to the slope. Said radon barrier will be divided into two layers:

i. an upper layer, 1 foot thick, with a field hydraulic conductivity of 5.0E-8 cm/sec or less, and

ii. a lower layer, 1 foot thick with a field hydraulic conductivity of 1.0E-6 cm/sec or less.

Top slope of the embankment shall be between 2% and 4%, as specified on the approved engineering drawings, and side slopes shall be no steeper than approximately 5:1. The outside toe of the clay radon barrier/liner shall extend outward and beyond the outermost edge of the waste layer and shall merge with the bottom clay liner.

b) Waste Layer – the waste layer shall not exceed a final thickness of 74.3 feet above the top of the bottom clay liner.

c) Clay Bottom Liner – the bottom clay liner shall be constructed below natural grade. Final grade and elevation for the base of the clay liner will

comply with the approved engineering design (Table 2C). This liner will be constructed after excavation of the site to the total design depth, followed by placement of imported clay materials, which meet the approved specifications for material and construction. The clay liner shall be a minimum of 2 feet thick and constructed in accordance with the approved LLRW and 11e.(2) CQA/QC Manual, and have a field hydraulic conductivity of 1.0E-6 cm/sec or less.

Table 2C: Approved Class A West Cell Engineering Design Drawings

Drawing	Last Revision	Subject
Class A West Disposal Embankment		
10014-C01, Rev. 2	1/3/12	Class A West Embankment – Embankment Features and Controls
10014-C02, Rev. 2	1/3/12	Class A West Embankment – Cross Sections
10014-C03, Rev. 3	1/5/12	Class A West Embankment – Sections and Details 1 of 2
10014-C04, Rev.3	11/3/11	Class A West Embankment – Sections and Details 2 of 2
10014-C08 Rev 1	1/5/12	Class A West Embankment-Class A, Class A North & Class A West Map
10014-C09, Rev. 1	11/4/11	Class A West Embankment – CWF Cross Sections
10014-U01, Rev.24	1/5/12	Class A West Embankment – Embankment Location Map and Buffer Zone
10014-U02, Rev. 2	1/5/12	Class A West Embankment – Environmental Monitoring

The best available technology design standard shall be defined by, and construction of the Class A and Class A North facilities shall conform to the engineering plans summarized in Table 2C1, below, and the specifications listed in the approved LLRW and 11e.(2) Construction Quality Assurance/Quality Control (CQA/QC) Plan.

Table 2C1: Approved Class A and Class A North Cell Engineering Design Drawings

Drawing	Last Revision	Subject
Class A Disposal Embankment		
9821-01, Rev. .J	2/9/09	Class A Disposal Cell – Layout Plan and Cover Details
9821-02, Rev. D	2/9/09	Class A Disposal Cell – Cross Sections
9821-03, Rev. D	7/8/09	Class A Disposal Cell – Ditch Details
9821-04, Rev. A	7/25/00	Class A Disposal Cell – Updated Drainage System
Class A North Disposal Embankment		
04080-C01 Rev. 3	2/9/09	Class A North Disposal Cell – Layout Plan and Cover Details
04080-C02 Rev.4	7/8/09	Class A North Disposal Cell – Cross Sections
04080-C03 Rev. 3	7/8/09	Class A North Disposal Cell – Ditch Details
04080-C04, Rev 3	10/26/09	Class A North Embankment Proposed CWF & LC Area, Area & Haul Road Layout
08080-C06, Rev. 4	10/26/09	Class A North Embankment Proposed CWF Area, CWF Area Plan and Details
08080-C06A	10/29/09	Class A North Embankment Proposed CWF area, CWF Area Plan and Details

5. Disposal Cell Location Restrictions

The LARW, 11e.(2), and Class A West disposal cells shall be restricted to the following locations in Section 32, Township 1 South, Range 11 West, SLBM, as specified on the currently approved engineering plans, drawings, and the approximate Latitude and Longitude Coordinates provided in Table 3 below:

Table 3: Authorized LARW, 11e.(2), and Class A West Disposal Cell Locations

Disposal Cell	Edge of Waste Position	Coordinates	
		Latitude	Longitude
LARW	NW Corner	40° 41' 11.382" N	113° 06' 51.318" W
	SW Corner	40° 40' 52. 908" N	113° 06' 51. 203" W
	SE Corner	40° 40' 52. 960" N	113° 06' 36. 734" W
	NE Corner	40° 41' 11.434" N	113° 06' 36. 848" W
11e.(2)	NW Corner	40° 41' 54.846" N	113° 06' 55.564" W
	SW Corner	40° 40' 55. 055" N	113° 07' 24. 761" W
	SE Corner	40° 40' 54. 845" N	113° 06' 55. 564" W
	NE Corner	40° 41'12.380" N	113° 06' 55.346" W
Class A West	NW Corner	40° 41' 39.609" N	113° 07' 24.754
	SW Corner	40° 41' 14. 230" N	113° 07' 24. 702" W
	SE Corner	40° 41' 14.191" N	113° 06' 55.369" W
	NE Corner	40° 41' 39.569" N	113° 06' 55.463" W

This description does not include the Mixed Waste facility, located east of the LARW Cell, which is authorized under a separate State-issued Part B Permit from the Utah Division of Solid and Hazardous Waste.

6. Definition of Class A Waste

For purposes of this Permit, Class A Low-Level Radioactive Waste (LLRW) is defined under the Utah Radiation Control Rules, UAC R313-15-1009, or as Naturally Occurring and Accelerator Produced Radioactive Materials under the Utah Radiation Control Rules, UAC R313-12-3.

7. Reserved

8. Definition of PCB/Radioactive Waste

For purposes of this Permit, PCB/Radioactive Waste to be accepted for disposal shall meet the criteria specified in R315-315-7(2)(a) or (3)(b)(i-vi) of the rules designated for disposal in a municipal or non-municipal non-hazardous landfill.

9. Definition of 11e.(2) Waste

For purposes of this Permit, 11e.(2) Waste is defined as "... tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content", as defined in Section 11e.(2) of the U.S. Atomic Energy Act of 1954, as amended.

10. Collection Lysimeters for Future Construction at the Class A West Cell

Future construction of the clay bottom liner of the Class A West Cell shall include the installation of collection lysimeters below the bottom clay liner, in accordance with the CQA Plan for Collection Lysimeter Construction currently approved by the Director and included herein as Appendix C. The Permittee shall also comply with the currently approved Operation, Maintenance and Closure Plan for Collection Lysimeters, also included herein as Appendix C. Any change to the approved design, operation, or construction specifications in Appendix C requires prior Director approval. The Permittee shall notify the Director of construction of additional lysimeters in the Class A West Cell, at least one week prior to construction.

11. Future Modification of Disposal Cell Engineering Design or Specifications

Any change in the approved engineering design or specifications requires prior submittal and Director approval. Said changes must be submitted to the Director as a written request with revised engineering drawings, specifications, ground water flow and contaminant transport models, or any other documentation deemed necessary by the Director, at least 180 days prior to the effective date desired by the Permittee.

12. Final Authorized Engineering Design and Specifications for Waste and Wastewater Related Facilities

Best available technology design standards for related facilities at the disposal site shall be defined by, and construction conform to the engineering plans and specifications summarized in Table 5, below:

Table 5: Approved Engineering Design Drawings for Waste/Wastewater Related Facilities

Related Facility	Drawing No.	Last Revision	Subject / Title
Track 4 Railcar Decontamination Pad	T-100, Rev. 3	Aug. 14, 1999	Foundation
	T-101, Rev. 3	Aug. 16, 1999	Foundation Details
	9906-02, Rev. H	Feb 26, 2007	Wash Water System As-Built
	9906-02A, Rev. H	Feb. 26, 2007	Wash Water System As-Built
Class A West Containerized Waste Facility and Large Component Area Evaporation Basin	10014-C05, Rev. 6	May 10, 2013	Class A West Embankment – Active CWF & LC Areas: Area and Haul Road Layout
	10014-C06, Rev. 4	May 2, 2012	Class A West Embankment Large Component Area Plan & Details
	10014-C07, Rev. 4	January 10, 2014	Class A West Embankment CWF Area Plan & Details

Table 5: Approved Engineering Design Drawings for Waste/Wastewater Related Facilities

Related Facility	Drawing No.	Last Revision	Subject / Title
	10014-C07A, Rev. 1	May 10, 2013	Class A West Embankment Active CWF Area CWF Area Plan & Details
1995 Evaporation Pond	9718-1, Rev. C	March 13, 2007	Facility Layout
	9504-3, Rev. E	Oct. 28, 1999	Storage Pond
	9504-3A, Rev. A	Oct. 28, 1999	Leak Detection System Details, As-Built
	9504-4, Rev. E	Oct. 28, 1999	Facility Details
	9718-4, Rev. A	Aug. 17, 1998	Piping Diagrams and Pump Station
	08007-C01, Rev. 2	Oct. 19, 2011	1995 Evaporation Pond HDPE Repairs, New 60 mil HDPE Liner
1997 Evaporation Pond	9718-1, Rev. C	March 13, 2007	Facility Layout
	9718-2, Rev. D	Feb. 25, 1999	Evaporation and Storage Pond
	9718-2a, Rev. B	Feb. 25, 1999	Leak Detection System Details, As-Built
	9718-3, Rev. -	Sept. 17, 1997	Details
	9718-4, Rev. A	Aug. 17, 1998	Piping Diagrams and Pump Station
2000 Evaporation Pond	0009-00, Rev. A	July 10, 2000	Site Plan and Facility Layout
	0009-01, Rev. E	Feb. 22, 2008	Plan View
	0009-02, Rev. A	Jan. 29, 2001	Cross Sections
	0009-03, Rev. B	Jan. 29, 2001	Details
	0009-04, Rev. A	Jan. 29, 2001	Sump/Side Slope Cross-Section
	0009-05, Rev. A	Jan. 29, 2001	Leak Detection Details
	0009-06, Rev. A	Feb. 22, 2008	Water Transfer Piping Details
Mixed Waste Evaporation Pond	9802-1, Rev. D	Dec. 22, 1999	Facility Layout
	9802-2, Rev. F	Dec. 22, 1999	Water Storage Facility
	9802-3, Rev. D	Dec. 22, 1999	Facility Details As-Built
	9802-4, Rev. B	Dec. 4, 1998	Water Storage Facility
	9802-5, Rev. A	Dec. 22, 1999	Leak Detection System Details, As-Built
	9803-2, Rev. -	Feb. 11, 1998	Storage Pad Drain Line As-Built
Box Washing Facility	9621-1, Rev. C	July 20, 1998	Site Plan As-Built Drawing
	9621-2, Rev. B	July 20, 1998	Foundation Plan As-Built Drawing
	9621-3, Rev. B	July 20, 1998	Elevation Views As-Built Drawing
	9621-4, Rev. B	July 20, 1998	Elevation Views As-Built Drawing
	9621-5, Rev. B	July 20, 1998	Wall Detail As-Built Drawing
Intermodal Unloading Facility	9705-1, Rev. A	July 31, 1998	Plan View
	9705-2, Rev. B	Nov. 20, 1998	Cross Section Drawings
	9813-01, Rev. B	March 13, 2007	Layout
	9813-02, Rev. A	July 31, 1998	Layout (and Details)
	0701-G03, Rev. 1	June 8, 2007	Site Layout and Facility Legend
Rail Digging Facility	0107-01, Rev. B	April 25, 2002	Site Layout
	0107-02, Rev. B	April 19, 2002	Digging Track Plan
	0107-03, Rev. B	April 12, 2002	Track and Pad Details
	0107-04A, Rev. A	April 25, 2002	Excavator Ramp
Container Storage Pad	9514-1, Rev. C	March 13, 2007	Plan, Sections and Details

Table 5: Approved Engineering Design Drawings for Waste/Wastewater Related Facilities

