

HAZARDOUS WASTE FACILITY PERMIT

PERMITTEE: U.S. Army, Garrison Redstone
U.S. Army Combat Capabilities Development Command Aviation and
Missile Center (CCDC AvMC)
U.S. Army Recovered Chemical Materiel Directorate (RCMD)

ADDRESS: Huntsville, Madison County

PERMIT NUMBER: AL7 210 020 742

UNITS PERMITTED: 33 Hazardous Waste Storage Units
2 Thermal Treatment Units (Subpart X OB Unit and Subpart X OD Unit)
Up to 2 Container Treatment Units (Phase 2 Explosive Destruction System
(EDS) Units)
Solid Waste Management Unit (SWMU) Corrective Action

ISSUANCE DATE: JULY 19, 2021

Modification #1: August 08, 2022 – Major
Modification #2: XXXX XX, XXXX – Major

EXPIRATION DATE: JULY 18, 2031

This Permit is issued pursuant with the Code of Alabama 1975, §§ 22-30-1-et. seq., as amended, and regulations adopted thereunder and the Hazardous Wastes Management and Minimization Act and in accordance with the plans and specifications and applications filed with the Department subject to the conditions appended hereto, all of which are considered a part of this Permit. This Permit shall be subject to all applicable laws of the State of Alabama, rules and regulations and orders of the Department of Environmental Management and shall be effective from the date of issuance.

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
HAZARDOUS WASTE PERMIT**

Permittee: U.S. Army, Garrison Redstone (IMSE-RED-PWE)
U.S. Army Combat Capabilities Development Command Aviation and Missile
Center (DEVCOM AvMC)
U.S. Army Recovered Chemical Materiel Directorate (RCMD)

Permit No.: AL7 210 020 742
Identification No.: AL7 210 020 742

Permit Modification: #2

Pursuant to the Alabama Hazardous Wastes Management and Minimization Act (AHWMMA), Code of Ala. 1975, Section 22-30-1, et. seq., as amended, and attendant regulations promulgated thereunder by the Alabama Department of Environmental Management (ADEM or the Department), a permit is issued to U.S. Army Garrison – Redstone (Facility Owner, Facility Co-Permittee, Facility Operator), the U.S. Army Combat Capabilities Development Command Aviation and Missile Center (DEVCOM AvMC) (Facility Co-Permittee, Facility Co-Operator (OB/OD Units)) and the U.S. Army Recovered Chemical Materiel Directorate (RCMD) (Facility Co-Permittee, Facility Co-Operator (EDS Units)) to operate a hazardous waste treatment and storage facility located in Madison County, Alabama, at latitude N34⁰ 37' 00" and longitude W86⁰ 39' 00".

For purpose of clarification, the designations Facility Owner, Facility Co-Permittee, Facility Operator, and Facility Co-Operator hereinafter shall be referred to as Owner, Permittee, and Operator respectively. The use of referring to Co-Permittee as Permittee and Co-Operator as Operator shall not change legal obligations and/or responsibilities.

To ensure the proper execution of this Permit, the Permittee agrees to the following division of operation responsibility:

- The U.S. Army Garrison – Redstone, as Facility Owner, a Permittee and Operator, acknowledges its responsibility for hazardous waste management activities at the RSA Facility. These responsibilities include funding, policy, capital expenditures, design, programmatic and scheduling decisions, general oversight of contractor activities, interim or corrective actions, and closure or post-closure activities.
- The U.S. Army Combat Capabilities Development Command Aviation and Missile Center (DEVCOM AvMC), as Permittee and Operator, acknowledges its responsibility for hazardous waste management activities under the control of DEVCOM AvMC. These responsibilities include funding, policy, capital expenditures, design, programmatic and scheduling decisions, general oversight of contractor activities, interim or corrective actions and closure or post-closure activities. The areas under DEVCOM AvMC control include the energetic treatment of waste munitions by open burning and open detonation and the associated storage of waste within permitted igloos for these operations.
- The U.S. Army Recovered Chemical Materiel Directorate (RCMD), as Permittee and Operator, acknowledges its responsibility for hazardous waste management activities under the control of RCMD. The areas under RCMD control include the treatment of recovered munitions or other items that contain chemical agent or industrial chemical fills in the EDS units. RCMD also

controls the storage of wastes associated with the EDS treatment at the permitted igloos. The RCMD responsibilities include the operation of EDS units and personnel training for the safe operation of the EDS units, hazardous waste management, contingency plan implementation and emergency procedures. The training responsibility includes new procedures and refreshers as well as training new personnel. The RCMD will maintain training records in accordance with ADEM Admin. Code r. 335-14-5-.02(7)d.

The hazardous waste treatment and storage facility consists of a hazardous waste storage area, a Subpart X Open Burning (OB) treatment unit, a Subpart X Open Detonation (OD) treatment unit, and up to two Phase 2 explosive destruction system (EDS) units, as well as multiple solid waste management units (SWMUs) and areas of concern (AOCs).

The hazardous waste storage area consists of 33 container storage igloos. The maximum storage capacity of each hazardous waste storage igloo is 240 fifty-five gallon containers (13,200 gallons) and the maximum storage capacity of all 33 units is not to exceed 7920 fifty-five gallon drums or 435,600 total gallons. Two of the storage units are used by Defense Logistics Agency (DLA) Disposition Services - Huntsville and are identified as Buildings 8630 and 8631. The remaining 31 units (Buildings 8205, 8208, 8209, 8210, 8211, 8212, 8213, 8214, 8216, 8217, 8218, 8219, 8220, 8221, 8222, 8223, 8224, 8225, 8226, 8227, 8228, 8229, 8230, 8231, 8621, 8622, 8623, 8624, 8625, 8632, and 8633) are managed by the Environmental Management Division (EMD) of U.S. Army Garrison - Redstone.

The OB and OD units are used to burn and detonate hazardous energetic waste having the characteristic of reactivity. The open burning area consists of five metal burn pans that are each 9 by 20 feet, elevated on support steel and placed on top of concrete pads. The open detonation takes place in an area inside the designated OB and OD Units. The OD area is surrounded by earthen mounds and each detonation is completed in a newly excavated pit.

The EDS units are used to process recovered munitions or other items that contain chemical agent or industrial chemical fills. Items to be treated may or may not have an explosive component. The EDS units are operated in environmental enclosures.

The facility also includes current and former solid waste management units (SWMUs). This permit sets forth SWMU corrective action requirements and associated activities that must be concluded by the Permittee.

The Permittee must comply with all terms and conditions of this permit, which consists of the conditions set forth herein (including those in any attachments), and the regulations applicable to the Permittee's facility contained in Chapters 335-14-1, 335-14-2, 335-14-5, 335-14-8, and 335-14-9 of the ADEM Administrative Code of Regulations (hereinafter referred to as the "ADEM Admin. Code Rule" or "ADEM Admin. Code R."). Applicable regulations are those which are in effect on the date of issuance of this permit.

This permit is based on the assumption that the information submitted in the permit application attached to the Permittee's letter dated February 6, 2020 as modified by subsequent amendments dated September 21, 2020; September 24, 2020; December 15, 2021; December 17, 2021; March 21, 2022; August 3, 2023; October 17, 2023; and December 4, 2023 (hereby incorporated by reference and hereafter referred to as the Application) is accurate and that the facility will be constructed and operated as specified in the Application. Any inaccuracies found in this information could lead to the termination or modification of this permit in accordance with ADEM Admin. Code Rules 335-14-8-.04(2), 335-14-

8-.04(3), and 335-14-8-.04(4) and could lead to potential enforcement action. The Permittee must inform ADEM of any deviation from or changes in the information provided in the Application that would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

This permit is effective as of July 19, 2021, as amended August 08, 2022 and XXXX XX, XXXX, and shall remain in effect until July 18, 2031 unless revoked and reissued, or terminated under ADEM Admin. Code Rules 335-14-8-.04(2) and 335-14-8-.04(4) or continued in accordance with ADEM Admin. Code Rule 335-14-8-.05(2).

Alabama Department of Environmental Management

Date Signed

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APPENDICES

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Documents Incorporated By Reference:

Part A and Part B Permit Application submitted on February 6, 2020, as modified by subsequent amendments dated September 21, 2020; September 24, 2020; December 15, 2021; December 17, 2021; March 21, 2022; August 3, 2023; October 17, 2023; and December 4, 2023.

Final ROD for Surface Media at RSA-057 (September 10, 2007)
 Final Remedial Action Work Plan for RSA-057 (March 31, 2008)
 Land Use Control Remedial Design (LUC RD) for RSA-049 (July 2, 2009)
 Installation-Wide Groundwater LUC RD (August 18, 2009)
 Revision 4, Remedial Action Phase 1 Completion Report for RSA-057 (August 7, 2012)

CMI Plan for Surface Media and Groundwater at RSA-053 (September 10, 2012)
 Revision 2 CMI Work Plan, RSA-054/RSA-055 (December 10, 2012)
 Revision 1 CMI Work Plan, RSA-095 and RSA-142 (September 6, 2013, Revised May 18, 2016)
 Installation-Wide Groundwater Monitoring Plan (Revised June 23, 2014)

Revision 2 CMI Work Plan, RSA-058 (November 14, 2014)
 CMI Work Plan, RSA-250 (July 20, 2016)
 Revision 2 CMI Work Plan, RSA-204 (September 23, 2016)
 CMI Work Plan for MSFC-027 (April 26, 2016)
 Revision 1 CMI Work Plan, RSA-060 (August 8, 2017)
 Revision 1 CMI Work Plan for the OB/OD Area (September 8, 2017)
 Revision 2 CMI Work Plan for RSA-255 (December 12, 2017)

Phase II CMI Work Plan for RSA-058 (May 18, 2018)
 CMI Work Plan, MSFC-033A (May 30, 2018)
 CMI Work Plan, RSA-140 (June 26, 2018)
 Revision 1 CMI Work Plan, RSA-009 (August 8, 2018)
 Revision 1 CMI Work Plan, RSA-003 (October 1, 2018)

Revision 1 Addendum to the Revision 1 CMI Work Plan, RSA-095 and RSA-142 (July 26, 2018, Revised October 24, 2018)

CMI Work Plan, RSA-201, RSA-242, and RSA-247 (December 17, 2018)

CMI Work Plan, RSA-056 and RSA-139 (March 13, 2019)

Revision 1 CMI Work Plan for RSA-083 (April 11, 2019)

CMI Work Plan, RSA-294-R-01 (June 20, 2019)

CMI Work Plan, RSA-072-R-01 (RSA-282) (July 26, 2019)

CMI Work Plan for Groundwater, RSA-030 and RSA-031 (October 8, 2019)

Revision 1 CMI Work Plan, RSA-275 (October 15, 2019)

Revision 1 CMI Work Plan, RSA-209 (April 22, 2020)

Slip Pages to Rev 1 CMI WP, RSA-280-R-01 (May 29, 2020)

Revision 2 CMI Work Plan, RSA-065, RSA-067, and RSA-069 (August 10, 2021)

Revision 0 CMI Work Plan, RSA-109 (March 22, 2021)

Revision 1 CMI Work Plan, RSA-141-R-01 (April 12, 2021)

Revision 1 CMI Work Plan, RSA-221-R-01 (April 15, 2021)

Revision 0 CMI Work Plan, RSA-013 (February 14, 2022)

Revision 0 CMI Work Plan, RSA-312-R-01, (December 01, 2021; March 25, 2022)

Revision 1 CMI Work Plan and Revised Slip Sheets, RSA-072-R-01 (RSA-282) (May 03, 2022)

Revision 1 CMI Work Plan, RSA-014S (March 29, 2022)

Revision 1 CMI Work Plan, RSA-271 (November 21, 2021; May 10, 2022)

Revision 0 CMI Work Plan, RSA-122 and RSA-183 and Slip Sheets (June 06, 2022; November 07, 2022)

Revision 1 CMI Work Plan, RSA-306 (April 27, 2023)

Redstone Arsenal Installation Restoration Site Access Control Program (Redstone Regulation 200-7), as enacted May 27, 2003, revised September 19, 2012 and March 4, 2022.

Alabama Department of Environmental Management (ADEM) Memorandum #304 – Subject: Compliance with Land Use Control Requirements for Federally – Owned Property, as enacted September 3, 2010. (Note: Mention of Policy Memo 304 is for reference purposes only as the contents of this memo have been subsequently incorporated into and superseded by ADEM Admin. Code r. 335-5-1-.02(3).)