Related Facility	Drawing No.	Last Revision	Subject / Title
East Truck Unloading Facility	05023-C104, Rev. 9	April 26, 2007	New Site Layout
	05023-C301, Rev. 4	Sept. 22, 2005	Cross Sections
	05023-C401, Rev. 5	Dec. 12, 2005	Truck Unloading Area Plan View
	05023-C402, Rev. 5	De. 12, 2005	Truck Unloading Dock Plan View
	05023-C403, Rev. 7	April 26, 2007	Enlarged Dock Plan View
	05023-C501, Rev. 5	Dec. 12, 2005	Truck Unloading Area Details
	05023-C502, Rev. 4	Dec. 12, 2005	Truck Dock Details
	05023-C503, Rev. 4	Dec. 12, 2005	Truck Dock Details
	05023-S1, Rev. 1	Sept. 22, 2005	Concrete Container Holding Pad Safety Protection
Shredder Facility	05056-F13, Rev._	09/30/06	Shredder Facility; Outfeed Pad Plan and Pad Details (As-Constructed)
	05056-F13A, Rev._	09/30/06	Shredder Facility; Shredder Pad Plan (As-Constructed)
	05056-F13B, Rev._	09/30/06	Shredder Facility; Shredder Pad Details (As-Constructed)
	05056-L1, Rev. 6	09/06	Shredder Facility; Site Layout Plan (As-Built)
	05056-L2, Rev. 2	Oct. 25, 2006	Shredder Facility; Containment Pad Water Management Layout Plan
	05056-C1, Rev. 10	Oct. 25, 2006	Shredding Facility; Operating Pad Layout (As-Built)
	05056-C6, Rev. 4	Oct. 25, 2006	Shredding Facility; Operating Pad – Sections and Details (As-Built)
	05056-C7, Rev 7	9/17/07	Shredding Facility; Catch Basin and Manhole Layouts (As-Built)
	05056-C8, Rev. 2	9/17/07	Shredding Facility; Drainage System Details
	05056-F1 thru -F14	Various	Details
Rotary Dump Facility	05006-C1, Rev. 3	Oct 6, 2006	Heater Building; Plan sheet
	05006-C2, Rev. 5	Oct 6, 2006	Rotary Dump Building; Plan Sheet
	05006-C3, Rev. 3	November 10, 2011	Wash Building; Plan Sheet
	05006-C5, Rev. 3	Oct 6, 2006	Rotary Dump Building; Section A-A
	05006-C6, Rev. 2	Oct 6, 2006	Rotary Dump Building; Section B-B
	05006-C12, Rev. 1	Oct 6, 2006	Heater Building; Drainage Details and Sections
	05006-C7, Rev. 1	Oct 6, 2006	Rotary Dump Building; Section C-C
	05006-C8, Rev. 1	Oct 6, 2006	Rail Car Wash Building; Section D-D
	05006-C9, Rev. 1	Oct 6, 2006	Wash Building, Drainage Plan Sheet
	05006-F1, Rev. 2	Oct 6, 2006	Rotary Dump Facility; Heater, Rotary and Wash Buildings foundation Plan and Details
	05006-F2, Rev. 3	Oct 6, 2006	Rotary Dump Facility; Heater Building Foundation Plan and Details
	05006-F10, Rev. 4	Oct 6, 2006	Rotary Dump Facility; Rotary Dumper Building Foundation Plan and Details
	05006-F13, Rev. 1	Oct 6, 2006	Rotary Dump Facility; Rotary Dumper Building Foundation Plan and Details
	05006-F25, Rev. 3	Oct 6, 2006	Rotary Dump Facility; Rotary Dumper Building Foundation Plan and Details
	05006-F26, Rev. 3	Oct 6, 2006	Rotary Dump Facility; Rotary Dumper Building Foundation Plan and Details

Table 5: Approved Engineering Design Drawings for Waste/Wastewater Related Facilities

Related Facility	Drawing No.	Last Revision	Subject / Title
	05006-F27, Rev. 3	Oct 6, 2006	Rotary Dump Facility; Rotary Dumper Building Foundation Plan and Details
	05006-P103, Rev. 1	Sept. 20, 2007	Rotary to NW Corner Pond
	05006-V1, Rev. 2	Dec 1, 2006	Rotary Dump Facility; Water Supply and Waste Water Flow Diagram
	05006-SL100. Rev. 6	Oct 6, 2006	Rotary Dump Building; Sediment Basin Liner Plan
	05006-SL101. Rev. 6	Oct 6, 2006	Rotary Dump Building; Sediment Basin Liner Sections
	05006-SL102. Rev. 6	Oct 6, 2006	Rotary Dump Building; Sediment Basin Liner Section
	05006-F5, Rev.	November 10, 2011	Wash Building Foundation Plan and Details
	05006-F9C, Rev. 3	6/11/08	Wash Building Foundation Details
Intermodal Container Wash Building	05008-G1, Rev. 4	May 19, 2006	Intermodal Container Wash Building; Map Layout and Index
	05008-C100, Rev. 2	May 19, 2006	Intermodal Container Wash Building; Facility Location Map
	05008-C101, Rev. 4	September 26, 2006	Intermodal Container Wash Building; Plan Sheet
	05008-C102, Rev. 2	May 19, 2006	Intermodal Container Wash Building; Section A-A
	05008-C103, Rev. 3	May 19, 2006	Intermodal Container Wash Building; Section B-B
	05008-SL100, Rev. 5	August 23, 2006	Intermodal Container Wash Building; Sediment Basin Liner Plan
	05008-SL101, Rev. 5	August 23, 2006	Intermodal Container Wash Building; Sediment Basin Liner Section A-A
	05008-SL102, Rev. 5	August 23, 2006	Intermodal Container Wash Building; Sediment Basin Liner Section B-B
Decontamination Access Control Building	05015-G001, Rev. 1	February 23, 2006	Access Control Building; Map Layout and Index
	05015-C100, Rev. 1	February 23, 2006	Access Control Building; Facilities Location Map
	05015-C101, Rev. 2	February 23, 2006	Access Control Building; Floor Plan
	05015-C102, Rev. 2	February 23, 2006	Access Control Building; Elevations
	05015-C103, Rev. 3	February 23, 2006	Access Control Building, Typical Sections
	05015-C104, Rev. 0	February 23, 2006	Access Control Building, Site Layout and Gray Water Tank and Pipe
	05015-S100, Rev. 2	June 30, 2006	Access Control Building, 1000 Gallon Gray Water Tank
	05015-P100, Rev. 1	February 23, 2006	Access Control Building, Plumbing Plan
	05015-P101, Rev. 1	February 23, 2006	Access Control Building, Plumbing Details
East Side Drainage and Gray Water System Modifications	06007-G1, Rev. 5	2/26/07	East Side Drainage, Map Layout and Index
	06007-G2, Rev. 4	2/26/07	East Side Drainage, Notes and Specifications
	06007-C1, Rev. 6	7/23/12	East Side Drainage, General Site Plan
	06007-C2, Rev. 6	7/23/12	East Side Drainage, Storm Water Drainage Plan
	06007-C3, Rev. 7	2/1/2010	East Side Drainage, Intermodal Container Wash Facility Gray Water System Plan
	06007-C4, Rev. 6	3/12/08	East Side Drainage, Decon Access Control

Table 5: Approved Engineering Design Drawings for Waste/Wastewater Related Facilities

Related Facility	Drawing No.	Last Revision	Subject / Title
			Gray Water System
	06007-D1, Rev. 7	6/10/09	East Side Drainage, Section and Details
	06007-P1, Rev. 4	2/26/07	East Side Drainage, Pipelines #4 and #5 Alignments and Profiles
	06007-SL1, Rev. 3	3/14/07	East Side Drainage, Storm Water Lift Sump Plan
	06007-SL2, Rev. 3	3/14/07	East Side Drainage, Storm Water Lift Sump Section
	06007-SL3, Rev. 3	3/14/07	East Side Drainage, Storm Water Lift Sump Section
	06007-V1, Rev. 4	7/23/12	East Side Drainage, Storm Water and Waste Flow Diagram
	06007-P2, Rev. 4	2/22/08	Pipeline 4A and 5A Extension into the 1997 Pond
Northwest Corner Evaporation Pond			
	06021-C1, Rev 5	October 19, 2011	Northwest Corner Pond; General Site Plan and Profile
	06021-C2, Rev. 8	October 19, 2011	Northwest Corner Pond; Pond Plan View
	06021-C3, Rev.5	08/29/07	Northwest Corner Pond; Sections and Details
	06021-C4, Rev. 3	08/29/07	Northwest Corner Pond; Sections and Details
	06021-C5, Rev. 3	08/29/07	Northwest Corner Pond; Sump Plan, Sections, and Details
	06021-C6, Rev. 3	08/29/07	Northwest Corner Pond; Leak Detection System Sections and Details
	06021-C7, Rev. 3	09-17-07	Northwest Corner Pond Leak Detection System Sections and Details
	06021-C10, Rev. 2	October 19, 2011	Northwest Corner Pond; Water Transfer Facility; Plan & Details
	06021-C11, Rev. 1	October 19, 2011	Northwest Corner Pond; Water Transfer Facility; Plan & Details
11e.(2) Disposal Cell Temporary Diversion Ditch	9420-7D, Rev. 1	10/15/09	Lift Section Details
DU Storage Building	088800, sheet 1of 10	8/19/10	Anchor Bolt Plan & Details
	088800, sheet 2 of 10	8/19/10	Anchor Bolt Reactions
	088800, sheet 3 of 10	8/19/10	Rigid Frame Elevation
	088800, sheet 4 of 10	8/23/10	Roof Framing
	088800, sheet 5 of 10	8/23/10	Sidewall Framing
	088800, sheet 6 of 10	8/23/10	Sidewall Framing
	088800, sheet 7 of 10	8/19/10	Endwall Framing
	088800, sheet 8 of 10	8/19/10	Endwall Framing
	088800, sheet 9 of 10	8/19/10	Detail drawings
	088800, sheet 10 of 10	8/19/10	Detail drawings
	10008 L01	8/12/10	Building Location Map
	10008 L02	8/12/10	Building Plan & Elevations
	J10197 E1	8/24/10	Electrical Plans and Schedules
	J10197 E2	8/24/10	Electrical installation Details, Wiring Diagrams and One-Line

Table 5: Approved Engineering Design Drawings for Waste/Wastewater Related Facilities

Related Facility	Drawing No.	Last Revision	Subject / Title
	J10197 M1	8/24/10	Mechanical Plans and Schedules
	J10197 M3	8/24/10	Specifications
	10008 C01, rev. 1	11/1/10	Site Ground Plan
	10335 S1	9/2/10	Foundation Plan and Footing Schedule
	10335 S2	9/2/10	Details
	10335 S3	9/2/10	Notes
Mixed Waste Surface Impoundment	Design Drawings are listed in Attachment II-11 of the State-issued Part B Permit		
LLRW Operations Building	07015-P101 (redlined)	Feb. 7, 2008	Plumbing Plan
	07015-V1, Rev. 2	March 1, 2010	Holding Tank Sections and Details

13. Authorized Mixed Waste Cell Engineering Design and Specifications

The best available technology standards for the Mixed Waste Cell shall be defined by those requirements mandated by the Utah Division of Solid and Hazardous Waste State-issued Part B Permit, issued April 4, 2003 (as amended), hereafter State-issued Part B Permit. All Mixed Waste Cell engineering design and specifications shall comply with State-issued Permit, Module V.

14. DU Storage Building

The best available technology standards for the depleted uranium (DU) Storage Building shall be defined as the complete physical control and containment of DU within the building. For the purposes of this Permit, waste materials stored in the DU Storage Building will be exclusively limited to Savannah River Site DU material (waste stream 9021-33). The DU waste, in the DU Storage Building, is not subject to the 365-day storage requirement applicable to all other containerized waste in Part I.E.10.a.6 of this Permit.

E. BAT Performance and Best Management Practice Standards

1. Waste Restrictions

a) Allowed Class A Low Level Radioactive Waste Volume - The volume of Class A Low-level Radioactive Waste disposed in the Class A West and Mixed Waste embankments as described in drawing 10014 C01, rev 2 for the Class A West embankment, and in drawing 11009 W02, rev 0 for the Mixed Waste embankment shall not exceed a total of 10.08 million cubic yards.

b) 11e.(2) Waste – any change affecting the non-radiologic content of the waste to be disposed of in the 11e.(2) Cell, including additional types or concentrations of non-radiologic contaminants, above and beyond those defined in Table 6 below, shall require prior approval from the Director, after submittal of satisfactory technical justification to demonstrate that the requirements of Part I.D.1 of this Permit will be met.

c) Solid Waste Landfill Equivalency – PCB/Radioactive Waste shall only be disposed of as designated in the State-issued Part B Permit.

d) Mixed Waste and Class A West Cells – waste to be disposed of in the Mixed Waste and Class A West Cells shall be limited to wastes which meet the definition of Class A Low-Level Radioactive Waste (LLRW) under the Utah Radiation Control Rules, UAC R313-15-1009, or are defined as Naturally Occurring and Accelerator Produced Radioactive Materials under the Utah Radiation Control Rules, UAC R313-

2. Prohibited Wastes

a) Hazardous Waste – the disposal of hazardous waste as defined by the Utah Hazardous Waste Management Rules (UAC R315-2-3) is prohibited in the Class A West and 11e.(2) Disposal Cells. LLRW or 11e.(2) waste that exceeds the regulatory concentration levels of the Toxic Characteristic Leaching Procedure (TCLP) as defined in 40 CFR Part 261 Subpart C, Table 1 is prohibited, unless specifically authorized in Table 6 below, or with prior written approval from the Director. Waste samples shall be collected in accordance with the currently approved Waste Characterization Plan (Radioactive Material License, Condition 58); the 11e.(2) Byproduct Material License (UT 2300478) Renewal Application, Revision 5, and analyzed for those exclusive parameters listed in Table 6, below; or for PCB/Radioactive Waste, the currently approved State-issued Part B Permit.

Table 6: Maximum Allowable Concentrations in 11e.(2) Waste

Parameter	TCLP Leachate Regulatory Limit (mg/l)	Total Waste Concentration (mg/kg)
Volatile Organic Compounds		
Acetone	n/a	10.0
2-Butanone (methyl ethyl ketone)	200.0	10.0
Carbon Disulfide	n/a	10.0
Chloroform	6.0	10.0
1,1-Dichloroethane	0.5	10.0
Diethyl Phthalate	n/a	80.0
Methylene Chloride	n/a	70.0
2-Methylnaphthalene	n/a	80.0
Naphthalene	n/a	80.0
1,1,2-Trichloroethane	n/a	7.27
Vinyl Chloride	0.2	0.66

b) Liquid Waste – acceptance of liquids and liquid content of all wastes shall be in accordance with the Radioactive Materials License.

c) Chelating Agents – the disposal of any waste containing chelating agents shall be limited to the Mixed Waste Cell and is prohibited in the Class A West, and 11e.(2) Disposal Cells. The disposal of any waste in the Mixed Waste Cell containing chelating agents in excess of 22% by weight is prohibited.

3. Failure to Construct as per Approval

Failure to construct any portion of the facility in compliance with the approved engineering design and specifications or in a manner inconsistent with the LLRW and 11e.(2) CQA/QC Plan (Radioactive Materials License UT 2300249, Condition 44) shall be cause for the Director to require excavation of the materials and remedial construction, retrofit of the embankment or any other mitigative action to prevent the release of pollutants to soil or ground water.

4. Unsaturated Soil Moisture Content Monitoring

The Permittee shall conduct soil moisture content monitoring to verify performance of the engineered containment systems for the LARW, and 11e.(2), Disposal Cells in accordance with the requirements of Part 1.H.17 of this Permit and Radioactive Material License Condition 28. This monitoring shall consist of instrumentation, as approved by the Director, installed in the Cover Test Cell.

The Permittee shall maintain and replace all soil moisture instrumentation as directed by the Director.

The Director reserves the right to require similar soil moisture content monitoring in the radon barrier at the 11e.(2) Cell. The Permittee shall install and make operational any soil moisture instrumentation in compliance with the schedule to be determined by the Director.

5. Reserved

6. Open Cell Time Limitation

For each open portion of the Class A West disposal cell, final cover construction shall be completed in accordance with the approved engineering plans and specifications (Part I.D. 4) and the approved CQA/QC Manual no later than 18 years after the date of initial placement of waste in that portion of the open cell.

Any modification of this 18 -year limitation shall require prior Director approval with area-specific plans, schedule, and the submittal of justification. Said justification must be submitted to the Director at least 180 days prior to the expiration date of the respective 18-year open cell time limit. Failure to secure Director approval prior to expiration of the 18 -year deadline shall not be cause for the Permittee to postpone construction of the cover of the Class A West cell in accordance with the currently approved engineering design and specifications in Part I.D. 4 of this Permit.

The Permittee was given an extension (to 25 years) to the Open Cell Time Limitation for parts of, or all of lift areas P01, N01, N04, N06, N11, N12, N14, N15, N17, N20, N23, and M10 as defined in the Permittee's Extension request, Part I.E.6, Open Cell Time Limitation letter dated October 8, 2013. The extension is conditioned on annual precipitation of 9.32 inches or above for two consecutive years causing a reevaluation of the extension..

7. General Stormwater Management Requirements

The Permittee shall contain all stormwater runoff at the Class A West and 11e.(2) Disposal Cells which has contacted the waste (i.e., contact stormwater). The Permittee shall not begin pumpage or removal of stormwater that falls inside the restricted area that has not contacted the waste (i.e., non-contact stormwater) before beginning removal of contact stormwater, and:

a) Within 24 hours of discovery of an accumulation of contact stormwater, the Permittee shall immediately begin pumpage and removal of said stormwater in accordance with the stormwater priority schedule listed in Appendix J, BAT Performance Monitoring Plan.

b) The Permittee shall pump and remove contact stormwater in an uninterrupted manner until it is completely removed from said location. The Permittee may utilize equipment, which cannot be used at higher priority locations, at lower priority locations in accordance with Appendix J of this Permit, BAT Performance Monitoring Plan. All contact stormwater accumulated and pumped shall be disposed of in the evaporation ponds. However, contact stormwater from the Class A West and 11e.(2) disposal cells may be used for minimal engineering and dust control purposes on the waste in the Class A West disposal cell and for dust suppression activities at the Shredder and Rotary Dump Facilities.

c) Class A West Containerized Waste Facility and Large Component Evaporation Basin – precipitation that falls on the Class A West Containerized Waste Facility and Large Component Area shall be allowed to accumulate in an engineered evaporation basin constructed in accordance with the following conditions:

1) The evaporation basin shall be constructed in accordance with the design specifications in engineering drawings listed in Table 5 of this Permit and the requirements of the currently approved LLRW and 11e.(2) CQA/QC Manual (Work Element – General Requirements, specification "Runoff Control During Project" and Work Element – "Clay Liner Placement").

2) Fluid head in the evaporation basin shall not exceed a 1-foot level above the lowest point of the evaporation basin protective cover.

3) The Permittee shall ensure that the physical integrity of the clay liner is not compromised by desiccation or freeze/thaw cycles by implementing quality assurance/quality control requirements in the currently approved LLRW and 11e.(2) CQA/QC Manual (Work Element - Clay Liner Placement, specification "Liner Drying Prevention"). This requirement is met by completing an annual survey of the evaporation basin's surface to ensure that at least six inches of compacted clay is present above the top of the clay liner. This survey is to be completed no later than May 1 of each year.

8. Reserved

9. 11e.(2) Waste Storage

Storage of 11e.(2) waste at the facility shall be explicitly limited to areas within the confines of the 11e.(2) Disposal Cell having completed and approved clay liner.

10. LLRW and 11e.(2) Waste Management Performance Requirements

The Permittee shall operate and maintain all facilities in compliance with the following performance requirements:

a) Contaminant Containment and Spill Prevention – the Permittee shall manage all site operations to:

1) Prevent contact of wastes with the ground surface.

2) Prevent spills of wastes or liquids contained therein from any contact with the ground surface or ground water.

3) Prevent contact of surface water or stormwater run-on with the waste.

4) Control any runoff, which may have contacted the waste from subsequent contact with the ground surface or ground water by means of approved engineering containment. Any accumulations of such

contact runoff or leachates shall be removed and managed in accordance with Part I.E.7 of this Permit.

5) Prevent wind dispersal of wastes.

6) Minimize the time any waste is held in temporary storage without disposal in a disposal cell or embankment. In no case shall any waste be in temporary storage beyond 365 days after the date of waste entry into the controlled area. Once the waste is removed from temporary storage and is in a disposal cell, the 365 day restriction is no longer relevant.

7) Identify all wastes held in storage by use of clear and legible placards, signs, or labels which identify the generator, waste stream number and dates that said waste or waste container both entered the controlled area and was placed into temporary storage.

8) Maintain all waste containers in a closed, strong tight and watertight condition.

9) All containers in storage shall be inspected as required in the currently approved Appendix J of this Permit.

10) Waste in bags shall be managed as bulk waste.

b) Containerized Waste Storage Pad and Other Waste Storage Areas – the Permittee shall operate and maintain waste containers, the asphalt surface of the Containerized Waste Storage Pad, and other storage surfaces used as a waste storage area by completing the following actions, as applicable:

1) Repair or otherwise seal and render impermeable any and all cracks, ruptures, damage, or porous areas found in the asphalt surface or other storage surfaces in accordance with the currently approved Appendix K of this Permit.

2) Inspecting all containers in storage in accordance with the currently approved Appendix J of this Permit.

3) Prevent contact of waste with precipitation or stormwater by maintaining all containers in a closed and watertight condition.

4) Manage leaking containers in accordance with the Waste Characterization Plan and Radioactive Material License.

5) Adequately operate and maintain any stormwater collection sump, pump, and piping to ensure containment and conveyance of stormwaters to the approved evaporation ponds.

c) Prohibition and Restrictions for Dry Active Waste (DAW) Storage – DAW is defined as contaminated materials without soil-like texture or characteristics that has a dry weight density of 70 pounds per cubic foot or less (e.g., contaminated paper, plastic, personal protective equipment, cloth, or other similar soft-type debris). Open-air storage of DAW is prohibited at the

facility. All temporary storage of DAW shall be conducted either inside buildings or in watertight containers at the Containerized Waste Storage Pad or other approved storage areas. DAW located within a disposal cell must be covered at the end of the working day with soil or soil-like waste material to prevent wind dispersal.

d) Intermodal Unloading Facility – the Permittee shall operate and maintain the LLRW Intermodal Unloading Facility to provide free draining conditions to the stormwater drainage pipeline system.

e) Management of Containerized Waste – the following locations are approved for management and storage of Class A waste received in containers (does NOT include waste received for disposal in the Containerized Waste Facility):

- Containerized Waste Storage Pad
- Intermodal Unloading Facility
- East Truck Unloading Facility storage pads
- Decontamination Facilities (Box Wash, Track #4 Rail Car Wash Facility, Intermodal Container Wash Building)
- Class A West Disposal Cell
- Shredder Facility
- Rotary Dump Facility

f) Bulk Waste Management – the following locations are approved for management and storage of bulk Class A waste:

- Intermodal Unloading Facility
- Decontamination Facilities (Box Wash, Track #4 Rail Car Wash facility, Intermodal Container Wash Building)
- Class A West Disposal Cell
- Rail Digging Facility (bulk waste transfer only, waste storage prohibited)
- Shredder Facility
- Rotary Dump Facility

11. <u>LARW, and Class A West Cell Collection Lysimeters: Operation, Maintenance and Inspection</u>

The Permittee shall operate and maintain all collection lysimeters in compliance with the currently approved Appendix C of this Permit. Said operation shall include a video inspection of each collection lysimeter constructed at the LARW, and Class A West Cells within one year following the completion of liner over the collection lysimeter pan. Afterwards video inspections will be conducted on an every other year basis. Each video inspection shall log the entire length of the drainage pipe to ensure proper operation and free drainage of each collection

lysimeter. Failure to satisfactorily complete a video log inspection or a determination that free draining conditions no longer exist in a collection lysimeter shall constitute failure to maintain best available technology pursuant to Part I.G.4 of this Permit. Such failures shall be reported to the Director in accordance with the requirements of Part I.H.8 of this Permit.