Table VI.1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
036	In-ground Oil/Water Separator, Bldg 4832	
037	Underground Used Oil Storage Tank at Bldg 7857	
038	Underground Used Oil Storage Tank Bldg 3240	
039	Underground Used Oil Storage Tank Bldg 3338	
040	Underground Used Oil Storage Tank Bldg 3617	
041	Underground Used Oil Storage Tank Bldg 3636	
042	Underground Used Oil Storage Tank Bldg 4812E	
043	Underground Used Oil Storage Tank Bldg 5435A	
044	Underground Used Oil Storage Tank Bldg 5435B	
045	Smoke Munitions Plant 3	
046	Inactive Chemical Munition Test Site, Area CC	**
047	Chemical Training Facility, Area EE	
048	Inactive Sanitary Landfill, Area G	
049	Capped Arsenic Waste Lagoons – West, Area F	
050	Inactive Munitions Demil/Disposal Area H	
051	Inactive Munitions Demil/Disposal Area I	
052	Inactive Munitions Demil/Disposal Area N	
053	Inactive Sanitary & Industrial Landfill, Area Q3	
054	Inactive Sanitary & Industrial Landfill, Area T	
055	Inactive Sanitary & Industrial Landfill, Area S	
056	Closed Arsenic Waste Ponds (South) Area U	
057	Inactive Arsenic Waste Lagoons – East	
058	Inactive Rubble Fill/Waste Pile, Area W	
059	Inactive Construction Rubble Fill, Area R	
060	Inactive Sanitary & Industrial Landfill, Area Q4	
061	Inactive Munitions Demil/Disposal, Area P	
062	Inactive Munitions Demil	
063	Inactive Chemical Munitions Disposal, Area M	
064	Inactive Munitions Demil/Disposal Area BB	
065	Former Chemical Drum Storage Area, Area X	
066	Inactive Ash Disposal Site, Area X-1	
067	Former Chemical Drum Storage Area, Area AA	
068	Inactive Chemical Disposal Area, Area Z	
069	Former Chemical Drum Storage Area, Area Y	
070	Inactive Toxic Chemical Storage Area, Area Y1	
071	High Explosive Drop Test Site, Area A	**
071-R-01	Former High Explosive Drop Test Site, Resolute Way	
072	Mortar Shell Test Site, Area B	**
073	High Explosive Impact Test Site, Area C	**
074	High Explosive Impact Test Site, Area D	**
075	Inactive Solid Waste Incinerator	
076	RDX/HMX Filtration Unit 1, Thiokol North	
077	RDX/HMX Filtration Unit 2, Thiokol South	

Table VI.1 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
078	RDX/HMX Filtration Unit 1 Sump, Thiokol North	
079	RDX/HMX Filtration Unit 2 Sump, Thiokol South	
080	RDX/HMX Suspension Transfer Pad/Sump	
081	RDX/HMX Filtration Units, Charcoal Column Dolly	
082	Former Sparging Unit, Bldg 7595	
083	Paint Spray Booth Sump, Bldg 7344	
084	Inactive Temporary Waste Storage Pad, Bldg 7344	
085	Inactive Temporary Waste Storage Pad 1, Bldg 7359	
086	Inactive Temporary Waste Storage Pad 2, Bldg 7359	
087	Inactive Temporary Waste Storage Pad 1&2, Bldg 7368	
088	Inactive Temporary Waste Storage Pad, Bldg 7625	
089	Inactive Temporary Waste Storage Pad, Bldg 7726	
090	Inactive Temporary Waste Storage Pad, Bldg 7340	
091	Inactive Temporary Waste Storage Pad, Bldg 7595	
092	Temporary Waste Storage Pad, Bldg 7552	
093	Reclaimed Empty Drum Storage Pad, Bldg 7368	
094	Chlorinated Solvent Distillation Unit 1, Bldg 7625	
095	Chlorinated Solvent Distillation Unit 2, Bldg 7368	
096	Chlorinated Solvent Distillation Unit 3, Bldg 7740	
097	Chlorinated Solvent Distillation Unit 4, Bldg 7726	
098	Chlorinated Solvent Distillation Unit 5, Bldg 7346	
099	Abandoned Plating Shop Tank/Sumps, Bldg 7614	
100	Aboveground Waste Oil Tank, Bldg 7630	
101 ^a	DDT Contaminated Area DD	
102	DDT Plant Site Q-6	
103	DDT Settling Lagoon	
104	Inactive ISP Wastewater Discharge Ditch	
105	DDT Drainage Ditches	
106	DDT Earthen Dams	
107	Closed DDT Soil/Debris Landfill	
108	Test Range 4 Missile Impact Site	
109	Former Chemical Munitions Staging Area	
110	Former Drum Storage/Construction Debris, Area Y	
111	Construction Debris, Area W	
112	Suspected Former Demil/Disposal, Area W	
113	Inactive Disposal Trenches/Burn Pits, Area W	
114	Inactive Madkin Mt Rock Quarry	
115	Inactive East Side Blowdown Lagoon, Test Area 5	
116	South Side Blowdown Lagoon, Test Area 5	
117	Former Liquid Caustic Mfg Plant, Area R	

Table VI.2

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

List of SWMUs and AOCs requiring a RCRA Facility Investigation (RFI):

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
010	Closed Sanitary Landfill	
051	Inactive Munitions Demil/Disposal Area I	
052	Inactive Munitions Demil/Disposal Area N	
061	Inactive Munitions Demil/Disposal, Area P	
062	Inactive Munitions Demil	
063	Inactive Chemical Munitions Disposal, Area M	
064	Inactive Munitions Demil/Disposal Area BB	
066	Inactive Ash Disposal Site, Area X-1	
068	Inactive Chemical Disposal Area, Area Z	
071-R-01	Former High Explosive Drop Test Site, Resolute Way	
104	Inactive ISP Wastewater Discharge Ditch	
105	DDT Drainage Ditches	
110	Former Drum Storage/Construction Debris, Area Y	
112	Suspected Former Demil/Disposal, Area W	
113	Inactive Disposal Trenches/Burn Pits, Area W	
114	Inactive Madkin Mt. Rock Quarry	
117	Former Liquid Caustic Mfg. Plant, Area R	
118	Inactive ISP Industrial Discharge Lagoon	
128	Inactive Mustard Gas Demil Area, Area W	
146	GW Southeast part of RSA, underlies former Thiokol Plant (~6600 acres)	
147	GW Central part of RSA (~1300 acres)	
148	GW Central Area – East of MSFC (~3600 acres)	
149	GW West Central Area – West MSFC (~3900 acres)	
154	GW South-Central part of RSA (~3300 acres)	
155	GW Southwestern area of RSA (1600 acres)	
188	Northern Burial Area/Burning Ground #3	
219	Chemical Storage Area in Salvage Yard	
257	Rock Pond	
264	RR Spring	
278	Highway 565 Area	
281	Disposal Trenches at RSA-046 Range	
317	Construction Site East of Building 5674 off Technology Road	

Table VI.2 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
318	Smoke Pot Disposal Area	
346	White Phosphorous Smoke Grenades near TA-5	
347	Small Arms Range near Vincent Park	
MSFC-003	Inactive Old Bone Yard Disposal Site #1	
MSFC-033	SWAA Bldg 4815	*
MSFC-034	Former Chemical Production Area	
MSFC-035	Inactive Sump/Tiled Drain Field – East TA	
MSFC-043	Former Waste Oil Trap and Separator (Bldg 4817)	*
MSFC-068	Surface Drainage for Bldg 4815	*
MSFC-082	Former Mustard Gas Demil Site and Mustard Shell Disposal Trenches	
IOU-1	Huntsville Spring Branch East of McDonald Creek	
IOU-2	Huntsville Spring Branch East of Patton Road	
IOU-3	Huntsville Spring Branch Patton Road through Olin	
IOU-4	Huntsville Spring Branch, Indian Creek Confluence	
IOU-5	McDonald Creek	
IOU-6	Indian Creek	
IOU-7	Southeastern Boundary System	
IOU-8	McKinley Range	
IOU-9	Southwest Area	
IOU-10	Bradford Sinks	
IOU-11	Tennessee River East	
IOU-12	Tennessee River West	

* Denotes SWMUs/AOCs that are under the control of the MSFC; however, they are located on RSA (Army) Property.

** Denotes sites where the RFI is deferred until range closure.

Table VI.3 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
174	Chemistry Lab, Pad 2, TSA Bldg 7632	
175	Physical Property Lab, Pad 1, TSA Bldg 7636	
176	Physical Property Lab, Pad 2, TSA Bldg. 7636	
177	Small Motor Finishing, TSA Bldg. 7654	
178	Control Lab and First Aid, Pad 1, TSA Bldg. 7667	
179	Control Lab and First Aid, Pad 2, TSA Bldg 7667	
180	Nitramine Drying Pilot, TSA Bldg 7688	
181	Nitramine Grinding Pilot, TSA Bldg 7690	
182	1.1 Grinder Bldg "P2", TSA Bldg 7695	
190	Disposal and Drainage Area West of ROP Line 2 Area	
193	Igniter Preparation Facility	
202	Graded Area Northeast of ROP Storage Igloos	
216	Laboratory Injection Test Facility, Bldg 5475	
222	Roads and Grounds Maintenance Shop, Bldg 5494	
223	Central Railroad Classification Yard	
224	Container Storage Area	
228	Sewage Treatment Plant 2	
229	Former PX Service Station (Bldg 3197)	
232	SMF #1 Service Station	
235	Bulk Fuel Storage Facility	
240	Substation No.7, Formerly Bldg 5290 (demolished)	
241	Hazardous Waste Storage Igloo, Bldg 7313	
243	Propellant Storage, Bldg 7342	
244	Propellant Mixing Bldg, Bldg 7356	
246	Sewer Ejector & Motor Pool, Bldg 7630	
248	Battery Maintenance Shop, Bldg 3633	
251	Former Phosgene Plant	
253	Utility/Flammable Materials Storage (B6109)	
255	Former Manganese Ore Storage Area, OU-8	
256	Scarred Area #2-NE of RSA-032 w/in Historic RR Spur Line	
258	Guard Shack Waiting Shelter/Paint Spray, Bldg 7862	
259	TA #2 Leach Field	
266	Gulf Chemical Depot Storage Magazines	
267	Drainage Ditch #4	
268	Sewage Treatment Plant, Bldg 8018	
270	Hazardous Waste TSA & Recycling Facility Bldg 5423	
276	Former Boiler House, Bldg 7362	
277	Bldg 5487, Wastewater Maintenance Shop Acid Bath Wash Down Area	
279	Smoke Grenade Area	

Table VI.3 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT
284	Fire Training Area	**
285	Former WP Grenade Test Area	
287	Component Storage Warehouse, Bldg 3634	
289	Drinking WTP#2, Sludge Thickener (Bldg 9102) & Sludge Drying Beds	
290	Drinking WTP#3, Sludge Thickener & Drying Beds, Bldgs 5431 & 5433	
292	UST at Bldg 3311 (Boiler & Compressor House)	
295	Hazardous Waste TSA, Bldg S-3335	
296	Disposal Area North of RSA-011	
297	Ammunition Packing/Shipping, Bldg 7551	
298	Hazardous Waste TSA, Bldg 8408	*
299	Hazardous Waste TSA, Bldg 7216	*
300	Hazardous Waste TSA, Bldg 7172	*
301	Hazardous Waste TSA, Bldg 7173	
302	Hazardous Waste TSA, Bldg 3802	*
303	Hazardous Waste TSA, Bldg 7700	*
307	Hazardous Waste TSAs B and C, Bldg 7347	*
309	Covered Trench & Sump at Bldg 7155	
310	Former OWS & Suspected OWS at Bldg 7289	
316	7500 Area Hardstand Parking	
348	Automotive Skills Center Building 3617	
B	Abandoned Army Propellant Mfg., Bldg 7598	
F	Fenced Open Storage/Laydown Yard	
MSFC-002/087	Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon	
MSFC-052E	Portion of Industrial Sewer East of MSFC Property	
MSFC-053	Former Propellant Storage Area and Test Stand Site	
MSFC-055	Site of Former Stauffer Chemical Company	
MSFC-060	Drainage System for Historic Redstone Test Site	
MSFC-065	1800-ft Surface Drainage Ditch/Area	
MSFC-074	Inactive Disposal Site, East Test Area	
MSFC-077	Former Burning Pits	
MSFC-D	Containment Area for Tanks 4234 A, B, & C	

* These sites are active and conditions will be re-evaluated when they are closed.

** NFA for the soil media and groundwater although the RFI did not include the sampling and analysis of per- and polyfluoroalkyl substances (PFAS).

Table VI.6

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

The following SWMUs and AOCs require a Corrective Measure Implementation (CMI) Plan:

Some sites listed within this table have had corrective measures implemented for one or more medium, and require a CMI plan for different media. Corrective measures at these sites are described in the documents listed in Table VIII.1. For example, RSA-087 is included on this table as requiring a CMI plan for groundwater and is also included on Table VIII.1 as having a corrective measures plan for surface media.