12. Stormwater Drainage Works Performance Criteria

All stormwater drainage works constructed and operated at the LARW, Class A West, and 11e.(2) facilities shall be performed in accordance with the following criteria:

a) Seepage Control to Prevent Ground Water Mounding – all drainage works at the facility shall be constructed of either low-permeability clay liner materials or of an impermeable man-made conveyance in order to control and prevent seepage that alter local natural ground water hydraulic gradients or velocities. This infiltration control shall address seepage during periods of storm water storage in the drainage system.

b) Free Drainage – all stormwater drainage works shall be free draining and under gravity conditions shall convey stormwater from the contributing facilities to an off-site location, except as follows:

1. The stormwater culvert at the southeast margin of the 11e.(2) cell, as found on the Permittee's engineering drawing 9420-7D as listed in Table 5 of this Permit. Said construction includes an engineered catch basin and lift station.

c) Temporary Stormwater Drainage Works – plans and specifications for any temporary stormwater drainage works shall be submitted for Director review and approval prior to installation. As-Built reports shall be submitted for Director approval within 30 days following installation. Prior to site closure, the Permittee shall remove all temporary stormwater drainage works as part of the site Decontamination and Decommissioning Plan required under Radioactive Material License, Condition 74.

13. Reserved

14. Wastewater Management Requirements

The Permittee shall operate and maintain all wastewater storage, treatment, and disposal facilities in accordance with Best Available Technology requirements approved by the Director, as follows:

a) 1995, 1997, 2000, Mixed Waste, and Northwest Corner Evaporation Ponds – the Permittee shall operate and maintain the evaporation ponds to prevent release of fluids to subsurface soils or groundwater, in accordance with the following requirements:

1) Leak Detection System Pumping and Monitoring Equipment Continuous Operation – the Permittee shall provide continuous operation of the leak detection system pumping and monitoring

equipment, including, but not limited to, the submersible pump, pump controller, head/pressure transducer, and flow meter equipment in accordance with the currently approved Appendix J of this Permit.

2) Maximum Allowable Daily Leakage Volumes – the Permittee shall, in accordance with the currently approved Appendix J of this Permit, measure the volume of all fluids pumped from the respective leak detection systems of the evaporation ponds in accordance with the currently approved Appendix J of this Permit. Under no circumstance shall the leak detection system flow volume, as determined pursuant to Part I.F.13.a.3, exceed the following limits:

i. 1995 Evaporation Pond:	162 gallons/day
ii. 1997 Evaporation Pond:	171 gallons/day
iii. Mixed Waste Evaporation Pond:	171 gallons/day
iv. 2000 Evaporation Pond:	382 gallons/day
v. Northwest Corner Evaporation Pond:	326 gallons/day

Leak detection system flow volumes in excess of these limits shall constitute failure of Best Available Technology and a violation of this Permit.

3) Maximum Allowable Head – the Permittee shall measure fluid head in the respective leak detection sumps of the evaporation ponds by use of pressure transducer equipment in accordance with the currently approved Appendix J of this Permit. Under no circumstance shall fluid head in the leak detection system sump exceed a 1-foot level above the lowest point in the lower flexible membrane liner. The occurrence of leak detection system fluid levels above this 1-foot limit shall constitute failure of Best Available Technology and a violation of this Permit.

4) 2-foot Minimum Vertical Freeboard Criteria – the Permittee shall operate and maintain at least 24 inches of vertical freeboard in the evaporation ponds to ensure total containment of fluids in accordance with the currently approved Appendix J of this Permit. If at any time the Permittee operates the pond with less than 24 inches of vertical freeboard, such operation shall constitute failure of Best Available Technology and a violation of this Permit.

5) Ancillary equipment intended to facilitate evaporation shall be constructed and operated in accordance with the currently approved Appendices J and K of this Permit.

b) Decontamination Facilities - the Permittee shall operate and maintain decontamination facilities in accordance with the currently approved BAT Performance Monitoring Plan and BAT Contingency Plan in Appendices J and K, respectively of this Permit.

c) Clive facility - All contact water (stormwater or operational) shall not leave the restricted area within Section 32.

d) Mixed Waste Surface Impoundment - Pursuant to Part I.E.16 of this Permit the Permittee shall operate and maintain the Mixed Waste Surface Impoundment in accordance with the State-issued Part B Permit.

15. Filter Construction Settlement Performance Standards

The cover system filter shall meet requirements in the CQA/QC manual. Any filter construction undertaken that does not meet the requirements in the CQA/QC manual shall constitute a violation of this Permit.

16. Mixed Waste Facility BAT Performance and Best Management Practice Standards

Performance and best management practice standards for waste storage, and stormwater and wastewater storage, treatment, and disposal at the Mixed Waste Facility shall be defined by requirements mandated by the State-issued Part B Permit.

17. Reserved

18. Evaluation of Effect of Proposed Pumping Well(s)

The Permittee will evaluate the effect of any proposed pumping well, at the facility, on the local ground water flow field and ground water monitoring. This evaluation will be undertaken with the use of analytical or numeric ground water flow models, which conform to the guidance provided to the Permittee by the Bureau of Radiation Control in the November 26, 1990 Notice of Deficiency, Comment WPC-1 K. The Permittee will submit the results of this evaluation and receive Director approval before any construction of the withdrawal well.

19. Management of Evaporation Ponds Waste Material

The Permittee shall dispose of all waste material generated during the operation of evaporation ponds in the Class A West or Mixed Waste Cell, whichever cell is appropriate for the waste. Waste material includes, but is not limited to: sludge, soil contaminated from spills or releases, miscellaneous debris, and material or equipment repaired or replaced such as synthetic liner, pumps, piping, cables, floats, etc. All material associated with the final demolition of evaporation ponds, including underlying contaminated soil, must be disposed of in the Class A West or Mixed Waste Cell and is expressly prohibited from disposal in the 11e.(2) cell.

20. Shredder Facility

The Permittee shall operate and maintain the Shredder Facility in accordance with the currently approved BAT Performance Monitoring Plan and BAT Contingency Plan in Appendices J and K, respectively of this Permit.

21. Rotary Dump Facility

The Permittee shall operate and maintain the Rotary Dump Facility in accordance with the currently approved BAT Performance Monitoring Plan and BAT Contingency Plan in Appendices J and K, respectively of this Permit. .

22. Intermodal Container Wash Building

The Permittee shall operate and maintain the Intermodal Container Wash Building in accordance with the currently approved BAT Performance Monitoring Plan and BAT Contingency Plan in Appendices J and K, respectively of this Permit.

23. Decontamination Access Control Building

The Permittee shall operate and maintain the Decontamination Access Control Building in accordance with the currently approved BAT Performance Monitoring Plan and BAT Contingency Plan in Appendices J and K, respectively of this Permit.

24. East Side Drainage Project

The Permittee shall operate and maintain the East Side Drainage Project in accordance with the currently approved BAT Performance Monitoring Plan and BAT Contingency Plan in Appendices J and K, respectively of this Permit. .

25. Horizontal Hydraulic Gradient Performance Standard

The Permittee shall operate the facility to prevent the shallow aquifer horizontal hydraulic gradient, based on fresh water equivalent ground water elevations, of any sub area, from exceeding the cell-specific Horizontal Hydraulic Gradient Limits specified in Part I.H.2.(d) of this Permit.

The Permittee shall operate and maintain the stormwater culvert, catch basin, and lift station at the southeast margin of the 11e.(2) cell to transfer stormwater in an un-interrupted manner to the Southwest Pond, in accordance with the currently approved BAT Performance Monitoring Plan and BAT Contingency Plan in Appendices J and K, respectively, of this Permit.

26. Vertical Hydraulic Gradient Performance Standard

The Permittee shall maintain a neutral or upward hydraulic gradient in all nested or paired monitoring wells at the facility required by Part I.H.2[c] of this Permit. Said neutral hydraulic gradient is defined as equal freshwater elevation in both wells of the pair, pursuant to Part I.H.2(a) of this Permit. Upward hydraulic gradient is defined as a condition where the deeper well of the pair exhibits a higher or greater freshwater elevation than the shallow well. For well pair GW-19A and GW-19B, this performance standard shall become effective after completion of the shallow aquifer de-watering required by Part I.I.2 of this Permit.

27. DU Storage Building Performance Standard
The Permittee shall operate and maintain the DU Storage Building in accordance with the currently approved BAT Performance Monitoring Plan and BAT Contingency Plan, Appendices J and K, referenced in Part I.I.5 of this Permit.

F. Compliance Monitoring

1. Compliance Monitoring Wells

Ground water monitoring wells used as compliance monitoring points shall meet the following requirements:

a) LARW, Class A West, and 11e.(2) Compliance Monitoring Wells – the following wells shall be sampled and analyzed for purposes of compliance monitoring

1) LARW Cell – existing wells GW-128, GW-16R, GW-20, GW-22, GW-23, GW-24, GW-29, GW-56R, GW-64, GW-77, GW-103, GW-104, and GW-105.

2) 11e.(2) Cell – existing wells GW-19A, GW-20, GW-24, GW-25, GW-26, GW-27, GW-28, GW-29, GW-36, GW-37*, GW-38R*, GW-57, GW-58, GW-60, GW-63, GW-126, GW-127 and piezometer PZ-1*. *Wells GW-37, GW-38R, and piezometer PZ-1 shall be monitored only for ground water elevations.

3) Class A West Cell – existing wells GW-88, GW-89, GW-90, GW-91, GW-92, GW-93, GW-25, GW-94, GW-26, GW-95, GW-27, GW-99, GW-100, GW-101, GW-102 GW-106, GW-107, GW-108, GW-142, GW-143, GW-144, GW-145, GW-146, GW147, GW-148, GW-149, and GW-150.

b) Mixed Waste Cell Compliance Monitoring Wells (radiologic contaminants only) – the following wells shall be sampled and analyzed for purposes of compliance monitoring: GW-133, GW-134, GW-135, GW-136, I-1-30, GW-151, GW-152, GW-153, GW-154, and I-3-30*.

* Well I-3-30 shall be monitored only for ground water elevations.

c) Evaporation Pond Monitoring Wells – monitoring wells P3-95 NECR, P3-95 SWC, and P3-97 NECR shall be sampled and analyzed for purposes of compliance monitoring for the 1995 and 1997 Ponds, well GW-66R shall be sampled and analyzed for purposes of compliance monitoring for the Mixed Waste Pond, and wells GW-19A, GW-36, and GW-58 shall be sampled and analyzed for purposes of compliance monitoring for the 2000 Evaporation Pond in addition to the 11e.(2) cell. Monitoring well GW-129 shall be sampled and analyzed for purposes of compliance monitoring for the Northwest Corner Evaporation Pond

d) Deep Aquifer Monitoring Wells– the Permittee shall monitor heads in all deep aquifer monitoring wells, including, but not limited to monitoring wells I-1-100, GW-19B, GW-27D, GW-148D, and GW-153D.

e) Well Construction Criteria – any ground water monitoring well used as a compliance monitoring point shall be:

1) Located hydrologically downgradient of waste disposal,

2) Completed exclusively in the uppermost aquifer,

3) Located as close as practicable to the waste and no more than 90 feet from edge of waste,

4) Constructed in conformance to guidelines found in the EPA RCRA Ground Water Monitoring Technical Enforcement Guidance Document, 1986, OSWER-9950.1.

f) Well Network Early Warning Requirement – any network of ground water monitoring wells used as points of compliance shall be adequately constructed, both in location and spacing, to provide early warning of a contaminant release from a waste embankment before the contaminant leaves the embankment's 100-foot wide buffer zone, as defined in Table 7, below. For purposes of this Permit, early warning shall be provided by a compliance monitoring well network with an inter-well spacing distance to be approved by the Director.

g) Buffer-Zone Requirements– waste disposal is prohibited inside the buffer zone, as described in Tables 3 and 7 of this Permit.

Table 7: Buffer Zone Boundary Locations

Disposal Cell	Edge of Buffer Zone Position	Coordinates	
		Latitude	Longitude
LARW	NW Corner	40° 41' 12.366" N	113° 06' 52.622" W
	SW Corner	40° 40' 51.915" N	113° 06' 52.494" W
	SE Corner	40° 40' 51.976" N	113° 06' 35.429" W
	NE Corner	40° 41' 12.427" N	113° 06' 35.556" W
Class A West	NW Corner	40° 41' 40.599" N	113° 07' 26.054" W
	SW Corner	40° 41' 13. 245" N	113° 07' 25. 996" W
	SE Corner	40° 41' 13.201" N	113° 06' 54.167" W
	NE Corner	40° 41' 40.556" N	113° 06' 54.165" W
11e.(2)	NW Corner	40° 41' 13.587" N	113°0 7' 25.832" W
	SW Corner	40° 40' 54.077" N	113° 07' 26.070" W
	SE Corner	40° 40' 53.849" N	113° 06' 54.279" W
	NE Corner	40° 41' 13.359" N	113° 06' 54.037" W

h) Protection of Monitoring Network – all compliance monitoring wells must be protected from damage due to surface vehicular traffic or contamination due

to surface spills. All monitoring wells shall be maintained in full operational condition for the life of this Permit.

The criteria for determining full operational condition are:

1) Accessibility – each well must be accessible for sampling and shall not be located in an area of standing water.

2) Casing Measuring Point – each well shall have a permanent surveyed reference point such as the top of the protective casing.

3) Physical Integrity – any physical disturbance to any well, which may alter the surveyed water level measuring point, is prohibited. In addition, all wells shall have an adequate surface seal around the well casing to prevent surface or storm water from entering the well.

4) Chemical Integrity – all well and sampling materials shall be constructed of inert materials to prevent the introduction of contaminants from leaching or corrosion.

5) Silt Content – if the measured water column of any well is less than 90% of the theoretical water column, the monitoring well shall be redeveloped prior to sampling.

Any well that becomes damaged beyond repair or is rendered unusable for any reason will be replaced by the Permittee within 90 days or as directed by the Director.

i) Notification of Ground-water Monitoring Event - At least 30 calendar days prior to the annual Ground Water Monitoring Event, required under Part I.H.1, the Permittee will submit a written notice and schedule, with approximate dates and wells that will be sampled to the Director.

2. BAT Compliance Monitoring Points

The Permittee shall inspect, sample, analyze, or otherwise monitor other points of compliance in order to confirm compliance with this Permit. These points are defined in the BAT Performance Monitoring Plan, Appendix J of this Permit.

3. Future Modification of Compliance Monitoring Systems or Equipment

If at any time the Director determines that additional systems, mechanisms or instruments are necessary to monitor ground water quality or Best Available Technology compliance at the facility, the Permittee shall submit within 30 days of receipt of notification, a plan and compliance schedule to modify the compliance monitoring equipment, for Director approval. Any failure to construct the required compliance monitoring system or equipment in accordance with the approved plan and schedule shall constitute a violation of this Permit.

4. Reserved

5. Monitoring Requirements and Frequency

Measurements or analysis done for monitoring will be conducted in compliance with the requirements below, and reported to the Director as per the requirements of Part I.H.

a) Water Level Measurements – water level measurements shall be made quarterlyy in each monitoring well and piezometer listed in Part I.F.1. The quarterly water level measurements will be compared to the measurements from the previous quarter, and if the difference between measurements is greater than 0.4 feet, the Permittee shall notify the Director within 15 days of the discovery, and shall immediately increase the water level measurement frequency to monthly for each well meeting this condition. Additionally:

- For well pairs listed I Part IH.2.c, if an upward vertical gradient (as defined in Part I.E.26) is observed in any water level data, the Permittee shall notify the Director within 30 days of the discovery and shall immediately increase the water level measurement to monthly at well pairs meeting the upward gradient condition.

- The frequency of water level measurements at compliance monitoring wells GW-19A, GW-19B, GW-60, GW-63, and PZ-1 will remain monthly.

Return to quarterly water level measurement frequency will be approved by the Director.

Measurements made in conjunction with annual ground water sampling shall be completed prior to any collection of ground water samples in accordance with the currently approved Water Monitoring Quality Assurance Plan in Appendix B of this Permit. These measurements will be made from a permanent single reference point clearly demarcated on the top of the well or surface casing. Measurements will be made to the nearest 0.01 feet.

b) Specific Gravity Measurements – ground water-specific gravity measurements shall be made annually in each monitoring well and piezometer in conjunction with each annual ground water quality sampling event.

c) Ground Water and Pore Water Quality Sampling and Analysis – except for permit renewal parameters listed in Part I.F.5.c.3 grab samples of ground water from compliance monitoring wells and pore water from lysimeters (as available) will be collected for analysis on an annual basis, in conformance with Part II.A and B and the currently approved Water Monitoring Quality Assurance Plan in Appendix B of this Permit.

1) Ground/Pore Water Analytical Methods – methods used to analyze ground water samples must comply with the following:

   vi. Are methods cited in the currently approved Water Monitoring Quality Assurance Plan, Appendix B of this Permit, and

   vii. Have detection limits which do not exceed the Ground Water Quality Standards or Protection Levels listed in Tables 1A and 1C of this Permit.

2) Analysis Parameters – the following analyses will be conducted on all samples collected for ground water monitoring:

   i. Field Parameters – dissolved oxygen, pH, temperature, specific gravity, and specific conductance.

   ii Laboratory Parameters – including:

   - General Inorganic Parameters: Chloride, Sulfate, Carbonate, Bicarbonate, Sodium, Potassium, Magnesium, Calcium, bromide, iron, and total anions and cations
   - General Radiologic Parameters: potassium-40, gross beta
   - All Protection Level Parameters – individual analysis for all parameters found in Part I.C, Tables 1A, 1B, 1C, 1D, 1E, and 1F of this Permit

3) Permit Renewal Parameters – groundwater samples will be collected for chemical analysis in each compliance monitoring well prior to Permit renewal and reported with the Comprehensive Groundwater Quality Evaluation Report submitted as part of Permit Renewal. The analyses shall consist of the following:

   Inorganics and Trace Dissolved Metals (All wells except Mixed Waste wells): cyanide, fluoride, total nitrate/nitrite (as N) , antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, and zinc.

   Organic Parameters (All LARW, Class A West, and Evaporative Pond wells): acetone, 1, 2-dichloroethane, 2-butanone, methylene chloride, carbon disulfide, chloroform, 1,1,2-trichloroethane, vinyl chloride.

   Organic Parameters (All 11e.(2) wells): acetone, 1,2-dichloroethane, 2-butanone, methylene chloride, carbon disulfide, chloroform.,

   If any Permit renewal parameter is found to be greater than the mean concentration plus two times the standard deviation concentration (background concentration) using the statistics found in the

Comprehensive Groundwater Quality Evaluation Report for that parameter, the Permittee shall go into an accelerated monitoring program for that well and parameter. Additionally, if any compliance monitoring well for the Mixed Waste embankment has a parameter that exceeds the GWPLs for the Mixed Waste Embankment, than wells along the east side of the LLRW embankment will immediately be sampled for that parameter.

6. Collection Lysimeter Sampling

Collection lysimeter sampling shall be conducted in compliance with the currently approved Water Monitoring Quality Assurance Plan as provided in Appendix B of this Permit. Sample analysis shall conform to the requirements of Part I.F.5(c) of this Permit.

Water quality samples shall be collected within 24 hours of initial discovery of fluid. The priority of sample parameters shall conform to the currently approved Appendix C of this Permit, with special emphasis on selection of mobile and predominant contaminants found within the capture area of the lysimeter.

7. Modification of Monitoring or Analysis Parameters

If at any time the Director determines the monitoring or analysis parameters to be inadequate, the Permittee shall modify all required monitoring parameters immediately after receipt of written notification from the Director. Upon any change in the currently approved waste parameters defined in Conditions 6, 7, and 8 of the Utah Radioactive Material License UT 2300249, the Permittee shall revise the currently approved Water Monitoring Quality Assurance Plan in Appendix B.

8. Waste Characterization Monitoring

a) Class A Waste – all Class A waste received by the Permittee shall be fully characterized to determine its chemical and radiological constituents and the presence and concentration of any chelating agents both before shipment and emplacement for disposal, in accordance with the requirements of the currently approved Waste Characterization Plan in the Radioactive Material License UT 2300249, Condition 58 and for PCB/Radioactive Waste, in the currently approved State-issued Part B Permit. Said waste characterization shall include sampling and analysis of all contaminants authorized by Part I.E.1 and of those prohibited by Part I.E.2 of this Permit.

b) 11e.(2) Waste – all 11e(2) Waste received by the Permittee shall be fully characterized both before shipment and after arrival at the facility to identify any new non-radiologic contaminants not authorized by this Permit by Parts I.E.2 and I.E.5. Said waste characterization shall include sampling and analysis of all non-radiologic contaminants prohibited by Part I.E.2 of this Permit.

The Permittee shall maintain records of all Class A, and 11e.(2) Waste sampling and analysis on site.

9. Waste Liquid Content Monitoring

All wastes received shall be tested for liquids in accordance with the currently approved LLRW Waste Characterization Plan in the Radioactive Material License, Condition 58. In accordance with UAC R313-15-1009(2)(a)(iv), solid waste received for disposal shall contain as little free-standing and non-corrosive liquid as reasonably achievable, but shall contain no more free liquids than 1% of the volume of the waste. In the event that solid waste is received or observed to contain free liquids in excess of 1% by volume, within 24 hours of identification, the Licensee/Permittee shall notify the Division of Radiation Control that the shipment(s) failed the requirements for acceptance.

10. Post-Closure Monitoring

Post-closure monitoring shall conform to the requirements of the currently approved Post-Closure Monitoring Plan in Appendix F of this Permit.

11. On-Site Meteorological Monitoring

The Permittee shall provide continuous monitoring of the following minimum meteorological parameters, in accordance with the currently approved Weather Station Monitoring Plan found in Appendix G of this Permit:

a) Wind direction and speed

b) Temperature

c) Daily Precipitation

d) Pan evaporation

The Permittee shall maintain records of this monitoring on site. The Permittee shall submit an annual meteorological report for the facility in compliance with the requirements of Part I.H.10 of this Permit.

12. Containerized Waste Storage Areas: Leakage/Spill Monitoring and BAT Status

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit.

13. Evaporation Ponds Monitoring

a) 1995, 1997, 2000, Mixed Waste, and Northwest Corner Evaporation Pond Daily Monitoring – the Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit.

b) 1995, 1997, 2000, Mixed Waste, and Northwest Corner Evaporation Pond Leak Detection System Pump Tests – the Permittee shall conduct a pump test of the evaporation pond's leak detection sump within 5 days of discovery that the average daily leak detection system flow volume exceeds the following limits:

1) 1995 Evaporation Pond: 155 gallons/day
2) 1997 Evaporation Pond: 160 gallons/day
3) Mixed Waste Evaporation Pond: 160 gallons/day
4) 2000 Evaporation Pond: 355 gallons/day
5) Northwest Corner Evaporation Pond: 300 gallons/day

Said pump test shall comply with the currently approved BAT Contingency Plan in Appendix K of this Permit.

c) Annual Monitoring – on an annual basis, the Permittee shall:

1) Collect water quality samples from fluids stored in the approved evaporation ponds.

2) Analyze said water samples for all ground water quality protection level parameters defined in Part I.F.5.c.2, above, including a complete gamma spectroscopic analysis.

Sampling and analyses at all evaporation ponds shall comply with the currently approved Water Monitoring Quality Assurance Plan in Appendix B of this Permit.

d) Annual Pump Inspection – on an annual basis, the Permittee shall remove the submersible pump from the leak detection system of the 1995, 1997, 2000, Mixed Waste, and Northwest Corner evaporation ponds and check both the winding resistance and insulation resistance. If either the winding resistance or insulation resistance is outside of the manufacturer specifications, the pump will be replaced and/or repaired with a pump that satisfies all manufacturer specifications within 24 hours. Within 30 days of completing the annual pump inspection, a bor-o-scope video inspection shall be performed to ensure the pump was correctly reinstalled.