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA*
008	Inactive Sewage Treatment Plant #4		Groundwater
011	Former Sewage Treatment Plant No. 1, OU-10	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
013	Unlined Inactive Open Burn Pad	Groundwater to be investigated and/or remediated as part of RSA-151.	Groundwater
014	Unlined Inactive Burn Trenches Unit #2	Groundwater under the entire site to be investigated and/or remediated as part of RSA-151.	Groundwater
028	In-ground Oil/Water Separator, 5693 Area		Soil, Surface Water, and Groundwater
032	Inactive Scrap Metal Storage Area	Groundwater to be investigated and/or remediated as part of RSA-152.	Groundwater
048	Inactive Sanitary Landfill, Area G		Soil and Groundwater
049	Capped Arsenic Waste Ponds – West, OU-5	Groundwater to be investigated and/or remediated as part of RSA-148.	Groundwater
056/139	Closed Arsenic Waste Ponds	Groundwater to be investigated and/or remediated as part of RSA-147.	Groundwater
057	Inactive Arsenic Waste Lagoons – East, OU-6	Groundwater to be investigated and/or remediated as part of RSA-147.	Groundwater
058	Inactive Rubble Fill/Waste Pile, Area W	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater

Table VI.6 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA *
059	Inactive Construction Rubble Fill, Area R		Soil and Groundwater
065	Former Chemical Drum Storage Area, Area X	Groundwater to be investigated and/or remediated as part of RSA-152.	Groundwater
069/070	Former Chemical Drum Storage Area, Area Y/Inactive Toxic Chemical Storage Area, Area Y1	Groundwater to be investigated and/or remediated as part of RSA-068.	Groundwater
087	Inactive Temporary Waste Storage Pad 1&2, Bldg 7368	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
088	Inactive Temporary Waste Storage Pad, Bldg 7625	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
089	Inactive Temporary Waste Storage Pad, Bldg 7726	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
092	Inactive Temporary Waste Storage Pad, Bldg 7552	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
093	Reclaimed Empty Drum Storage Pad, Bldg 7368	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
094	Chlorinated Solvent Distillation Unit 1, OU-10	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
095	Chlorinated Solvent Distillation Unit 2, Bldg 7368	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
096	Chlorinated Solvent Distillation Unit 3, Bldg 7740	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
097	Chlorinated Solvent Distillation Unit 4, Bldg 7726	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
115	Inactive East Side Blowdown Lagoon, Test Area 5		Groundwater
116	South Side Blowdown Lagoon, Test Area 5		Groundwater

Table VI.6 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA *
122	Dismantled Lewisite Mfg. Plant, Area U	Groundwater to be investigated and/or remediated as part of RSA-147.	Groundwater
132	Dismantled Popping Furnace	Groundwater to be investigated and/or remediated as part of RSA-151.	Groundwater
133	Inactive Rocket Washrack/Sump	Groundwater to be investigated and/or remediated as part of RSA-151.	Groundwater
135H	1.1 Propellant Wastes Captive Sump, Bldg 7593	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
138M	ROP Tetryl Processing Line	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
140	Inactive Disposal Area near T/S Tower	Groundwater to be remediated with RSA-219	Groundwater
141	4.2-inch Mortar Disposal Site, Bldg 4656, OU-15	Groundwater to be investigated and/or remediated by NASA	Groundwater
142	TCE Spill by Thiokol Degreasing Process	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
143	Petroleum Contaminated Soil Site, S. of Bldg 3240		Soil and Groundwater
144	Degreaser at Bldg 7554	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
145	GW Northeast part of RSA (~9900 acres)		Groundwater
150	GW Western part of RSA (~3900 acres)		Groundwater
151	GW Southern part of RSA, underlies OB/OD Area (~570 acres)		Groundwater
152	GW Southern part of RSA, underlies GCWD (~570 acres)		Groundwater
153	GW Western edge of RSA (~6300 acres)		Groundwater
156	GW Southern part of RSA (~1400 acres)		Groundwater

Table VI.6 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA *
157	GW Southeastern part of RSA, underlies GCWD Storage Area (~100 acres)		Groundwater
172	Motor Pool, TSA Bldg 7630	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
183	Former Lewisite Manufacturing Plants 1 and 2, OU-5	Groundwater to be investigated and/or remediated as part of RSA-148.	Groundwater
187	Northern Thiokol Propellant Mixing Facility	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
189	Motor/Oxidizer Preparation Facilities (ROP Line 2 Area)	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
191	ROP Line 1 Service Facilities	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
192	Tetryl and Igniter Processing (ROP Line 1 Area)	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
194	Physical Test Laboratory and Storage Facilities	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
195	Propellant Mixing Facility #1, Bldg 7363	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
196/098	Test Stand and Cleaning Building/Chlorinated Solvent Unit Bldg 7346, OU-10	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
197	Rocket Motor Static Test Stand	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
198/085	Equipment/Tool Cleaning Facility, Bldg 7359/Inactive Temporary Storage Pad 1	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
199	Propellant Mixing Facility #2, Bldg 7382	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
200	ROP Line 5 Area Operations Facilities	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater

Table VI.6 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA *
201	Research Laboratory, Bldg 7632	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
203	Igloo Area Loading Dock, Bldg 7351	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
205	Photo Lab and Motor Service Facility, Former Bldg 7628	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
207	Gorgas Laboratory, Bldg 7770	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
208	South Plant Testing Facilities	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
210	Nitroglycerine Wash House	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
211	South Plant Storage Magazines	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
212	Propellant Dry Houses	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
213	ROP Line 4 Area Operations Facilities	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
214	ROP Line 6 Area Operations Facilities	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
215	RSA-146 Historic Service Facilities	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
217	Inert Storage Warehouse Facilities	Groundwater to be investigated and/or remediated as part of RSA-146.	Soil and Groundwater
218	Defense Reutilization Material Office (DRMO) Open Storage Area	Groundwater to be investigated and/or remediated as part of RSA-219.	Groundwater
220	Construction Material Storage Yard	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater

Table VI.6 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA *
226	Open Storage 54-2	Groundwater to be investigated and/or remediated as part of RSA-147.	Groundwater
227	Inactive Washrack (adjacent to Bldg 5492)	Groundwater to be investigated and/or remediated as part of RSA-147.	Groundwater
230	Abandoned Rubble Pile	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater
231	SMF #1 Mixing & Prep Facilities	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater
233	SMF #2 Mixing & Prep Facilities	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater
234	Waste Disposal Pit		Soil and Groundwater
236	Grenade Packing & Assembly	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater
237	Propellant Cutting and Drying	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
238	Plant 2, Mustard Lines 5 and 6		Groundwater
239	ROP Line #1 Boiler House	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
242	Hazardous Waste Storage Igloo, Bldg 7314	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
245	Steam Heating Plant, Bldg 7579	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
247	Steel Fabrication/Maintenance Facility, Bldg 7644	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
249	Inactive Old Bone Yard, Disposal Site 2		Soil and Groundwater
261	Lance Missile Conditioning Facility, Bldg 7847	Groundwater to be investigated and/or remediated as part of RSA-154.	Groundwater

Table VI.6 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA *
262	CWS Warehouse Area (Bldgs 8021, 8022, 8023, 8024, 8025, 8026 and 8027)		Soil and Groundwater
263	CWS Motor Pool (Bldg 8017)/Change House (Bldg 8020)		Groundwater
265	Gasoline Drum Storage Area	Groundwater to be investigated and/or remediated as part of RSA-155.	Groundwater
272	Former UST for Boiler Unit, Bldg 7650	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
273	Propellant Conditioning & Motor Cycling, Bldg 7364	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
274	Physics Laboratory & High Explosives Storage Magazine, Bldg 7540	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
275	Film Processing Laboratory, Former Bldg S-7173	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
282	Former Mortar Test Site (Not in Range)	Groundwater to be investigated and/or remediated as part of RSA-150.	Groundwater
283	Former Primary Substation No. 2 Bldg 3796	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater
286	Boiler/Steam Plant, Bldg 3624		Soil and Groundwater
288	Drinking WTP#1, Sludge Thickener & Drying Beds, Bldgs 8043 & 8044	Groundwater to be investigated and/or remediated as part of RSA-155.	Groundwater
291	UST at Former Bldg T-3162 (Steam Plant)		Groundwater
293	Former USTs at Bldg 3639 (Screening & Proportioning Smoke Components Bldg)		Groundwater
304	OWS, Washrack & Sump, adjacent to Bldg 5498	Groundwater to be investigated and/or remediated as part of RSA-304/RSA-320	Soil and Groundwater
305	Dispatcher's Office with Washrack, Bldg 3664	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater

Table VI.6 (cont'd)

SWMU/AOC NUMBER	SWMU/AOC NAME	UNIT COMMENT	POTENTIALLY AFFECTED MEDIA *
308	Exterior Sump at Bldg 7120		Soil and Groundwater
311	Exterior Sump & Interior Concrete Pits at Bldg 7352		Groundwater
312	Former Range Area for Gate 7 Expansion	Groundwater to be investigated and/or remediated as part of RSA-150/RSA-153	Groundwater
313	Western Side of Former High Explosive Drop Area A		Soil and Groundwater
314	Used Oil AST & Spill Site, Bldg 3670		Soil and Groundwater
319	Former Oil/Water Separator, Bldg 4812 & Pad	Groundwater to be investigated and/or remediated as part of RSA-150	Groundwater
320	Parking/Equipment Staging Area	Groundwater to be investigated and/or remediated as part of RSA-304/RSA-320	Groundwater
321	Cleared Area East and Northeast of Bldg 3639	Groundwater to be investigated and/or remediated as part of RSA-293/RSA-321	Groundwater
A	Inactive Propellant Storage Wells South	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
C	Abandoned Army Propellant Mixing Bldg 7596	Groundwater to be investigated and/or remediated as part of RSA-146.	Groundwater
D	Paint Storage Shed, Bldg 3547	Groundwater to be investigated and/or remediated as part of RSA-145.	Groundwater
E	No. 2 Fuel Oil Spill, Tank 5693 at the Fuel Farm	Groundwater to be investigated and/or remediated as part of RSA-028.	Groundwater
MSFC-027	Inactive (M-1) Waste Accumulation Area	Groundwater to be investigated and/or remediated as part of MSFC.	Groundwater
IWGW	Installation-Wide Groundwater	LUCs	Groundwater

*The SWMUs that require CMI Plans for Groundwater only shall be submitted to the Department upon completion of investigation activities of the respective SWMUs (e.g., CMI for RSA-214 to be included in CMI Plan for RSA-146, etc.).

PART VII

GROUNDWATER MONITORING AND CORRECTIVE ACTION

VII.A. REQUIRED PROGRAM(S)

1. Groundwater monitoring shall consist of the General Groundwater Monitoring Program of Permit Condition VII.B., the Compliance Monitoring Program contained in Permit Condition VII.D and the Corrective Action Monitoring Program contained in Permit Condition VII.E.
 - a. The Permittee shall commence groundwater monitoring as required by this permit no later than 120 calendar days after the effective date of this permit.

VII.B. GENERAL GROUNDWATER MONITORING PROGRAM

1. Well Location, Installation and Construction

The Permittee shall install and/or designate groundwater monitoring wells in order to maintain a groundwater monitoring system to comply with the requirements of ADEM Admin. Code Rules 335-14-5-.06(8), 335-14-5-.06(9), 335-14-5-.06(10), and 335-14-5-.06(11) as applicable and as specified below:

- a. The Permittee shall maintain all groundwater monitoring wells at the facility as identified in Table VII.1 of this permit, at the locations specified on Figure E-2 of the permit application, and any other groundwater monitoring wells specified by Permit Condition VII.B.1.d.
 - i. All groundwater monitoring wells shall be maintained in accordance with the plans and specifications presented in Section E of the permit application and in accordance with ADEM Admin. Code Rule 335-14-5-.06.
 - ii. A groundwater monitoring well shall not be removed from any monitoring program specified in this permit without an approved permit modification pursuant to Permit Condition I.J.
 - iii. If a groundwater monitoring well is damaged, the Permittee shall immediately notify the Department in writing, which includes a description of the well repair activities to be conducted. The well repair procedures must be approved by the Department prior to implementation. Within 30 calendar days after the well is repaired, the Permittee shall submit a written notification to the Department that the well repair activities were conducted in accordance with the approved procedures.
 - iv. If a groundwater monitoring well is deleted from the monitoring program(s) required by this permit in accordance with Permit Conditions

VII.B.1.a.ii. and I.J., it shall be abandoned within 90 calendar days after deletion using procedures to be approved by the Department. Within 30 calendar days after the well is abandoned, the Permittee shall submit a written notification to the Department that the well abandonment activities were conducted in accordance with the approved procedures.

- b. Groundwater monitoring wells RS107, RS108, RS209, RS211, RS2882, RS2883 and RS2884 shall define the point of compliance for the OB and OD Units. Groundwater monitoring well RS243 shall be used as the background well for the OB and OD units.
- c. The Permittee shall maintain the background monitoring well(s) listed in Table VII.1 to assess the groundwater quality for the respective units.
- d. The Permittee shall install and/or designate groundwater monitoring wells as necessary to assess changes in the rate and extent of any plume of contamination or as otherwise deemed necessary to maintain compliance with ADEM Admin. Code Rules 335-14-5-.06(6), 335-14-5-.06(8), 335-14-5-.06(9), 335-14-5-.06(10), and 335-14-5-.06(11), as applicable. A plan in the form of a permit modification, in accordance with Permit Condition I.J., request specifying the design, location and installation of any additional monitoring wells should be submitted to the Department at least 90 calendar days prior to installation which, at a minimum, shall include:
 - i. Well construction techniques including casing depths and proposed total depth of well(s);
 - ii. Well development method(s);
 - iii. A complete description of well construction materials;
 - iv. A schedule of implementation for construction; and,
 - v. Provisions for determining the lithologic characteristics, hydraulic conductivity, grain size distribution, and porosity for the applicable aquifer unit(s) at the location of the new well(s).

2. General Groundwater Monitoring Requirements

- a. The Permittee shall determine the groundwater surface elevation from all monitoring wells listed in Table VII.1 of this permit at least annually and each time a sampling event is conducted. The results of these determinations should be submitted in accordance with Permit Condition VII.B.6. Elevation data should be recorded and reported as mean sea level (MSL) and referenced to an appropriate North American Vertical Datum (NAVD) benchmark.
 - i. The Permittee shall sample GW Wells listed in Table VII.1 at the OB and OD areas for the constituents listed in Table VII.2 on an annual basis.