14. Confined Aquifer Head Monitoring

The Permittee shall conduct monthly monitoring of water levels and annual specific gravity measurements in all wells completed in the deep confined aquifer, including, but not limited to: I-1-100, GW-153D, GW-19B, GW-148D, and GW-27D. Annual water levels and specific gravity measurements shall be made in conjunction with the annual ground water quality sampling event.

15. Mixed Waste Leachate Monitoring

On an annual basis, the Permittee shall collect representative samples of leachate from the Mixed Waste Cell leachate collection system (upper leachate collection access pipe) and analyze for radioactive contaminants. If no leachate is present during the annual sampling event, no sample is required. Said radioactive contaminants shall include:

a) All Ground Water Protection Level Parameters found in Tables 1E and 1F of this Permit

b) A complete gamma spectroscopic analysis to determine all other gamma-emitting radioisotopes that may be present

16. Intermodal Unloading Facility Monitoring

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit. .

17. Box-Washing Facility Monitoring

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit.

18. Rail Car Wash Facility Monitoring

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit.

19. Reserved

20. Open Cell Time Limit Monitoring

The Permittee shall demonstrate compliance with the open cell time limitation requirements of Part I.E.6 of this Permit by observing and recording the following dates of completion for each working area in the Class A West cell:

a) Initial placement of waste on the first lift on the clay liner

b) Completion of construction of the clay radon barrier

The Permittee shall maintain records of this monitoring. All monitoring records shall comply with the requirements of Part II.G of this Permit.

21. Reserved

22. BAT Performance Monitoring Plan

The Permittee shall demonstrate compliance with the BAT requirements and performance standards and Best Management Practices in Parts I.D and I.E of this Permit by implementing the most current BAT Performance Monitoring Plan approved by the Director and provided in Appendix J of this Permit.

23. BAT Contingency Plan

In the event that BAT failure occurs at any facility, the Permittee shall implement the most current BAT Contingency Plan approved by the Director and provided in Appendix K of this Permit to regain the BAT requirements and performance standards and Best Management Practices specified in Parts I.D and I.E of this Permit.

24. Stormwater Monitoring

The Permittee shall demonstrate compliance with stormwater removal requirements of Part I.E.7 of this Permit by maintaining daily written records for stormwater management activities:

a) Date, time, and location of discovery of stormwater accumulation

b) Date and time when stormwater removal activities were initiated at each location

c) Date and time when stormwater removal was completed at each location

d) First and last name(s) of all personnel involved with stormwater removal activities

e) Unique identity of locations of where stormwater was removed

f) Type of stormwater removed: contact or non-contact stormwater

g) Identify equipment used to remove contact and non-contact stormwater

h) Volumes of stormwater removed at each location

i) Location(s) where stormwater was disposed

25. Shredder Facility

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit.

26. Rotary Dump Facility

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit.

27. Intermodal Container Wash Building

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit.

28. Decontamination Access Control Building

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit. :

29. East Side Drainage Project

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit.

30. DU Storage Building Monitoring

The Permittee shall perform monitoring in accordance with the BAT Performance Monitoring Plan, Appendix J of this Permit.

G. Non-Compliance Status. Ground Water Monitoring and Best Available Technology

1. Noncompliance with the Ground Water Protection Levels

Noncompliance with the ground water protection levels in Part I.C, Tables 1A, 1B, 1C, 1D, 1E, and 1F as applied to the compliance monitoring wells defined in Part I.F.1 of this Permit shall be defined as follows:

a) Monitoring for probable out-of-compliance shall be defined as any one sample in excess of the protection level in Tables 1A, 1B, 1C, 1D, 1E, or 1F of this Permit for any parameter from the same compliance monitoring well.

b) Out-of-Compliance Status –defined as two (2) consecutive samples in excess of the protection level in Tables 1A, 1B, 1C, 1D, 1E, or 1F of this Permit for any parameter from the same compliance monitoring well.

c) Other Methods to Determine Ground Water Quality Compliance Status – at the discretion of the Director, other methods may be employed to determine the compliance status of the facility with respect to ground water quality data, including:

1) Trend and/or Spatial Analysis – analysis of any contaminant concentration trend through time in a single compliance monitoring point, and /or spatial analysis of the same from any group of compliance monitoring points.
2) EPA RCRA Statistical Methods – other applicable statistical methods may be used to determine out-of-compliance status, as defined in the EPA document "Statistical Analysis of Ground Water Monitoring Data at RCRA Facilities", February 1989, or as amended.

2. Requirements for Ground Water Monitoring for Probable Out-of-Compliance Status

The Permittee shall evaluate the results of each round of ground water sampling and analysis to determine existence of probable out-of-compliance status as defined in Part I.G.1(a) of this Permit. Upon any determination that probable out-of-compliance status exists, the Permittee shall:

a) Notify the Director of the probable out-of-compliance (POOC) status within 30 days of the initial detection.

b) Immediately implement a schedule of quarterly ground water sampling and analysis for the well(s)/parameter(s) of concern, consistent with the requirements of Part I.F.5(b) and the currently approved Water Monitoring Quality Assurance Plan, Appendix B of this Permit. This quarterly sampling will continue until the compliance status can be determined by the Director.

3. Requirements for Ground Water Out-of-Compliance Status

a) Notification and Accelerated Monitoring – the Permittee shall evaluate the results of each round of ground water sampling and analysis to determine existence of out-of-compliance status as defined in Part I.G.1(b) of this Permit. Upon any determination that an out-of-compliance status exists the Permittee shall:

1) Verbally notify the Director of the out-of-compliance status within 24 hours, and provide written notice within 5 days of the detection and

2) Immediately implement an accelerated schedule of monthly ground water monitoring of the monitoring wells of concern for the parameters in question. This monitoring shall continue for at least 2 months or until the facility is brought into compliance, as determined by the Director. At the discretion of the Director, the Permittee may be required to sample and analyze for additional inorganic, organic, or radiochemical parameters in order to determine the compliance status of the facility.

b) Source and Contamination Assessment Study Plan – within 30 days of the verbal notice to the Director required in Part I.G.3(a) of this Permit, the Permittee shall submit for Director approval an assessment study plan and compliance schedule for:

1) Assessment of the source or cause of the contamination and determination of steps necessary to correct the source.

2) Assessment of the extent of the ground water contamination and any potential dispersion.

3) Evaluation of potential remedial actions to restore and maintain ground water quality and ensure that the ground water standards will not be exceeded at the compliance monitoring wells, and best available technology will be reestablished.

c) Contingency Plan – in the event that Out-of-Compliance status is determined as per Part I.G.1(b) or (c), and upon written notification from the Director, the Permittee shall immediately implement the currently approved Contingency Plan in Appendix A of this Permit.

4. <u>Definition and Requirements for Failure to Maintain Best Available Technology</u>

a) Definition of Failure to Maintain Best Available Technology (BAT) Requirements – any violation of the BAT Design Standards in Part I.D, including design, design specifications, or construction requirements shall constitute failure to meet the best available technology requirements of this Permit. Any violation of the BAT Performance Standards in Parts I.D.1 or I.E shall also constitute failure to meet the best available technology requirements of this Permit

b) Requirements for Failure to Maintain Best Available Technology – in the event that the Permittee fails to maintain best available technology in accordance with Parts I.D and I.E, above, the Permittee shall:

1) Notify the Director verbally within 24 hours of discovery of the BAT failure, and provide written notice within 5 days of discovery.

2) Submit within 5 days of discovery a complete written description of:

i. The cause of the BAT failure,

ii. Any measures taken by the Permittee to mitigate the BAT failure,

iii. Time frame of the discovery of the BAT failure and any mitigation measures were implemented, and

iv. Evidence to demonstrate that any discharge or potential discharge caused by the BAT failure did not and will not result in a violation of UAC 19-5-107.

c) BAT Contingency Plan – In the event that a BAT failure occurs at any facility, the Permittee shall implement the currently approved BAT Contingency Plan provided in Appendix K of this Permit to regain the BAT requirements and performance standards and the Best Management Practices specified in Parts I.D and I.E of this Permit.

5. Affirmative Defense Relevant to Best Available Technology Failures

In the event that a compliance action is initiated against the Permittee for violation of Permit conditions relating to best available technology, the Permittee may affirmatively defend against that action by demonstrating the following:

a) The Permittee submitted notification according to UAC R317-6-6.13,

b) The failure was not intentional or caused by the Permittee's negligence, either in action or in failure to act,

c) The Permittee has taken adequate measures to meet permit conditions in a timely manner or has submitted to the Director, for Director approval, an adequate plan and schedule for meeting permit conditions, and

d) The provisions of UAC 19-5-107 have not been violated.

H. Reporting Requirements

Notwithstanding any other environmental reporting required by the Radioactive Material License, the Permittee shall submit the following reporting information.

1. Ground-Water Monitoring

Monitoring required in Part I.F of this Permit, shall be reported according to the following schedule, unless modified by the Director:

a) Routine Annual Monitoring

Time Period	Report Due By
January 1 thru December 31	March 1

b) Accelerated Monitoring

Monitoring required in Part I.G.2 and Part I.G.3 of this Permit, shall be reported on a semi-annual schedule according to the following schedule, unless modified by the Director:

Time Period	Report Due By
1st (January thru June)	September 1
2nd (July thru December)	March 1

The Permittee shall include within the written report a summary table of wells, sampling dates, analytes, and a more detailed discussion of each analyte and associated well will also be provided in the report.

2. Water Level Measurements

The Permittee shall comply with the following ground water level reporting requirements:

a) General Requirements – monthly and quarterly water level measurements from all ground water monitoring wells will be reported annually in both measured ground-water elevations, and saline ground-water elevations above mean sea level. In addition, annual freshwater equivalent head elevations will be reported for each well and will be derived from annual ground water specific gravity measurements made in that well during each annual sampling event.

b) Maps and Diagrams Format – distribution of freshwater equivalent head shall be summarized on an annual basis in the form of quarterly potentiometric maps of the uppermost aquifer for each water level measurement event, and shall be submitted with the annual monitoring report required by Part I.H.1

c) Vertical Hydraulic Gradient Reporting – on a quarterly basis the Permittee shall calculate summaries of head data for each shallow/intermediate aquifer nested well group, including but not limited to: I-1-30 / I-1-100, GW-153 / GW153D, GW-19A / GW-19B, GW-27/GW-27D, and GW-148/GW-148D. Said summaries shall include measured water level depth, and calculations of ground water level elevations, both saline and fresh water equivalents, in both the shallow and confined aquifers for each water level measurement event (monthly or quarterly) and include calculations of both the saline and fresh water equivalent vertical gradients (ft/ft) for each nested well group. These summaries shall be submitted with the annual monitoring report as required by Part I.H.1.

d) Horizontal Hydraulic Gradient Reporting – on a quarterly basis the Permittee shall calculate the following and provide within the annual monitoring report as required by Part I.H.1:

1) A site-wide summary of maximum, minimum, and average horizontal hydraulic gradient for all shallow-aquifer compliance monitoring wells based on saline and fresh water equivalent ground water elevations and

2) Individual disposal cell summary of maximum, minimum, and average horizontal hydraulic gradient based on saline and fresh water equivalent ground water elevations for the Class A West LARW, 11e.(2), and Mixed Waste disposal facilities. Determination of these individual hydraulic gradients shall be made after division of each disposal cell into smaller sub-areas for purposes of hydraulic gradient comparisons through time, as approved by the Director. On an individual cell basis, the Permittee shall identify the cell sub-areas where the monthly maximum, minimum, and average hydraulic gradients occurred, as summarized in the August 31, 2004 letter response from Envirocare of Utah Inc. to DRC comments regarding the 2003 2nd Semi-Annual Ground Water Report.

In the event that the average fresh water equivalent horizontal hydraulic gradient of any sub-area exceeds the cell-specific Permit limit listed below, the Permittee shall report and identify the sub-area in which the exceeded limit occurred within the annual ground water monitoring report required by Part I.H.1 of this Permit.