- b. The Permittee shall determine the groundwater flow rate and direction in the underlying aquifer(s) at least annually and submit the results in accordance with Permit Condition VII.B.6.
 - c. The Permittee shall determine background concentrations of hazardous constituents and other chemical parameters required to be monitored by this permit in accordance with Section E of the permit application and ADEM Admin. Code Rule 335-14-5-.06(8)(g).
3. Groundwater Protection Standard
- a. The groundwater protection standard, as required under ADEM Admin. Code Rule 335-14-5-.06(3), shall consist of Table VII.3 of this permit which lists the hazardous constituents and their respective concentration limits.
 - b. The groundwater protection standard applies to all hazardous waste or hazardous constituent releases as deemed appropriate by the Department to protect human health and the environment.
4. Compliance Period
- a. The compliance period, during which the groundwater protection standard specified in Permit Condition VII.B.3. applies, shall begin at the time of the first sampling event of the compliance monitoring program (Permit Condition VII.D.), or the corrective action monitoring program (Permit Condition VII.E.), whichever is earlier.
 - b. The compliance period shall continue (after beginning pursuant to Permit Condition VII.B.4.a.) until the groundwater protection standard as defined by Permit Condition VII.B.3.a. has not been exceeded for a period of three consecutive years.
 - c. If the Permittee is engaged in a corrective action program pursuant to Permit Condition VII.E., then the compliance period shall continue as required by ADEM Admin. Code Rule 335-14-5-.06(7)(c) until the groundwater protection standard has not been exceeded for a period of three consecutive years after corrective action has been terminated and this permit has been modified, in accordance with Permit Condition I.J., to implement a compliance monitoring program pursuant to Permit Condition VII.D. or a detection monitoring program pursuant to Permit Condition VII.C., as required by ADEM Admin. Code Rule 335-14-5-.06(11)(f).
5. Sampling and Analysis Procedures

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the groundwater monitoring wells described in Permit Condition VII.B.1. to provide a reliable indication of the quality of the groundwater as required under ADEM Admin. Code Rules 335-14-5-.06(8)(d), (e), and (g):

- a. Samples shall be collected, preserved, and shipped (when shipped off-site for analysis) in accordance with the procedures specified in Section E of the permit application.
 - b. Samples shall be analyzed according to the procedures specified in Section E of the permit application, the most recent edition of SW-846 or other appropriate methods approved by the Department. Analytical method detection limits shall be less than or equal to the concentration limits specified in Table VII.3, unless otherwise approved in writing by the Department.
 - c. Samples shall be tracked and controlled using the chain-of-custody procedures specified in Section E of the permit application.
 - d. Statistical analyses used to evaluate the groundwater monitoring data shall be as described in Section E of the permit application and ADEM Admin. Code Rule 335-14-5-.06(8)(h).
 - e. All samples taken in accordance with this permit shall not be filtered prior to analysis.
6. Recordkeeping and Reporting
- a. The Permittee shall keep and maintain all monitoring, testing, and analytical data obtained in accordance with Permit Conditions VII.B., VII.C, VII.D, and VII.E. as required by Permit Condition I.C.10.
 - b. The Permittee shall submit to the Department written reports to include all analytical sampling data, established background values, statistical evaluations, groundwater elevations, associated potentiometric maps, and the annual groundwater flow rate and direction determinations. The analytical method and the method detection limit (MDL) for each constituent must be integrated into all reports of analysis. The reports shall be submitted within 60 calendar days after the first sampling events and on an annual basis thereafter. Copies of these reports shall be kept at the facility in accordance with Permit Conditions I.C.10.c. and I.C.10.e.
 - c. The Permittee shall submit progress reports to the Department describing implementation of groundwater monitoring and/or corrective action activities at the site as required by Part VII of this permit on a quarterly basis. The first progress report shall be submitted to the Department within 90 calendar days after the effective date of this permit. The progress reports shall continue until such time as the required monitoring and/or corrective action systems and activities required by this permit are fully constructed and operational. In the event that additional monitoring and/or corrective action requirements are imposed through a permit modification, in accordance with Permit Condition I.J., the quarterly reporting requirement shall resume, commencing upon the effective date of the permit modification and continuing until the required monitoring and/or corrective action systems and activities are again fully constructed and operational.

VII.C. DETECTION MONITORING PROGRAM (RESERVED)

VII.D. COMPLIANCE MONITORING PROGRAM

The requirements of this Condition are applicable to the OB and OD Units. Except as specified otherwise in this permit, the Compliance Monitoring Program shall be implemented in accordance with Section E of the permit application, and ADEM Admin. Code Rule 335-14-5-.06(10).

1. Monitoring Requirements

In addition to the general groundwater monitoring requirements specified in Permit Condition VII.B.2., the Permittee shall:

- a. Sample all point of compliance wells and background wells and analyze for the constituents listed in Tables VII.2. and VII.3. of this permit annually in accordance with Permit Condition VII.B.5 throughout the compliance monitoring period. This schedule shall begin within 120 calendar days of the effective date of this permit.
- b. Sample and analyze for temperature (degrees F or C), specific conductance (Mhos/cm), and pH (standard units), at all background and point of compliance monitoring well locations each time the well is sampled in accordance with Permit Condition VII.B.5 and as shown in Table VII.4. The data obtained should be submitted as raw data in the reports required by Permit Condition VII.B.6.
- c. Sample all point of compliance and designated background monitoring wells and analyze, in accordance with Permit Condition VII.B.5., for the constituents listed in ADEM Admin Code Rule 335-14-5-Appendix IX in addition to the constituents listed in Tables VII.2 and VII.3. of this permit at the beginning of the compliance monitoring period and thereafter on an annual basis throughout the compliance period. [ADEM Admin. Code Rule 335-14-5-.06(10)(g).]

2. Reporting and Response Requirements

In addition to the recordkeeping and reporting requirements specified in Permit Condition VII.B.6., the Permittee shall perform statistical evaluation of monitoring well analytical data for each monitoring event pursuant to Permit Condition VII.B.5 and ADEM Admin. Code Rule 335-14-5-.06(10)(d).

- a. If the Permittee determines, pursuant to Permit Conditions VII.B.5. and VII.D.1.c. and ADEM Admin. Code Rules 335-14-5-.06(10)(d) and 335-14-5-.06(10)(g), that any constituent(s) listed in ADEM Admin. Code Rule 335-14-5-Appendix IX but not listed in Table VII.3. of this permit is detected at any point of compliance or background well, he or she must comply with ADEM Admin. Code Rule 335-14-5-.06(10)(g).

- b. If the Permittee determines pursuant to Permit Conditions VII.B.5. and VII.D.1.c. and ADEM Admin. Code Rule 335-14-5-.06(10)(d) that any concentration limits listed in Table VII.3 of this permit exceeded in any monitoring well at the point of compliance, he or she must comply with ADEM Admin. Code Rule 335-14-5-.06(10)(h).

VII.E. CORRECTIVE ACTION MONITORING PROGRAM

The requirements of this Condition are applicable to RSA-003, RSA-009, RSA-045, RSA-049, RSA-053, RSA-054/RSA-055, RSA-056, RSA-060, RSA-083, RSA-139, RSA-204, RSA-206, RSA-209, RSA-225, RSA-252, RSA-269, RSA-271, and RSA-306. Except as specified otherwise in this permit, the Corrective Action Monitoring Programs shall be implemented in accordance with the approved CMI Plans and Corrective Action Plans (CAPs) for the SWMUs/AOCs and ADEM Admin. Code Rule 335-14-5-.06(11).

1. Monitoring Systems

In addition to the point of compliance and background well monitoring systems identified in Permit Conditions VII.B.1.b. and VII.B.1.c., the Permittee shall:

- a. Maintain groundwater monitoring wells RS065, RS065A, RS066, RS070, RS643, RS961, RS1111, RS1114, RS1121, RS1148, RS1149, RS1151, RS1152, RS1153, RS1154, RS1157, RS1158, RS1159, RS1160, RS1164, RS1167, RS1294, RS1353, RS1413 (shallow and deep), RS1414, RS1416, RS1418, RS1419, RS1483, RS1486c, RS1488e, RS1489e, RS1514 (shallow and deep), RS1518 (all screened intervals), RS1520 (all screened intervals), RS1522 (shallow and deep), RS1523, RS1527, RS1534 (all screened intervals), RS1673a, RS1675 (shallow and deep), RS1711, RS1779, RS1783 (shallow and deep), RS1785 (shallow and deep), RS1786 (shallow and deep), RS1806 (all screened intervals), RS2109, RS2801, RS2802, RS2803, RS2804, MSW13, MSW14, MSW16, MSW18a, INCRK-01, OFF-SW27 and P-SW11 as boundary wells/sampling points for the entire facility as specified in Table VII.1 of this permit.
- b. Maintain groundwater monitoring wells RS842, RS1301, RS1302, RS1332, RS1333, RS1470, RS1471, and RS2816 as effectiveness wells for RSA-003, as specified in Table VII.1 of this permit. RS1560 and RS2455 shall be maintained as upgradient wells for RSA-003, and monitoring wells RS1355 and RS1562 shall be maintained as point of compliance wells for RSA-003.
- c. Maintain groundwater monitoring well RS1428 as an effectiveness well for RSA-009, as specified in Table VII.1 of this permit.
- d. Maintain groundwater monitoring wells RSP-1684 (spring), RS1743, RS1745, RS1821, RS2149, RS2153, RS2167, RS2169, RS2691, RS2692, RS2693, RS2788, RS2937, RS2938, RS2939, RS2940, RS2941, and RS2942 as effectiveness wells for RSA-045 as specified in Table VII.1 of this permit. Wells RS1744 and RS2788 shall be maintained as upgradient wells for RSA-045.

- e. Maintain groundwater monitoring wells RS054, RS263, RS633, RS635, RS636, RS1074, RS1090, RS1589, RS1590, RS1591, RS1592 and RS1973 as effectiveness wells for RSA-049 as specified in Table VII.1 of this permit. Wells RS634, RS1087, RS1593, and RS1594 shall be maintained as background wells for RSA-049.
- f. Maintain groundwater monitoring wells RS1996, RS1997, RS138, RS139, RS179, RS192, RS273, RS274, RS348 and RS349 as effectiveness wells for RSA-053, as specified in Table VII.1 of this permit. RS270, RS2175 and RS2003 shall be maintained as upgradient wells for RSA-053 and monitoring well RS195 shall be maintained as a point of compliance for RSA-053.
- g. Maintain groundwater monitoring wells RS038, RS039, RS165, RS166, RS200, RS201, RS223, RS297, RS384 and RS385 as effectiveness wells for RSA-054/RSA-055, as specified in Table VII.1 of this permit.
- h. Maintain groundwater monitoring wells RS048, RS518, RS521, RS630, RS1255, RS1257, RS1259, RS1261, RS1267, RS1273, and RS1275 as effectiveness wells and RS517 as a point of compliance well for RSA-056/RSA-139, as specified in Table VII.1 of this permit.
- i. Maintain groundwater monitoring wells RS020, RS022, RS197, RS282, RS552, RS555, RS556, RS2723, RS2876 and RS2877 as effectiveness wells for RSA-060, as specified in Table VII.1 of this permit. RS285 will be maintained as a background well for RSA-060.
- j. Maintain groundwater monitoring wells RS708, RS709, RS710, RS808, RS2545, RS2548, RS2549, RS2550, RS2637, RS2639, RS2640, and RS3054 as effectiveness wells for RSA-083, as specified in Table VII.1 of this permit. RS2547, RS2638, and RS2641 shall be maintained as upgradient wells for RSA-083.
- k. Maintain groundwater monitoring wells RS690, RS691, RS1223, RS1550, RS2027, RS2029, RS2030, RS2031, RS2032, RS2033, RS2034, RS2668, RS2669, RS2670, RS2671, RS2672, RS2673, RS2674, RS2675, RS2676, RS2677, RS2678, RS2683, RS2791, RS2793 and RS2824 as effectiveness wells for RSA-204, as specified in Table VII.1 of this permit.
- l. Maintain groundwater monitoring wells RS1215, RS1654, RS1856, RS1857, RS1896, RS2024, RS2183, RS2184, RS2185, RS2186, RS2187, RS2188, RS2189, RS2190, RS2554, RS2555, RS2556, and RS2777 as effectiveness wells for RSA-206, as specified in Table VII.1 of this permit. RS1653 and RS1897 shall be maintained as upgradient wells for RSA-206.
- m. Maintain groundwater monitoring wells RS649, RS652, RS654, RS662, RS1110, RS1748, RS1753, RS2019, RS2020, RS2021, RS2022, RS2660, RS2661, RS2690, and RS2766 as effectiveness wells for RSA-209, as specified in Table VII.1 of this permit. RS2657, RS2658, RS2659, and RS2665 shall be maintained as upgradient wells for RSA-209.

- n. Maintain groundwater monitoring wells RS1899, RS1900, RS1901, RS1902, RS2044, and RS2471 as effectiveness wells for RSA-225, as specified in Table VII.1 of this permit. RS2043 shall be maintained as an upgradient well for RSA-225.
- o. Maintain groundwater monitoring wells RS349, RS350, RS1679, RS1682, RS1686, RS1885, RS1888, RS1889, RS1892, RS1994, RS2401, RS2402, RS2761, and RS2767 as effectiveness wells for RSA-252, as specified in Table VII.1 of this permit. RS2400, RS2845, RS2846, RS2847, RS2934, RS2935, and RS2936 shall be maintained as background wells for RSA-252.
- p. Maintain groundwater monitoring wells RS1622 and RS1623 as effectiveness wells for RSA-269, as specified in Table VII.1 of this permit. RS1625 shall be maintained as an upgradient well for RSA-269.
- q. Maintain groundwater monitoring wells RS2707, RS2708, RS2709, RS2994, RS3003, and RS3004, as effectiveness wells for RSA-271, as specified in Table VII.1 of this Permit.
- r. Maintain groundwater monitoring wells RS2340, RS2341, RS2342, RS2343, RS2344, RS2346, RS2805, RS2806, and RS2807 as effectiveness wells for RSA-306, as specified in Table VII.1 of this Permit.
- s. **RESERVED**

2. Corrective Action Program

- a. The Permittee shall conduct a Corrective Action Program, as described in the approved CMI Plans, to remove or treat in place all hazardous constituents that exceed their respective groundwater protection standards as described in Table VII.3. of this permit at the point of compliance, between the point of compliance and the down-gradient facility property boundary, and beyond the facility boundary in accordance with ADEM Admin. Code Rule 335-14-5-.06(11)(e)2.
- b. Pursuant to ADEM Admin. Code Rules 335-14-5-.06(11)(c) and 335-14-5-.06(11)(e)3., the Permittee shall continue to implement the corrective action program as described in the approved CMI Plans within 120 calendar days after the effective date of this permit.
- c. The Permittee shall handle/treat groundwater in accordance with the approved CMI Plans and with the applicable requirements of the Hazardous Waste Facility Permit AL7 210 020 742 as issued by the Department.

3. Monitoring Requirements

In addition to the general groundwater monitoring requirements specified in Permit Condition VII.B.2., the Permittee shall:

- a. Sample all background, upgradient, point of compliance, boundary, and effectiveness monitoring wells shown in Table VII.1 of this permit and analyze for the constituents listed in Table VII.2. and Table VII.3. of this permit on an annual basis beginning within 120 calendar days of the effective date of this permit and continuing through the end of the compliance period.
- i. At RSA-003, the Permittee shall sample the groundwater wells listed in Table VII.1 for the constituents listed in Table VII.3. The Permittee shall sample these groundwater wells on a quarterly basis during Years 1 and 2, on a semiannual basis during Years 3 and 4, and on an annual basis through the remainder of the corrective measures. The Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency or analyte list based on sampling results presented in the Annual Effectiveness Report.
 - ii. At RSA-009, the Permittee shall sample the groundwater well listed in Table VII.1 on a semiannual basis for the constituents listed in Table VII.3.
 - iii. At RSA-045, the Permittee shall sample the groundwater wells listed in Table VII.1 for the constituents listed in Table VII.3. These groundwater wells shall be sampled during the baseline sampling event prior to injection activities and then on an annual basis as prescribed in the CMI Plan. Supplementary sampling events shall be conducted as needed to satisfy the requirements of the Underground Injection Control permit as described in the CMI Plan. The Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency or analyte list based on sampling results presented in the Annual Effectiveness Report.
 - iv. At RSA-049, the Permittee shall sample groundwater wells listed in Table VII.1 on a semiannual basis for the constituents listed in Table VII.3.
 - v. At RSA-053, the Permittee shall sample groundwater wells listed in Table VII.1 on a semiannual basis for the constituents listed in Table VII.3. After two years of semiannual sampling, the Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency or analyte list based on sampling results presented in the Annual Effectiveness Reports.
 - vi. At RSA-054/RSA-055, the Permittee shall sample the groundwater wells listed in Table VII.1 on an annual basis for the constituents listed in Table VII.3.
 - vii. At RSA-056/RSA-139, the Permittee shall sample the groundwater wells listed in Table VII.1 semiannually for the constituents listed in Table VII.3. After three years, the Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the

sampling frequency based on sampling results presented in the Annual Effectiveness Report.

- viii. At RSA-060, the Permittee shall initiate sampling of the groundwater wells listed in Table VII.1 on a semiannual basis for the constituents listed in Table VII.3. After two years of semiannual sampling, the Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency or analyte list based on sampling results presented in the Annual Effectiveness Report.
- ix. At RSA-083, the Permittee shall sample the groundwater wells listed in Table VII.1 for the constituents listed in Table VII.3. Two of the fifteen wells, RS2545 and RS2548, will be sampled during the baseline sampling event and then considered contingency wells for the remainder of the groundwater monitoring program. The Permittee shall sample the remaining groundwater wells on a quarterly basis during Year 1, on a semiannual basis during Years 2 and 3, and on an annual basis through the remainder of the remedial action. The Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency or analyte list based on sampling results presented in the Annual Effectiveness Report.
- x. At RSA-204, the Permittee shall initiate sampling of the groundwater wells listed in Table VII.1 on a quarterly basis for the first year and then on a semiannual basis for the next two years as prescribed in the CMI Plan for the constituents listed in Table VII.3. After two years of semiannual monitoring, the Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency or analyte list based on sampling results presented in the Annual Effectiveness Report.
- xi. At RSA-206, the Permittee shall sample the groundwater wells listed in Table VII.1 for the constituents listed in Table VII.3. These groundwater wells shall be sampled during the baseline sampling event prior to injection activities. During the injection activities, the Permittee shall also sample these groundwater wells as a part of the supplementary sampling events conducted as needed to satisfy the requirements of the Underground Injection Control permit and then on an annual basis as prescribed in the CMI Plan. The Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency or analyte list based on sampling results presented in the Annual Effectiveness Report.
- xii. At RSA-209, the Permittee shall sample the groundwater wells listed in Table VII.1 for the constituents listed in Table VII.3. These groundwater wells shall be sampled during the baseline sampling event prior to injection activities and then on an annual basis as prescribed in the CMI Plan. Excluding groundwater wells RS649, RS652, RS1748, RS1753, RS2657, and RS2658, the Permittee shall sample the remaining groundwater wells as a part of the supplementary sampling events

conducted as needed to satisfy the requirements of the Underground Injection Control permit as described in the CMI Plan. The Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency or analyte list based on sampling results presented in the Annual Effectiveness Report.

- xiii. At RSA-225, the Permittee shall initiate sampling of the groundwater wells listed in Table VII.1 on a quarterly basis for the first year and then on a semiannual basis for the next two years as prescribed in the CMI Plan for the constituents listed in Table VII.3. After two years of semiannual monitoring, the Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency, to abandon the upgradient monitoring well RS2043, or analyte list based on sampling results presented in the Annual Effectiveness Report.
 - xiv. At RSA-252, the Permittee shall sample the groundwater wells listed in Table VII.1 for the constituents listed in Table VII.3. Groundwater monitoring will begin with a baseline sampling event then continue on a semiannual basis until the groundwater analytical results indicate the cleanup goals have been attained for the groundwater constituents listed in Table VII.3 at RSA-252 for three consecutive years as prescribed in the CMI Plan. Long-term monitoring will continue and an annual report will be submitted to the Department to evaluate the effectiveness of monitored natural attenuation at RSA-252. The Permittee may request a permit modification, in accordance with Permit Condition I.J., to modify the sampling frequency or analyte list based on sampling results presented in the Annual Effectiveness Report.
 - xv. At RSA-269, the Permittee shall sample the groundwater wells listed in Table VII.1 for the constituents listed in Table VII.3. Monitoring wells RS1622, RS1623, and RS1625 will be sampled on a semiannual basis.
 - xvi. At RSA-271, the Permittee shall sample the groundwater wells listed in Table VII.1 on an annual basis for the constituents listed in Table VII.3.
 - xvii. At RSA-306, the Permittee shall sample the groundwater wells listed in Table VII.1 for the constituents listed in Table VII.3. The Permittee shall sample the monitoring wells on a quarterly basis through the duration of the remedial action period. Passive recovery of light non-aqueous phase liquid (LNAPL) shall be performed at monitoring well RS2340 using absorbent socks. LNAPL recovery shall be performed on a quarterly basis during years 1-10. The Permittee may request a permit modification, in accordance with Permit Condition I.J., to the sampling or LNAPL recovery frequency or the analyte list based on the sample results presented in the Annual Effectiveness Report.
- b. Sample all background, upgradient, point of compliance, effectiveness, and boundary monitoring wells shown in Table VII.1. of this permit and analyze for the constituents listed in Tables VII.2. and VII.3. of this permit on an annual

basis beginning within 120 calendar days of the effective date of this permit and continuing through the end of the compliance period.

- c. Sample all background, upgradient, point of compliance, effectiveness, and boundary monitoring wells shown in Table VII.1. of this permit and analyze for temperature (degrees F or C), specific conductance (Mhos/cm), and pH (standard units) each time the well is sampled as shown in Table VII.4. The data obtained should be submitted as raw data in the reports required by Permit Condition VII.B.6.
- d. When evaluating the monitoring results to determine the effectiveness of the corrective measures, in accordance with Permit Condition VII.E.4., the Permittee shall:
 - i. Determine if the corrective action system effectively addresses the entire plume of contamination;
 - ii. Determine if the concentration of the hazardous constituents are decreasing (pH increasing or decreasing toward neutrality, as applicable) in the effectiveness wells specified in Permit Condition VII.A.1.;
 - iii. Determine if hazardous waste or hazardous constituents are being released into the environment; and,
 - iv. Determine if hazardous constituents have been detected in the boundary wells specified in Permit Condition VII.A.1.

4. Reporting and Response Requirements

In addition to the recordkeeping and reporting requirements specified in Permit Condition VII.B.6.:

- a. The Permittee shall report the effectiveness of the corrective action program annually as required under ADEM Admin. Code Rule 335-14-5-.06(11)(g). These reports shall be submitted to the Department within 60 calendar days of each annual anniversary of this permit after corrective action is initiated and continue until corrective action is completed. The Permittee must provide data from groundwater monitoring along with an analysis of that data and any conclusions regarding the effectiveness of the program in accordance with Permit Condition VII.E.3.d. If the analysis of the data warrants any change to the corrective action program, the Permittee must include these revisions in the annual report which will be followed up within 90 calendar days with an application for permit modification in accordance with Permit Condition I.J.
- b. If corrective action is terminated under Permit Condition VII.B.4.c., the Permittee must sample all background, point of compliance, effectiveness and boundary sampling locations for the compounds listed in ADEM Admin. Code Rule 335-14-5-Appendix IX. Based upon the sampling results, the Permittee may petition the Department, in accordance with Permit Condition I.J., for a

permit modification to implement either a detection monitoring program or a compliance monitoring program.

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Table VII.1

MONITORING WELL DESIGNATIONS

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS107	POC	34°34' 15.98"N	86°39' 56.34"W	OB and OD	43.0	569.29	571.58	30.0-40.0	Overburden
RS108	POC	34°34' 11.93"N	86°39' 54.58"W	OB and OD	27.5	563.09	565.32	15.0-25.0	Overburden
RS209	POC	34°34' 15.71"N	86°40' 07.07"W	OB and OD	35.0	566.83	568.88	21.0-31.0	Overburden
RS211	POC	34°34' 20.28"N	86°40' 02.06"W	OB and OD	32.0	562.33	565.18	18.0-28.0	Overburden
RS243	BKG	34°34' 90.95"N	86°39' 59.62"W	OB and OD	39.8	572.82	575.68	24.3-33.3	Overburden
RS2882	POC	34°34' 18.94"N	86°40' 4.19"W	OB and OD	23.1	566.62	566.32	12.7-22.7	Overburden
RS2883	POC	34°34' 15.80"N	86°40' 6.11"W	OB and OD	39.8	563.39	563.13	29.4-39.4	Overburden
RS2884	POC	34°34' 15.99"N	86°40' 1.05"W	OB and OD	23.8	566.75	566.34	13.6-23.6	Overburden
RS842	EFF	34°40' 19.70"N	86°38' 1.57"W	RSA-003	66	606.23	605.93	51.0-66.0	Bedrock
RS1301	EFF	34°40' 19.72"N	86°38' 2.40"W	RSA-003	21.5	606.15	606.40	11.3-21.3	Overburden
RS1302	EFF	34°40' 19.83"N	86°38' 1.97"W	RSA-003	20	605.86	606.15	9.0-19.0	Overburden
RS1332	EFF	34°38' 1.95"N	86°38' 1.95"W	RSA-003	39	606.08	605.60	29.0-39.0	Overburden
RS1333	EFF	34°38' 5.19"N	86°38' 5.19"W	RSA-003	70	610.31	609.94	55.0-70.0	Bedrock
RS1355	POC	34°40' 21.58"N	86°37' 58.62"W	RSA-003	44	604.10	606.87	34.0-44.0	Overburden
RS1470	EFF	34°40' 20.63"N	86°38' 1.69"W	RSA-003	41	605.85	605.67	21.0-41.0	Overburden
RS1471	EFF	34°40' 19.99"N	86°38' 1.14"W	RSA-003	32	606.31	608.71	12.0-32.0	Overburden
RS1560	UPG	34°40' 21.35"N	86°38' 10.05"W	RSA-003	60	613.42	613.19	45.0-60.0	Bedrock
RS1562	POC	34°40' 17.63"N	86°37' 55.86"W	RSA-003	66	600.46	600.23	51.0-66.0	Bedrock