Disposal Cell	Fresh Water Equivalent Horizontal Hydraulic Gradient Limit
Class A West	1.00E-3
LARW	9.67E-4
Mixed Waste	1.00E-3
11e.(2)	3.29E-3

3. Ground Water and Pore Water Quality Sampling

Reporting will include:

a) Field Data Sheets – or copies thereof, including the field measurements, required in Part I.F.5(c)(2) of this Permit, and other pertinent field data, such as:

1) Groundwater well number, date and time, names of sampling crew, type of sampling pump or bail, measured casing volume, volume of water purged before sampling, volume of water collected for analysis.

b) Results of Ground Water, Pore Water, and Surface Water Analysis – including date sampled, date received; and the results of analysis for each parameter, including: value or concentration, units of measurement, reporting limit (minimum detection limit for the examination), analytical method, the date of the analysis, counting error for each radiochemical analysis, and total anions and cations for each inorganic analysis.

c) Quality Assurance Evaluation – with every sampling report the Permittee shall include a quality assurance evaluation of the reported ground water

and pore water data. Said report shall evaluate the sample collection techniques, sample handling and preservation, and analytical methods used in sampling with the objective of verifying the accuracy of the compliance monitoring results.

d) Electronic Data Files and Format – the Permittee shall provide an electronic copy of all laboratory results for ground water, pore water, and surface water quality sampling. Said electronic files shall consist of a Comma Separated Values (CSV) file or equivalent format, or as otherwise approved by the Director.

4. Spill Reporting

The Permittee shall report as per UAC 19-5-114, any spill or leakage of waste or waste liquids which come in contact with native soil or ground water in compliance with Part II.I of this Permit. For spills of solid waste greater than 100 kg, the spill must be reported to the Division of Radiation Control within 7 calendar days of discovery.

5. Post-Closure Monitoring

Reporting of post-closure monitoring shall comply with the requirements of the currently approved Post-Closure Monitoring Plan in Appendix F of this Permit.

6. Annual "As-Built" Report

The Permittee shall submit an annual "As-Built" Report to document interim construction of the Class A West, and 11e.(2) Disposal cells in compliance with the currently approved design and specifications and LLRW and 11e.(2) Construction Quality Assurance/Quality Control Manual . This report will be submitted for the Director's approval on or before December 1 of each calendar year, and will be prepared in accordance with the LLRW and 11e.(2) Construction Quality Assurance/Quality Control Manual.

7. Waste Characterization Reporting

In the event that a new contaminant is detected in any waste at the facility, which has not been authorized by Part I.E.1, or if concentrations of approved contaminants are detected above the limits established in Part I.E.2 of this Permit, the Permittee shall notify the Director in writing within 7 calendar days from the date of discovery.

8. Collection Lysimeter Reporting

The Permittee shall provide a verbal report to the Director within 24 hours of discovery of the presence of any fluid in the standpipe of the collection lysimeters. The Permittee shall provide a written report of the incident to the Director within 7 calendar days of discovery. The Permittee shall provide a report of the any required video log survey of the lysimeter's drainpipe, as required by Parts I.E.11 and I.F.6 of this Permit, on or before December 31 of each calendar year.

9. Reporting of Mechanical Problems or Discharge System Failures

The Permittee shall meet all requirements of reporting any mechanical or discharge system failure as outline in Appendix K of the Permit, the BAT Contingency Plan.

10. Meteorological Reporting

On or before March 1 of each calendar year, the Permittee shall submit an annual meteorological report for the previous meteorological year (January 1 to December 31), The report will also include a summary report of all meteorological data collected for the life of the facility. Said report shall compare the data observed against regional normal values, as available, and provide summary statistics of all meteorological data collected for Director approval.

The objective of this report shall be to show that the meteorological assumptions made in the infiltration and unsaturated zone modeling used to support issuance of the Permit were conservative or representative of the actual conditions at the site.

11. Containerized Waste Storage Area Reporting

Reporting requirements shall conform to BAT requirements found in Appendices J and K of this Permit.

12. Evaporation Ponds Reporting

a) Annual Water Quality Sampling –annual water quality samples collected shall be reported in conjunction with the ground water quality monitoring report required by Part I.H.1 of this Permit.

b) 1995, 1997, 2000, Mixed Waste, and Northwest Corner Evaporation Pond Daily Monitoring – Reporting requirements shall conform to BAT requirements found in Appendices J and K of this Permit

c) Annual Pump Inspection – results of the annual pump inspection and bor-o-scope video inspection conducted in accordance with Part I.F.13.d shall be submitted for the Director's approval as part of the 1st Semi-annual BAT Monitoring Report.

13. Annual Ground Water Usage Report

On or before March 1 of each calendar year the Permittee shall survey and report the location of all ground water withdrawals within at least a 1-mile radius of the facility boundary. The purpose of this report will be to locate all points near the facility where ground water is pumped or otherwise removed for any consumptive use, including domestic, agricultural, or industrial purposes. This report shall include a survey of water right appropriations found in the area of interest, identify the owners thereof, and disclose the physical location and depths of all such ground water withdrawals.

14. Reserved

15. Mixed Waste Cell Leachate Reporting

The Permittee shall report the results of Mixed Waste Leachate water quality sampling and analysis required by Part I.F.15 of this Permit with the annual ground water monitoring reports required by Parts I.H.1 and I.H.3.

16. BAT Non-Compliance Reporting Requirements

For all facilities subject to requirements under the currently approved BAT Performance Monitoring Plan and BAT Contingency Plan (Appendix J and K, respectively) the Permittee shall provide verbal notification to the Director of any BAT failures that are not corrected within 24 hours. All such verbal notifications shall be followed-up with a written notification within 7 calendar days.

17. Annual Cover Test Cell Report

On or before March 1 of each calendar year the Permittee shall submit an annual report for Director approval. The annual report shall provide the data collected in the past year, analyze the data, and interpret the meaning of the data.

18. Reserved

19. Reserved

20. BAT Semi-annual Monitoring Report

The Permittee shall submit a semi-annual BAT monitoring report to document compliance with the BAT performance standards mandated by Part I.E of this Permit. The report shall provide results, calculations, and evaluations of BAT monitoring data required in Part I.F of this Permit, including but not limited to the following:

a) 1995, 1997, 2000, Mixed Waste, and Northwest Corner Evaporation Ponds – the Semi-annual BAT monitoring report shall include:

1) A quality assurance evaluation of all daily leak detection system flow volume and head data collected,

2) Results of daily flow and head monitoring of the leak detection sump at each pond,

3) Results of weekly calculation of daily average flow volumes from the leak detection sump at each pond, pursuant to Part I.F.13.a.3 of this Permit,

4) An evaluation of any apparent trends in daily flow and head monitoring with respect to the pond's ability to comply with the BAT performance standards mandated by Part I.E.14 of this Permit.

b) Stormwater Management – the BAT Semi-annual report shall include daily stormwater monitoring records generated pursuant to Part I.F.24.

c) Reporting Schedule – the BAT Semi-annual Monitoring Report shall be submitted for Director approval in accordance with the following schedule:

Half	Report Due On
1st (January –June)	September 1
2nd (July-December)	March 1

*The Second Half Report shall include results of the required annual pressure tests for dual-walled pipe as identified in Part I.F.2.m.

21. Manifest Radioisotope Inventory Report

180 days prior to Permit expiration, the Permittee shall submit for Director approval a summary report of activities for radioisotopes including, but not limited to Aluminum-26, Berkelium-247, Calcium-41, Californium 250, Chlorine-36, Rhenium-187, Terbium-157, and Terbium-158; as listed in the current Radioactive Materials License (UT#2300249) Condition 29.E. Said report will be generated from the Clive facility Manifest Inventory (Permittee's EWIS database). The report shall provide a summary of all manifest inventory data available for radioisotopes disposed at the LARW, Class A West, 11e.(2), Mixed Waste, and any other embankment (excluding the Vitro Embankment) at the Clive facility;, and will include, but is not limited to: (1) total of individual radioisotopes activity (mCi), (2) radioisotope half-life (years, days, minutes, etc.), (3) distributions coefficients for each radioisotope (L/kg), and (4) the current overall average activity concentration of each radioisotope, determined by dividing each isotope's total individual inventoried activity disposed by the mass of the current waste (pCi/gm) found in all embankments listed at the facility.

22. Comprehensive Ground Water Quality Evaluation Report

180 days prior to Permit expiration, the Permittee shall submit for Director approval a comprehensive ground water quality evaluation report for the site. In submittal of this report, the Permittee shall present an evaluation of all ground water and vadose zone water quality data available for the LARW, Class A West, 11e.(2), and Mixed Waste facilities. Said report shall be similar to the March 19, 2014 Comprehensive Ground Water Quality Evaluation Report and shall include but not be limited to:

a) Graphs of temporal concentration trends for all compliance monitoring parameters and current compliance wells across the entire period of record, and an evaluation of parameter temporal relationships,

b) Number of water quality data available for each compliance monitoring parameter for each current compliance well,

c) Statistical tests of normality for each compliance monitoring parameter water quality data population, including univariate tests or equivalent. Normality testing will not be required for parameters with datasets consisting of greater than 50% nondetections, as the intent of normality testing is not to determine if detection limits are normally distributed.

d) Calculation of mean concentration and standard deviation on direct concentration values for all compliance monitoring parameters and current compliance wells. For water quality parameter populations that fail the normality test, provide mean concentrations and standard deviations on transformed values that are normally distributed,

e) Calculation of mean concentration plus the second standard deviation for comparison with existing ground water protection levels to identify parameters that warrant an evaluation for ground water protection level adjustments based on natural variations in background concentrations for all compliance monitoring parameters and current compliance wells, and

f) Isoconcentration maps of spatial concentration trends across Section 32 and an evaluation of facies and spatial relationships of water quality parameters that warrant an evaluation for ground water protection level adjustments based on section e) above.

Compliance monitoring parameters are those parameters listed in Tables 1A through 1F for which a GWPL is established.

23. Reserved

24. Revised Hydrogeologic Report

180 days prior to Permit expiration, the Permittee shall submit for Director approval a revised hydrogeologic report for the disposal facility and surrounding area. In submittal of this report the Permittee shall provide a description of hydrogeologic conditions at the facility current through the time of report submittal. Said report shall be similar to the December 2, 2013 Revised Hydrogeologic Report. This report will include, but is not limited to an evaluation of:

a) Ground-water hydraulics, including ground-water flow directions, velocities, and hydraulic gradients, in both the horizontal and vertical directions, and will include equipotential maps, cross-sections, and related calculations, and

b) An updated evaluation and reinterpretation of the site hydrogeology using all available data including new or additional data acquired since the last Director approved hydrogeologic report .

I. Compliance Schedule

1. Ground Water Institutional Control Plan

The Permittee shall submit a ground water institutional control plan for Director approval at the time the site Decontamination and Decommissioning Plan required under Condition 74 of Radioactive Materials License #UT 2300249 is submitted. In submittal of this plan the Permittee shall eliminate future inadvertent intrusion into potentially contaminated ground water at the disposal facilities and subsequent routes of exposure to the public and the environment. Said plan shall include at least one of the options listed in the July 27, 1998 Utah Division of Radiation Control Request for Information.

2. Reserved.

3. Background Ground Water Quality Report for the new Mixed Waste Compliance Wells.

The Permittee shall submit for Director approval four quarters of sampling, for all Mixed Waster parameters listed in Table 1E of this Permit, for new Mixed Waste embankment wells:

GW-151 GW-152 GW-153 GW-154

to evaluate which parameters, if any, require additional data so that it can be included in the Ground Water Protection Level Exceptions for Mixed Waste, Table 1F. This report shall include the wells and parameters needing additional evaluation. The Director does not anticipate the background concentrations for any parameter listed in Table 1E to be greater than their respective ground water protection levels. As a result, compliance monitoring for these parameters will commence in the new Mixed Waste Embankment wells with the Permittee's completion of the four quarters of sampling. With the completion of this quarterly sampling if any parameter (s) in any well requires additional evaluation, with which to calculate background values for inclusion in the Mixed Waste Exceptions Table, Table 1F, a minimum of an additional four quarters of sampling will commence, to build a data population. The Permittee will then submit a background ground water quality report for the Mixed Waste embankment parameters and compliance monitoring wells to be listed in Table 1F of this Permit .