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS2455	UPG	34°40' 20.57"N	86°38' 05.21"W	RSA-003	32	610.17	609.86	22.0-32.0	Overburden
RS2816	EFF	TBD	TBD	RSA-003	TBD	TBD	TBD	TBD	TBD
RS1428	EFF	34° 38' 24.00"N	86° 40' 48.00"W	RSA-009	10.0	562.40	565.48	5.0-10.0	Overburden
RSP-1684	EFF	34° 39' 46.73" N	86° 37' 11.97" W	RSA-045	N/A	567.20	N/A	N/A	Spring
RS1743	EFF	34° 39' 52.01" N	86° 37' 28.14" W	RSA-045	39.8	592.27	594.80	29.1 - 39.1	Overburden
RS1744	UPG	34° 39' 48.43" N	86° 37' 16.69" W	RSA-045	36.0	585.92	585.67	25.2 - 35.2	Overburden
RS1745	EFF	34° 39' 43.89" N	86° 37' 16.83" W	RSA-045	21.9	586.57	588.93	11.2 - 21.2	Overburden
RS1821	EFF	34° 39' 46.36" N	86° 37' 9.24" W	RSA-045	38.3	568.85	571.00	25.4 - 35.4	Overburden
RS2149	EFF	34° 39' 52.42" N	86° 37' 27.82" W	RSA-045	61.2	591.69	594.31	47.6 - 57.6	Overburden
RS2153	EFF	34° 39' 43.65" N	86° 37' 17.37" W	RSA-045	48.5	586.34	589.05	38.1 - 48.1	Overburden
RS2167	EFF	34° 39' 53.92" N	86° 37' 32.37" W	RSA-045	48.6	596.7	599.15	38.2 - 48.2	Overburden
RS2169	EFF	34° 39' 41.18" N	86° 37' 18.35" W	RSA-045	42.4	588.44	591.06	32.0 - 42.0	Overburden
RS2691	EFF	34° 39' 43.42" N	86° 37' 14.88" W	RSA-045	26.8	573.31	575.65	13.9 - 23.9	Overburden
RS2692	EFF	34° 39' 42.17" N	86° 37' 23.21" W	RSA-045	35.9	586.83	589.39	23.0 - 33.0	Overburden
RS2693	EFF	34° 39' 38.66" N	86° 37' 18.76" W	RSA-045	33.0	580.72	582.79	20.1 - 30.1	Overburden
RS2787	UPG	34° 39' 40.33" N	86° 37' 27.17" W	RSA-045	54.3	579.30	581.57	41.4 - 51.4	Overburden
RS2788	EFF	34° 39' 39.6" N	86° 37' 20.83" W	RSA-045	84.5	577.86	580.22	71.6 - 81.6	Bedrock
RS2937	EFF	34° 39' 43.07" N	86° 37' 21.14" W	RSA-045	N/A	N/A	N/A	N/A	Overburden
RS2938	EFF	34° 39' 41.56" N	86° 37' 21.76" W	RSA-045	N/A	N/A	N/A	N/A	Overburden
RS2939	EFF	34° 39' 42.79" N	86° 37' 23.88" W	RSA-045	N/A	N/A	N/A	N/A	Overburden

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS2940	EFF	34° 39' 43.40" N	86° 37' 25.09" W	RSA-045	N/A	N/A	N/A	N/A	Overburden
RS2941	EFF	34° 39' 40.97" N	86° 37' 23.99" W	RSA-045	N/A	N/A	N/A	N/A	Overburden
RS2942	EFF	34° 39' 42.12" N	86° 37' 20.17" W	RSA-045	N/A	N/A	N/A	N/A	Overburden
RS054	EFF	34° 39' 14.28"N	86° 39' 26.15"W	RSA-049	56.8	613.56	616.66	41.8-51.8	Overburden
RS263	EFF	34° 39' 13.23"N	86° 39' 24.34"W	RSA-049	42.4	608.86	610.76	32.4-41.8	Overburden
RS633	EFF	34° 39' 17.36"N	86° 39' 15.89"W	RSA-049	50.0	613.47	615.97	29.0-44.0	Overburden
RS634	BKG	34° 39' 21.04"N	86° 39' 20.58"W	RSA-049 (GW RSA-149)	33.5	612.93	615.43	17.8-32.8	Overburden
RS635	EFF	34° 39' 22.67"N	86° 39' 24.64"W	RSA-049	40.5	619.78	622.28	25.0-40.0	Overburden
RS636	EFF	34° 39' 17.36"N	86° 39' 27.79"W	RSA-049	43.5	621.77	624.44	27.5-42.5	Overburden
RS1074	EFF	34° 39' 13.29"N	86° 39' 16.54"W	RSA-049	106.0	608.57	611.36	95.7-105.7	Bedrock
RS1087	BKG	34° 39' 21.23"N	86° 39' 20.35"W	RSA-049 (GW RSA-149)	76.5	612.86	616.4	66.2-76.2	Bedrock
RS1090	EFF	34° 39' 18.46"N	86° 39' 27.81"W	RSA-049	95.0	623.20	626.04	83.0-92.7	Bedrock
RS1589	EFF	34° 39' 16.25"N	86° 39' 15.91"W	RSA-049	49.0	611.03	614.61	34.0-49.0	Overburden
RS1590	EFF	34° 39' 14.30"N	86° 39' 19.93"W	RSA-049	79.0	610.16	612.48	69.0-79.0	Bedrock
RS1591	EFF	34° 39' 14.16"N	86° 39' 21.80"W	RSA-049	66.0	610.53	613.71	51.0-66.0	Bedrock
RS1592	EFF	34° 39' 14.17"N	86° 39' 21.91"W	RSA-049	48.0	610.53	613.71	33.0-48.0	Overburden
RS1593	BKG	34° 39' 14.81"N	86° 39' 31.67"W	RSA-049 (GW RSA-149)	117.0	620.67	623.91	107.0-117.0	Bedrock
RS1594	BKG	34° 39' 14.68"N	86° 39' 31.78"W	RSA-049 (GW RSA-149)	45.0	620.32	623.86	30.0-45.0	Overburden
RS1973	EFF	34°39' 9.878"N	86°39' 16.988"W	RSA-049	46.0	614.83	617.54	36.0-46.0	Overburden

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS138	EFF	34°37' 40.16"N	86°38' 42.51"W	RSA-053	43.0	568.54	571.54	21.5-41.5	Overburden
RS139	EFF	34°37' 39.98"N	86°38' 47.00"W	RSA-053	40.0	580.83	583.32	30.0-40.0	Overburden
RS179	EFF	34°37' 37.09"N	86°38' 47.35"W	RSA-053	24.9	559.27	561.31	19.7-24.7	Overburden
RS192	EFF	34°37' 45.18"N	86°38' 44.03"W	RSA-053	66.0	600.29	602.45	57.0-66.0	Overburden
RS195	POC	34°37' 37.50"N	86°38' 43.76"W	RSA-053	40.5	557.99	560.46	28.0-38.0	Overburden
RS270	UPG	34°37' 55.88"N	86°38' 57.55"W	RSA-053	46.6	591.48	594.2	36.6-45.6	Overburden
RS273	EFF	34°37' 50.13"N	86°38' 46.19"W	RSA-053	40.2	603.59	605.89	27.7-36.7	Overburden/ Perched
RS274	EFF	34°37' 50.19"N	86°38' 46.32"W	RSA-053	71.6	603.46	606.00	59.1-68.1	Overburden
RS348	EFF	34°37' 56.87"N	86°38' 52.45"W	RSA-053	38.0	603.51	606.36	26.0-36.0	Overburden/ Perched
RS349	EFF	34°37' 56.89"N	86°38' 52.32"W	RSA-053	63.0	603.67	606.34	52.0-62.0	Overburden
RS1996	EFF	34°37' 48.09"N	86°38' 51.83"W	RSA-053	52.5	605.77	607.97	42.1-52.1	Overburden
RS1997	EFF	34°37' 47.49"N	86°38' 51.39"W	RSA-053	90.0	605.13	607.85	80.0-90.0	Bedrock
RS2003	UPG	34°37' 52.58"N	86°38' 55.08"W	RSA-053	58.0	603.33	604.48	47.0-57.0	Overburden
RS2175	UPG	34°37' 52.58"N	86°38'55.01"W	RSA-053	92.0	603.71	605.04	81.0-91.0	Bedrock
RS038	EFF	34° 38' 30.46"N	86° 38' 28.93"W	RSA-054/055	52.5	625.69	628.56	37.5-47.5	Overburden
RS039	EFF	34° 38' 24.35"N	86° 38' 31.13"W	RSA-054/055	46.0	634.77	638.49	30.0-41.0	Overburden
RS165	EFF	34° 38' 41.58"N	86° 38' 29.24"W	RSA-054/055	44.0	609.28	611.99	21.0-41.0	Overburden
RS166	EFF	34° 38' 24.53"N	86° 38' 41.24"W	RSA-054/055	66.0	615.61	617.93	51.0-61.0	Overburden
RS200	EFF	34° 38' 44.88"N	86° 38' 33.19"W	RSA-054/055	41.0	604.26	607.00	26.0-37.0	Overburden
RS201	EFF	34° 38' 30.25"N	86° 38' 43.05"W	RSA-054/055	60.0	611.82	614.23	47.0-57.0	Overburden

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS223	EFF	34° 38' 36.33"N	86° 38' 29.49"W	RSA-054/055	44.0	614.13	616.86	29.0-39.0	Overburden
RS297	EFF	34° 38' 42.21"N	86° 38' 43.02"W	RSA-054/055	44.4	627.86	630.65	31.9-40.9	Overburden
RS384	EFF	34° 38' 25.94"N	86° 38' 43.36"W	RSA-054/055	42.0	614.74	617.69	27.0-42.0	Overburden
RS385	EFF	34° 38' 37.37"N	86° 38' 45.74"W	RSA-054/055	40.0	630.40	632.66	30.0-40.0	Overburden
RS048	EFF	34°38' 36.101"N	86°38' 3.962"W	RSA-056/139	23.6	587.34	590.87	8.6-18.6	Overburden
RS517	POC	34°38' 29.72"N	86°38' 0.909"W	RSA-056/139	22.1	583.12	585.82	16.3-21.3	Overburden
RS518	EFF	34°38' 34.317"N	86°38' 1.093"W	RSA-056/139	28.1	586.36	587.96	22.6-27.6	Overburden
RS521	EFF	34°38' 34.093"N	86°38' 7.729"W	RSA-056/139	36.5	587.72	590.88	30.7-35.7	Overburden
RS630	EFF	34°38' 32.798"N	86°38'4.85"W	RSA-056/139	24.0	589.69	592.19	9.0-23.8	Overburden
RS1255	EFF	34°38' 36.243"N	86°38' 9.776"W	RSA-056/139	27.0	589.38	591.46	17.0-27.0	Overburden
RS1257	EFF	34°38' 36.041"N	86°38' 8.098"W	RSA-056/139	25.0	586.68	588.91	15.0-25.0	Overburden
RS1259	EFF	34°38' 34.513"N	86°38' 8.435"W	RSA-056/139	27.0	586.89	586.67	17.0-27.0	Overburden
RS1261	EFF	34°38' 35.495"N	86°38' 9.956"W	RSA-056/139	28.0	589.63	591.72	18.0-28.0	Overburden
RS1267	EFF	34°38' 32.508"N	86°38' 0.51"W	RSA-056/139	23.0	585.09	587.08	13.0-23.0	Overburden
RS1273	EFF	34°38' 30.591"N	86°38' 5.545"W	RSA-056/139	28.0	584.27	586.04	18.0-28.0	Overburden
RS1275	EFF	34°38' 32.203"N	86°38' 7.181"W	RSA-056/139	34.5	587.85	589.94	24.5-34.5	Overburden
RS020	EFF	34°37' 31.66"N	86°38' 22.77"W	RSA-060	26.0	556.36	570.56	10.0-21.0	Overburden
RS022	EFF	34°37' 29.49"N	86°38' 32.71"W	RSA-060	41.0	567.05	570.12	14.0-25.0	Overburden
RS197	EFF	34°37' 36.97"N	86°38' 36.23"W	RSA-060	52.2	574.78	576.50	39.0-49.0	Overburden
RS282	EFF	34°37' 37.03"N	86°38' 24.85"W	RSA-060	28.3	568.23	570.92	15.8-24.8	Overburden

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS285	BKG	34°37' 44.14"N	86°38' 34.66"W	RSA-060	43.5	572.87	575.25	31.0-40.0	Overburden
RS552	EFF	34°37' 29.88"N	86°38' 32.58"W	RSA-060	62.0	569.90	572.61	52.0-62.0	Bedrock
RS555	EFF	34°37' 32.45"N	86°38' 33.60"W	RSA-060	47.0	573.10	575.94	37.0-47.0	Overburden
RS556	EFF	34°37' 25.615"N	86°38' 31.30"W	RSA-060	35.5	563.50	566.31	25.5-35.5	Interface
RS2723	EFF	34°37' 31.05"N	86°38' 27.67"W	RSA-060	18.0	571.04	573.38	7.6-17.6	Overburden
RS2876	EFF	34° 37' 35.76"N	86° 38' 34.77"W	RSA-060	54.0	576.32	578.7	43.6-53.6	Overburden
RS2877	EFF	34° 37' 40.01"N	86° 38' 33.72"W	RSA-060	36.5	572.11	574.14	26.1-36.1	Overburden
RS708	EFF	34°37' 16.029"N	86°37' 13.622"W	RSA-083	10.5	575.28	578.19	5.5-10.5	Overburden
RS709	EFF	34°37' 14.649"N	86°37' 11.879"W	RSA-083	14.0	569.58	572.10	4.0-14.0	Interface
RS710	EFF	34°37' 15.931"N	86°37' 10.863"W	RSA-083	15.0	571.81	574.75	5.0-15.0	Interface
RS808	EFF	34°37' 12.068"N	86°37' 14.784"W	RSA-083	8.0	569.71	571.80	3.0-8.0	Overburden
RS2545	EFF	34°37' 14.766"N	86°37' 15.682"W	RSA-083	19.3	572.47	574.875	8.9-18.9	Interface
RS2547	UPG	34°37' 12.858"N	86°37' 12.065"W	RSA-083	12.2	570.34	572.58	1.8-11.8	Interface
RS2548	EFF	34°37' 17.798"N	86°37' 10.897"W	RSA-083	15.3	570.24	574.10	4.9-14.9	Interface
RS2549	EFF	34°37' 20.072"N	86°37' 7.786"W	RSA-083	14.6	571.84	574.27	4.2-14.2	Interface
RS2550	EFF	34°37' 18.138"N	86°37' 6.179"W	RSA-083	21.4	573.58	576.11	11.0-21.0	Interface
RS2637	EFF	34°37' 14.604"N	86°37' 4.931"W	RSA-083	17.8	573.83	576.25	7.4-17.4	Interface
RS2638	UPG	34°37' 12.522"N	86°37' 8.214"W	RSA-083	17.5	572.50	574.86	7.0-17.0	Interface
RS2639	EFF	34°37' 20.956"N	86°37' 8.605"W	RSA-083	16.3	571.74	574.10	5.9-15.9	Interface