This report shall include inter-well descriptive statistics for each Parameter, and well in question, such as:

a. Graphs of temporal concentration trends in each well for each compliance monitoring parameter with an evaluation of seasonal and analytical variations,

b. Normality testing along with a discussion of those data points, if any, that are outliers and justification of why the outliers should or should not be removed from the population prior to performing statistical calculations for each compliance monitoring parameter,

c. Calculation of mean concentration and standard deviation for each compliance monitoring parameter in each well, and

d. Calculation of mean concentration plus two (2) standard deviations for each compliance monitoring parameter in each well.

Compliance monitoring parameters are those parameters listed in Table 1E for which a GWPL is established.

After review and approval of this report, the Director may reopen this Permit and revise the ground water protection levels for the Mixed Waste embankment compliance wells. Compliance monitoring will continue in compliance monitoring wells GW-130, GW-131, and GW-132 until their abandonment.

4. Background Ground Water Quality Report for the new Class A West Compliance Wells.

The Permittee shall submit for Director approval four quarters of sampling, for all Class A West parameters listed in Table 1A of this Permit, for new Class A West embankment wells:

GW-142, GW-143, GW-144, GW-145, GW-146, GW-147, GW-148, GW149, and GW-150

to evaluate which parameters, if any, require additional data so that it can be included in the Ground Water Protection Level Exceptions for Class A West, Table 1B. This report shall include the four quarters of sampling data for all wells, and more detail on wells and parameters needing additional evaluation. The Director does not anticipate the concentrations of any parameter listed in Table 1A to be greater than their respective ground water protection levels. As a result, compliance monitoring for these parameters will commence in the new Class A West Embankment wells with the Permittee's completion of the four quarters of sampling. With the completion of this quarterly sampling, if any parameter (s) in any well requires additional evaluation with which to calculate background values for inclusion in the Class A West Exceptions Table, Table 1B, a minimum of an additional four quarters of sampling will commence, to build a data population. The Permittee will then submit a background ground water quality report for the Class A West embankment compliance monitoring parameters and compliance monitoring wells to be listed in Table 1B of this Permit .

This report shall include inter-well descriptive statistics for each Parameter, and well in question, such as:

a. Graphs of temporal concentration trends in each well for each monitoring parameter with an evaluation of seasonal and analytical variations,

b. Normality testing along with a discussion of those data points, if any, that are outliers and justification of why the outliers should or should not be removed from the population prior to performing statistical calculations for each compliance monitoring parameter,

c. Calculation of mean concentration and standard deviation for each compliance monitoring parameter in each well, and

d. Calculation of mean concentration plus two (2) standard deviations for each compliance monitoring parameter in each well.

Compliance monitoring parameters are those parameters listed in Table 1E for which a GWPL is established.

After review and approval of this report, the Director may reopen this Permit and revise the ground water protection levels for the Class A West embankment compliance wells. Compliance monitoring will continue in compliance monitoring wells GW-81, GW-82, GW-83, GW-84, GW-85, GW-86 until their abandonment, and in compliance monitoring wells GW-109, GW-110, GW-111, GW-112, GW-137, GW-138, GW-139, GW-140, and GW-141 until the new Class A West embankment wells are installed, and their abandonment.

PART II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling

Samples taken in compliance with the monitoring requirements established under Part I shall be representative of the monitored activity. Failure by the Permittee to conduct all ground water and pore water sampling in compliance with the currently approved Water Monitoring Quality Assurance Plan in Appendix B of this Permit shall be considered a failure to monitor and may subject the Permittee to enforcement action.

B. Analytical Procedures

Water sample analysis must be conducted according to test procedures specified under UAC R317-6-6.3(L), unless other test procedures have been specified in this Permit. All sample analysis shall be performed by laboratories certified by the State Health Laboratory, or otherwise after prior written approval by the Director.

C. Penalties for Tampering

The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this Permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Reporting of Monitoring Results

Monitoring results obtained during each reporting period specified in the Permit, shall be submitted to the Director, at the following address:

Utah Department of Environmental Quality
Division of Radiation Control
195 North 1950 West
P.O. Box 144850
Salt Lake City, Utah 84114-4850
Attention: Ground Water Quality Program

E. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this Permit shall be submitted no later than 14 days following each schedule date.

F. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this Permit, using approved test procedures as specified in this Permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted. Such increased frequency shall also be indicated.

G. Records Contents

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements,
2. The individual(s) who performed the sampling or measurements,
3. The date(s) and time(s) analyses were performed,

4. The individual(s) who performed the analyses,
5. The analytical techniques or methods used, and
6. The results of such analyses.

H. Retention of Records

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by this Permit, and records of all data used to complete the application for this Permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

I. Twenty-Four Hour Notice of Noncompliance Reporting

1. The Permittee shall verbally report any noncompliance which may endanger public health or the environment as soon as possible, but no later than 24 hours from the time the Permittee first became aware of the circumstances. The report shall be made to the Utah Department of Environmental Quality 24-hour number, (801) 536-4123, or to the Division of Water Quality, Ground Water Protection Section at (801) 538-6146, during normal business hours (8:00 am – 5:00 pm Mountain Time).
2. A written submission shall also be provided to the Director within 5 days of the time that the Permittee becomes aware of the circumstances. The written submission shall contain:
   a) A description of the noncompliance and its cause,
   b) The period of noncompliance, including exact dates and times,
   c) The estimated time noncompliance is expected to continue if it has not been corrected, and
   d) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
3. Reports shall be submitted to the addresses in Part II.D, Reporting of Monitoring Results.

J. Other Noncompliance Reporting

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.D are submitted.

K. Inspection and Entry

The Permittee shall allow the Director or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the Permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

L. Monitoring Well "As-Built" Reports

In the event that additional ground water monitoring wells are required by the Director, diagrams and description describing the final completion of the monitoring wells shall be submitted within 60 days of construction of each well. These reports will include:

1. Casing: depth, diameter, type of material, type of joints.
2. Screen: length, depth interval, diameter, material type, slot size.
3. Sand Pack: depth interval, material type and grain size.
4. Annular Seals: depth interval, material type.
5. Surface Casing(s) and Cap: depth, diameter, material type.
6. Survey Coordinates and Elevation: ground surface and elevation of water level measuring point in feet above mean sea level, measured to 0.01 of a foot. Said coordinates and elevation shall be conducted and certified by a Utah Licensed Land Surveyor, or a Utah registered professional engineer.
7. Results of slug tests to determine local aquifer permeability in the vicinity of the well. Said tests shall conform with ASTM Method 4044-91. Test results and data analysis thereof shall be submitted for Director approval.

M. Plugging and Abandonment Reports

Within 30 days of completion of plugging and abandonment of any environmental measurement system or instrument, including but not limited to ground water monitoring wells, piezometers, soil tensiometers or moisture instrumentation, or any other stationary device to make environmental measurements, the Permittee shall submit an "As-Plugged" report for Director approval. Failure to comply with any condition of said approval shall constitute a violation of this Permit.

PART III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The Permittee must comply with all conditions of this Permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The Permittee shall give advance notice to the Director of the Water Quality Board of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions

The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under Section 19-5-115(2) of the Act a second time shall be punished by a fine not exceeding $50,000 per day. Nothing in this Permit shall be construed to relieve the Permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit.

D. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this Permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Failure to maintain all treatment and control systems in fully functional operating order or condition at the facility is a violation of this Permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the Permit.

PART IV. GENERAL REQUIREMENTS

A. Prior Approval

Pursuant to UAC R317-6-6.1.A, the Permittee may not construct, install, or operate waste or wastewater storage, treatment, or disposal facilities, or any other facility that discharges or may discharge pollutants that may move directly or indirectly into ground water without a ground water discharge permit from the Director. Pursuant to UAC R317-6-6.3.J, the Permittee shall submit engineering plans, specifications, and plans for operation and maintenance of a proposed facility prior to Director approval.

B. Planned Changes

The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature of the facility or increase the quantity of pollutants discharged.

C. Modification of Approved Engineering Design, Specifications, or Construction

Any modification to the approved engineering design, specifications, or construction of the facility cited in this Permit shall require prior Director approval. Said facilities shall include, but are not limited to:

1. Waste and Wastewater Disposal and Containment Facilities – including all related engineering containment such as liner, cover, and drainage systems,
2. Waste and Wastewater Handling and Storage Facilities – used to handle, manage or store wastes prior to permanent disposal,
3. Decontamination Facilities – used to decontaminate equipment used in the transportation or disposal of waste, and
4. Environmental Monitoring Systems and Equipment – including ground water monitoring wells, piezometers, meteorological monitoring equipment, soil moisture and lysimeter instrumentation, or any other permanent system, mechanism, or instrument to make environmental measurements required by this Permit.

D. Anticipated Noncompliance

The Permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

E. Permit Actions

This Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

F. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittee must apply for and obtain a permit renewal or extension. The application should be submitted at least 180 days before the expiration date of this Permit.

G. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this Permit.

H. Other Information

When the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

I. Signatory Requirements

All applications, reports or information submitted to the Director shall be signed and certified.

1) All permit applications shall be signed as follows:

   a) For a corporation: by a responsible corporate officer.

   b) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

   c) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2) All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a) The authorization is made in writing by a person described above and submitted to the Director, and,

   b) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3) Changes to Authorization. If an authorization under Part IV.I.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.I.2 must submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

4) Certification. Any person signing a document under this section shall make the following certification: "I certify under penalty of law that this document and all

5) Attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

J. Penalties for Falsification of Reports

The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

K. Availability of Reports

Except for data determined to be confidential by the Permittee, all reports prepared in accordance with the terms of this Permit shall be available for public inspection at the offices of the Director. As required by the Act, permit applications, permits, effluent data, and ground water quality data shall not be considered confidential.

L. Property Rights

The issuance of this Permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

M. Severability

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Permit, shall not be affected thereby.

N. Transfers

This Permit may be automatically transferred to a new Permittee if:

1. The current Permittee notifies the Director at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new Permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,The Director does not notify the existing Permittee and the proposed new Permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

O. State Laws

Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, penalties established pursuant to any applicable state law or regulation under authority preserved by Section 19-5-117 of the Act.

P. Reopener Provision

This Permit may be reopened and modified, following proper administrative procedures, to include the appropriate limitations and compliance schedule, if necessary, if one or more of the following events occur:

1. If new ground water standards are adopted by the Board, the Permit may be reopened and modified to extend the terms of the Permit or to include pollutants covered by new standards. The Permittee may apply for a variance under the conditions outlined in R317-6-6.4(D)
2. Changes have been determined in background ground water quality.
3. Determination by the Director that changes are necessary in either the Permit or the facility to protect human health or the environment.

APPENDIX A:

Contingency Plan
for
Exceedances of Ground Water Protection Levels

SUBMITTED: August 5, 1991
APPROVED: September 24, 1991
RETITLED: June 30, 1999

APPENDIX B:

Water Monitoring Quality Assurance Plan

APPROVED: December 5, 1991

LATEST REVISION: August 30, 2011

APPENDIX C:

Construction Quality Assurance Plan
for
Collection Lysimeter Construction
and Operation, Maintenance, and Closure Plans
for
Collection Lysimeters and Related Approvals

SUBMITTED: September 16, 1992 and October 21, 1992, respectively
APPROVED: September 21, 1992 and November 27, 1992, respectively
REVISED: June 27, 2011

APPENDIX D:

Reserved

APPENDIX E:

Procedure
for
Certification of 11e.(2) Material

REVISED: March 1994

APPENDIX F:

Post-Closure Monitoring Plan for LARW and 11e.(2) Disposal Cells

APPROVED: September 13, 1994
REVISED: January 18, 2000

APPENDIX G:

Weather Station Monitoring Plan

APPROVED: September 14, 1994

REVISED: October 31, 2008

APPENDIX H:

Reserved

APPENDIX I:

Reserved

APPENDIX J:

Best Available Technology (BAT) Performance Monitoring Plan

LATEST REVISION: September 25, 2013

APPENDIX K:

Best Available Technology (BAT) Contingency Plan

LATEST REVISION: September 25, 2013