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS2640	EFF	34°37' 20.336"N	86°37' 4.782"W	RSA-083	19.5	573.16	575.62	9.1-19.1	Interface
RS2641	UPG	34°37' 9.859"N	86°37' 9.793"W	RSA-083	14.5	572.76	575.08	4.1-14.1	Interface
RS3054	EFF	34°37' 14.471"N	86°37' 13.592"W	RSA-083	12.0	568.58	570.88	2.0-12.0	Overburden
RS690	EFF	34° 37' 13.65"N	86° 36' 38.47"W	RSA-204	23.5	579.47	582.59	13.5 - 23.5	Overburden
RS691	EFF	34° 37' 17.50"N	086° 36' 35.04"W	RSA-204	22.0	577.53	580.64	12.0 - 22.0	Interface
RS1223	EFF	34° 37' 18.60"N	86° 36' 38.61"W	RSA-204	29.0	578.65	581.43	18.7 - 28.7	Interface
RS1550	EFF	34° 37' 21.73"N	86° 36' 35.61"W	RSA-204	26.0	575.04	575.28	16.0 - 26.0	Overburden
RS2027	EFF	34° 37' 21.09"N	86° 36' 40.47"W	RSA-204	34.7	580.94	583.40	24.3 - 34.3	Interface
RS2029	EFF	34° 37' 18.48"N	86° 36' 40.55"W	RSA-204	32.2	585.66	588.11	21.7 - 31.7	Interface
RS2030	EFF	34° 37' 13.79"N	86° 36' 36.26"W	RSA-204	24.2	581.54	584.12	13.8 - 23.8	Interface
RS2031	EFF	34° 37' 14.67"N	86° 36' 33.72"W	RSA-204	25.7	576.94	579.83	15.3 - 25.3	Interface
RS2032	EFF	34° 37' 18.92"N	86° 36' 35.04"W	RSA-204	32.5	577.66	576.91	22.1 - 32.1	Interface
RS2033	EFF	34° 37' 22.72"N	86° 36' 34.51"W	RSA-204	42.8	571.54	574.29	32.4 - 42.4	Interface
RS2034	EFF	34° 37' 22.84"N	86° 36' 37.54"W	RSA-204	24.6	576.73	579.13	14.2 - 24.2	Interface
RS2668	EFF	34° 37' 20.85"N	86° 36' 39.40"W	RSA-204	55	580.92	583.71	45 - 55	Bedrock
RS2669	EFF	34° 37' 19.34"N	86° 36' 37.09"W	RSA-204	60.0	576.91	579.33	50.0 – 60.0	Bedrock
RS2670	EFF	34° 37' 16.15"N	86° 36' 36.89"W	RSA-204	50	579.45	582.23	40 - 50	Bedrock
RS2671	EFF	34° 37' 14.91"N	86° 36' 35.67"W	RSA-204	65	581.01	580.78	55.0-65.0	Bedrock
RS2672	EFF	34° 37' 14.25"N	86° 36' 35.87"W	RSA-204	29.9	581.40	581.12	19.5 - 29.5	Interface
RS2673	EFF	34° 37' 15.16"N	86° 36' 36.59"W	RSA-204	27.2	582.14	582.05	16.8 - 26.8	Interface

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS2674	EFF	34° 37' 15.84"N	86° 36' 35.23"W	RSA-204	27.8	579.80	582.12	17.4 - 27.4	Interface
RS2675	EFF	34° 37' 16.24"N	86° 36' 36.60"W	RSA-204	30.3	579.17	581.99	19.9 - 29.9	Overburden
RS2676	EFF	34° 37' 17.46"N	86° 36' 37.23"W	RSA-204	20.5	578.89	581.06	10.1 - 20.1	Overburden
RS2677	EFF	34° 37' 19.12"N	86° 36' 38.21"W	RSA-204	29.5	578.31	580.75	19.1 - 29.1	Overburden
RS2678	EFF	34° 37' 20.02"N	086° 36' 37.65"W	RSA-204	28.4	578.348	580.788	18.0 - 28.0	Overburden
RS2683	EFF	34° 37' 21.49"N	086° 36' 39.73"W	RSA-204	28.8	579.491	581.813	18.4 - 28.4	Overburden
RS2791	EFF	34° 37' 15.38"N	86° 36' 35.74"W	RSA-204	28.5	582.65	580.26	18.2 - 28.2	Interface
RS2793	EFF	34° 37' 19.06"N	86° 36' 36.93"W	RSA-204	24.9	579.43	577.16	14.6 - 24.6	Interface
RS2824	EFF	34° 37' 22.837"	86° 36' 40.33"	RSA-204	24.5	578.134	580.466	13.6 - 23.6	Interface
RS1215	EFF	34° 37' 39.02" N	86° 36' 44.73" W	RSA-206	20.0	566.3	568.7	9.3 - 19.3	Interface
RS1653	UPG	34° 37' 38.86" N	86° 36' 42.87" W	RSA-206	22.2	565.6	567.8	11.8 - 21.8	Interface
RS1654	EFF	34° 37' 40.04" N	86° 36' 46.41" W	RSA-206	9.4	562.8	565.1	3.9 - 8.9	Overburden
RS1856	EFF	34° 37' 38.66" N	86° 36' 45.71" W	RSA-206	12.6	563.8	566.3	7.2 - 12.1	Overburden
RS1857	EFF	34° 37' 32.05" N	86° 36' 43.65" W	RSA-206	18.4	566.7	568.8	8.0 - 18.0	Overburden
RS1896	EFF	34° 37' 40.02" N	86° 36' 43.93" W	RSA-206	27.8	570.4	570.2	17.4 - 27.4	Overburden
RS1897	UPG	34° 37' 31.75" N	86° 36' 42.72" W	RSA-206	13.7	570.3	571.9	3.3 - 13.3	Overburden
RS2024	EFF	34° 37' 39.28" N	86° 36' 45.30" W	RSA-206	12.0	563.9	566.2	7.5 - 11.5	Overburden
RS2183	EFF	34° 37' 41.29" N	86° 36' 47.44" W	RSA-206	13.3	562.0	564.4	7.9 - 12.9	Overburden
RS2184	EFF	34° 37' 41.99" N	86° 36' 45.63" W	RSA-206	11.2	562.5	565.0	5.8 - 10.8	Overburden
RS2185	EFF	34° 37' 39.37" N	86° 36' 47.05" W	RSA-206	12.9	563.4	565.6	7.5 - 12.5	Overburden

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS2186	EFF	34° 37' 37.57" N	86° 36' 47.51" W	RSA-206	6.3	564.1	566.2	2.9 - 5.9	Overburden
RS2187	EFF	34° 37' 33.38" N	86° 36' 43.15" W	RSA-206	27.5	566.6	569.0	17.1 - 27.1	Overburden
RS2188	EFF	34° 37' 32.96" N	86° 36' 44.88" W	RSA-206	12.3	566.3	568.5	6.9 - 11.9	Overburden
RS2189	EFF	34° 37' 32.41" N	86° 36' 43.18" W	RSA-206	42.3	566.7	569.1	31.9 - 41.9	Overburden
RS2190	EFF	34° 37' 30.33" N	86° 36' 43.32" W	RSA-206	14.2	567.6	569.7	8.8 - 13.8	Overburden
RS2554	EFF	34° 37' 32.34" N	86° 36' 47.73" W	RSA-206	15.0	567.4	569.7	4.6 - 14.6	Interface
RS2555	EFF	34° 37' 33.75" N	86° 36' 45.88" W	RSA-206	13.3	565.8	568.1	2.9 - 12.9	Interface
RS2556	EFF	34° 37' 34.66" N	86° 36' 43.09" W	RSA-206	33.2	567.9	570.4	22.8 - 32.8	Overburden
RS2777	EFF	34° 37' 41.19" N	86° 36' 49.94" W	RSA-206	20.2	563.3	565.8	19.8 - 9.8	Interface
RS649	EFF	34° 36' 18.71"N	86° 35' 35.20"W	RSA-209	25	573.47	573.19	15.0 - 25.0	Interface
RS652	EFF	34° 36' 13.91"N	86° 35' 36.93"W	RSA-209	25	578.01	580.82	8.0 - 23.0	Overburden
RS654	EFF	34° 36' 16.75"N	86° 35' 41.18"W	RSA-209	40	587.06	586.88	28.0 - 38.0	Interface
RS662	EFF	34° 36' 14.85"N	86° 35' 42.74"W	RSA-209	32	585.03	587.56	17.0 - 32.0	Interface
RS1110	EFF	34° 36' 14.36"N	86° 35' 41.22"W	RSA-209	46.5	583.86	586.63	30.0 - 45.0	Interface
RS1748	EFF	34° 36' 16.14"N	86° 35' 34.00"W	RSA-209	19.6	571.84	571.58	9.6 - 19.2	Overburden
RS1753	EFF	34° 36' 12.52"N	86° 35' 38.18"W	RSA-209	25.2	576.47	578.69	14.8 - 24.8	Overburden
RS2019	EFF	34° 36' 17.79"N	86° 35' 40.12"W	RSA-209	36.3	585.55	587.67	25.9 - 35.9	Interface
RS2020	EFF	34° 36' 17.14"N	86° 35' 41.88"W	RSA-209	30.2	589.03	591.73	19.8 - 29.8	Interface
RS2021	EFF	34° 36' 16.14"N	86° 35' 40.49"W	RSA-209	25.4	584.47	586.75	15.0 - 25	Interface
RS2022	EFF	34° 36' 16.49"N	86° 35' 38.21"W	RSA-209	34.4	578.09	580.19	24.0 - 34.0	Overburden

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS2657	UPG	34° 36' 18.43"N	86° 35' 43.84"W	RSA-209	27.1	586.19	588.66	16.7 - 26.7	Interface
RS2658	UPG	34° 36' 19.43"N	86° 35' 42.12"W	RSA-209	29.1	588.63	591.17	18.7 - 28.7	Interface
RS2659	UPG	34° 36' 17.66"N	86° 35' 42.53"W	RSA-209	21.8	590.44	593.06	11.4 - 21.4	Interface
RS2660	EFF	34° 36' 17.03"N	86° 35' 43.23"W	RSA-209	41.2	590.80	593.13	30.8 - 40.8	Interface
RS2661	EFF	34° 36' 16.18"N	86° 35' 41.90"W	RSA-209	27.6	586.34	588.97	17.2 - 27.2	Interface
RS2665	UPG	34° 36' 18.66"N	86° 35' 40.08"W	RSA-209	31.6	586.67	588.89	21.2 - 31.2	Interface
RS2690	EFF	34° 36' 16.75"N	86° 35' 41.35"W	RSA-209	65	587.15	589.95	55.0 - 65.0	Bedrock
RS2766	EFF	34° 36' 16.85"N	86° 35' 41.28"W	RSA-209	119	587.49	589.53	98.6 - 118.6	Bedrock
RS1899	EFF	34° 38' 28.49" N	86° 38' 19.07" W	RSA-225	43.5	610.02	609.80	33.0 - 43.0	Overburden
RS1900	EFF	34° 38' 26.50" N	86° 38' 15.74" W	RSA-225	39.6	600.67	602.64	29.1 - 39.1	Overburden
RS1901	EFF	34° 38' 25.26" N	86° 38' 16.80" W	RSA-225	34.3	602.21	601.95	23.8 - 33.8	Overburden
RS1902	EFF	34° 38' 24.26" N	86° 38' 14.84" W	RSA-225	42.4	600.26	599.90	31.9 - 41.9	Overburden
RS2043	UPG	34° 38' 29.35" N	86° 38' 19.13" W	RSA-225	41.5	607.96	607.60	31.1 - 41.1	Overburden
RS2044	EFF	34° 38' 28.42" N	86° 38' 17.54" W	RSA-225	29.5	605.93	608.01	19.1 - 29.1	Overburden
RS2471	EFF	34° 38' 22.24" N	86° 38' 15.63" W	RSA-225	35.6	611.03	613.19	20.2 - 35.2	Overburden
RS349	EFF	34° 37' 56.82" N	86° 38' 52.43" W	RSA-252	62.0	603.88	606.45	52.0 - 62.0	Overburden
RS350	EFF	34° 37' 53.87" N	86° 38' 46.02" W	RSA-252	32.0	605.01	607.60	14.5 - 29.5	Overburden
RS1679	EFF	34° 38' 03.92" N	86° 38' 46.22" W	RSA-252	37.5	596.00	595.60	27.5 - 37.5	Overburden
RS1682	EFF	34° 37' 59.62" N	86° 38' 48.46" W	RSA-252	45.4	604.15	606.54	35.4 - 45.4	Overburden
RS1686	EFF	34° 37' 58.20" N	86° 38' 38.34" W	RSA-252	39.6	585.97	588.81	29 - 39	Overburden

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS1885	EFF	34° 38' 06.46" N	86° 38' 32.30" W	RSA-252	37.0	587.65	589.95	26.6 - 36.6	Overburden
RS1888	EFF	34° 37' 55.05" N	86° 38' 31.21" W	RSA-252	32.0	582.57	584.60	21.6 - 31.6	Overburden
RS1889	EFF	34° 37' 58.82" N	86° 38' 29.98" W	RSA-252	31.0	586.30	588.75	20.6 - 30.6	Overburden
RS1892	EFF	34° 38' 03.33" N	86° 38' 31.35" W	RSA-252	32.0	588.91	591.32	21.6 - 31.6	Overburden
RS1994	EFF	34° 38' 04.36" N	86° 38' 40.26" W	RSA-252	33.6	585.63	585.16	23.3 - 33.3	Overburden
RS2400	BKG	34° 38' 07.66" N	86° 38' 43.92" W	RSA-252	34.1	592.95	595.59	23.9 - 33.9	Overburden
RS2401	EFF	34° 38' 05.48" N	86° 38' 35.67" W	RSA-252	35.3	589.88	592.15	24.9 - 34.9	Overburden
RS2402	EFF	34° 38' 02.07" N	86° 38' 37.88" W	RSA-252	44.0	590.51	592.93	21 - 31	Overburden
RS2761	EFF	34° 38' 04.51" N	86° 38' 45.49" W	RSA-252	99.6	594.95	594.76	89.2 - 99.2	Bedrock
RS2767	EFF	34° 37' 55.73" N	86° 38' 37.40" W	RSA-252	34.1	589.69	591.93	23.7 - 33.7	Overburden
RS2845	BKG	34° 38' 12.70" N	86° 38' 39.49" W	RSA-252	48.8	592.68	594.76	38.4 - 48.4	Overburden
RS2846	BKG	34° 38' 12.47" N	86° 38' 43.02" W	RSA-252	38.4	593.13	595.67	28.0 - 38.0	Overburden
RS2847	BKG	34° 38' 10.30" N	86° 38' 37.92" W	RSA-252	36.8	589.28	589.01	26.6 - 38.4	Overburden
RS2934	BKG	TBD	TBD	RSA-252	TBD	TBD	TBD	TBD	TBD
RS2935	BKG	TBD	TBD	RSA-252	TBD	TBD	TBD	TBD	TBD
RS2936	BKG	TBD	TBD	RSA-252	TBD	TBD	TBD	TBD	TBD
RS1622	EFF	34° 35' 48.13" N	86° 37' 58.79" W	RSA-269	26.9	575.66	577.95	6.5 - 26.5	Overburden
RS1623	EFF	34° 35' 48.11" N	86° 37' 59.20" W	RSA-269	25.5	573.06	575.51	5.1 - 25.1	Overburden
RS1625	UPG	34° 35' 48.00" N	86° 38' 0.16" W	RSA-269	25.5	570.42	570.17	5.1 - 25.1	Overburden
RS2707	EFF	34° 37' 37.42" N	86° 35' 36.75" W	RSA-271	39.5	584.44	586.89	29.1 - 39.1	Overburden

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS2708	EFF	34° 37' 36.88" N	86° 35' 36.82" W	RSA-271	36.5	582.80	585.01	26.1 – 36.1	Overburden
RS2709	EFF	34° 37' 37.50" N	86° 35' 36.10" W	RSA-271	36.3	583.66	586.05	25.9 – 35.9	Overburden
RS2994	EFF	34° 37' 36.62" N	86° 35' 35.59" W	RSA-271	32.0	580.47	582.97	21.4 – 31.4	Overburden
RS3003	EFF	34° 37' 37.75" N	86° 35' 33.44" W	RSA-271	35.0	574.70	577.20	25.0 – 35.0	Overburden
RS3004	EFF	34° 37' 35.64" N	86° 35' 35.80" W	RSA-271	35.0	581.14	583.64	25.0 – 35.0	Overburden
RS2340	EFF	34°35' 55.715"N	86°37' 15.519" W	RSA-306	17.2	584.56	584.10	6.8 - 16.8	Overburden
RS2341	EFF	34°35' 56.299"N	86°37' 16.335" W	RSA-306	17.0	583.99	583.76	6.5 - 16.5	Overburden
RS2342	EFF	34°35' 56.011"N	86°37' 16.553" W	RSA-306	16.4	583.90	583.56	6.0 - 16.0	Overburden
RS2343	EFF	34°35' 56.021"N	86°37' 15.795" W	RSA-306	12.4	585.02	584.68	7.0 - 12.0	Overburden
RS2344	EFF	34°35' 56.018"N	86°37' 15.491" W	RSA-306	9.8	584.72	584.38	4.4 - 9.4	Overburden
RS2346	EFF	34°35' 55.385"N	86°37' 15.059" W	RSA-306	12.0	584.10	583.85	6.6 - 11.6	Overburden
RS2805	EFF	34°35' 54.810"N	86°37' 16.176" W	RSA-306	17.3	582.95	585.44	6.9 - 16.9	Overburden
RS2806	EFF	34°35' 55.343"N	86°37' 14.461" W	RSA-306	12.9	583.71	585.93	7.5 - 12.5	Overburden
RS2807	EFF	34°35' 56.788"N	86°37' 14.672" W	RSA-306	15.5	584.44	586.70	5.1 - 15.1	Overburden
RS065	BDY	34°40' 58.86"N	86°36' 41.71"W	Facility-Wide	58.0	596.85	597.98	43.0-58.0	Interface
RS066	BDY	34°40' 02.80"N	86°36' 38.08"W	Facility-Wide	47.0	583.98	583.98	32.0-47.0	Interface
RS070	BDY	34° 35' 46.53"N	86° 35' 12.39"W	Facility-Wide	48.0	571.12	572.27	33.0-48.0	Interface
RS961	BDY	34°37' 37.52"N	86°35' 22.155"W	Facility-Wide	45.5	566.46	568.92	35.5-45.5	Interface
RS1111	BDY	34° 41' 46.97"N	86° 41' 58.25"W	Facility-Wide	25.0	605.75	608.36	15.0-25.0	Overburden
RS1114	BDY	34° 41' 00.30"N	86° 42' 52.73"W	Facility-Wide	61.0	598.59	601.27	50.6 – 60.6	Overburden

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS1121	BDY	34° 39' 42.59"N	86° 42' 50.81"W	Facility-Wide	16.0	584.49	587.36	5.6-15.6	Overburden
RS1153 EP ³ - 3	BDY	34° 34' 17.14"N	86° 40' 20.69"W	Facility-Wide	45.0	564.95	567.61	34.6-44.6	Interface
RS1159 EP ³ - 5	BDY	34° 35' 3.22"N	86° 36' 8.30"W	Facility-Wide	40.6	565.21	567.69	25.0-40.0	Interface
RS1353	BDY	34° 38' 43.58"N	86° 42' 35.94"W	Facility-Wide	36.0	581.39	584.01	25.8-35.8	Overburden
RS1414	BDY	34°41' 27.246"N	86°42' 44.679"W	Facility-Wide	85.0	643.30	645.47	75.0-85.0	Interface
RS1419	BDY	34°41 '0.625"N	86°37' 18.301"W	Facility-Wide	25.0	578.34	580.56	10.0-25.0	Overburden
RS1523	BDY	34° 37' 02.71"N	86° 35' 12.16"W	Facility-Wide	22.0	568.09	571.10	11.8 – 21.8	Interface
RS1527 (off site)	BDY	34° 36' 38.96"N	86° 35' 14.10"W	Facility-Wide	21.0	567.38	570.80	11.0 – 21.0	Interface
RS1711	BDY	34°36' 9.326"N	86°35' 15.345"W	Facility-Wide	54.0	565.72	568.23	44.0 – 54.0	Interface
MSW13	BDY	34°41' 48.127"N	86°41' 56.881"W	Facility-Wide	0.0	NA	NA	NA	Surface water
RS2109	BDY	34° 35' 46.53"N	86° 35' 12.39"W	Facility-Wide	30.8	571.12	572.27	20.4-30.4	Overburden
RS2801	BDY	34° 36' 27.28"N	86° 35' 21.67"W	Facility-Wide	16.3	568.88	571.27	5.9-15.9	Overburden
RS2802	BDY	34° 36' 17.77"N	86° 35' 20.66"W	Facility-Wide	18.5	568.53	571.02	8.1-18.1	Overburden
RS2803	BDY	34° 36' 10.52"N	86° 35' 19.40"W	Facility-Wide	30.3	566.23	568.74	19.9-29.9	Overburden
RS2804	BDY	34° 36' 01.56"N	86° 35' 18.59"W	Facility-Wide	50.0	568.71	570.34	39.6-49.6	Overburden
MSW14	BDY	34°42' 32.59"N	86°38' 21.466"W	Facility-Wide	0.0	NA	NA	NA	Surface water
MSW16	BDY	34°39' 40.587"N	86°36' 17.672"W	Facility-Wide	0.0	NA	NA	NA	Surface water
MSW18a	BDY	34°37' 18.974"N	86°35' 15.024"W	Facility-Wide	0.0	NA	NA	NA	Surface water
INCRK-01	BDY	34°34' 54.971"N	86°43' 47.586"W	Facility-Wide	0.0	556.00	NA	NA	Surface water
OFF-SW27 (off site)	BDY	34°35' 48.045"N	86°35' 9.743"W	Facility-Wide	0.0	NA	NA	NA	Surface water

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
P-SW11	BDY	34°34' 21.525"N	86°40' 20.909"W	Facility-Wide	0.0	556.00	NA	NA	Surface water
RS065A	BDY	34°40' 46.52"N	86°36' 37.19"W	Facility-Wide Bedrock	142.0	585.89	588.89	57.0 – 77.0 127.0-142.0	Bedrock
RS643	BDY	34°37' 29.87"N	86°35' 21.23"W	Facility-Wide Bedrock	56.0	577.66	580.11	44.7 – 55.1	Bedrock
RS1148 EP ³ - 1	BDY	34°35' 21.629"N	86° 41' 28.22"W	Facility-Wide Bedrock	194.0	565.09	568.07	182.3-192.3	Bedrock
RS1149 EP ³ - 1	BDY	34° 35' 21.65"N	86° 41' 28.31"W	Facility-Wide Bedrock	274.4	565.23	567.80	259.4-274.4	Bedrock
RS1151 EP ³ - 2	BDY	34° 35' 00.22"N	86° 40' 39.41"W	Facility-Wide Bedrock	235.5	560.22	565.00	225.0-235.0	Bedrock
RS1152 EP ³ - 2	BDY	34° 35' 00.11"N	86° 40' 39.24"W	Facility-Wide Bedrock	300.3	560.16	564.79	270.0-285.0	Bedrock
RS1154 EP ³ - 3	BDY	34°34' 17.042"N	86°40' 20.77"W	Facility-Wide Bedrock	191.0	565.06	567.73	176.0-191.0	Bedrock
RS1157 EP ³ - 4	BDY	34° 34' 41.19"N	86° 37' 00.55"W	Facility-Wide Bedrock	200.3	562.99	565.43	190.0-200.0	Bedrock
RS1158 EP ³ - 4	BDY	34° 34' 41.30"N	86° 37' 00.48"W	Facility-Wide Bedrock	327.8	562.81	565.34	316.0-326.0	Bedrock
RS1160 EP ³ - 5	BDY	34° 35' 03.17"N	86° 36' 08.41"W	Facility-Wide Bedrock	205.5	565.24	567.85	195.5-205.5	Bedrock
RS1164 EP ³ - 6	BDY	34° 35' 7.55"N	86° 35' 16.45"W	Facility-Wide Bedrock	278.8	563.31	566.47	268.8-278.8	Bedrock
RS1167	BDY	34° 38' 15.09"N	86° 36' 08.57"W	Facility-Wide Bedrock	198.0	566.36	568.28	182.2-192.2	Bedrock
RS1294 EP ³ - 6	BDY	34° 35' 07.73"N	86° 35' 16.61"W	Facility-Wide Bedrock	119.5	563.29	565.85	109.0-119.0	Bedrock
RS1413S	BDY	34°41' 47.371"N	86°41' 54.903"W	Facility-Wide Bedrock	175.0	609.56	612.28	90.0-120.0	Nested Bedrock
RS1413D	BDY	34°41' 47.371"N	86°41' 54.903"W	Facility-Wide Bedrock	175.0	609.56	612.28	155.0-175.0	Nested Bedrock
RS1416	BDY	34°42' 33.373"N	86°39' 3.342"W	Facility-Wide Bedrock	56.0	683.69	685.69	36.0-56.0	Bedrock
RS1418	BDY	34°42' 32.778"N	86°38' 25.385"W	Facility-Wide Bedrock	92.0	629.14	631.32	82.0-92.0	Bedrock
RS1483	BDY	34°41' 27.095"N	86°42' 44.787"W	Facility-Wide Bedrock	101.0	642.52	644.76	91.0-101.0	Bedrock
RS1486c	BDY	34°42' 33.373"N	86°39' 3.342"W	Facility-Wide Bedrock	258.0	683.30	685.65	144.0-154.5	CMT Bedrock

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS1488e	BDY	34°42' 32.817"N	86° 38' 25.297"W	Facility-Wide Bedrock	125.0	628.99	631.63	121.5-124.5	CMT Bedrock
RS1489e	BDY	34°41' 0.625"N	86°37' 18.301"W	Facility-Wide Bedrock	200.0	578.75	581.18	184.5-197.0	CMT Bedrock
RS1514S	BDY	34° 37' 16.10"N	86° 35' 30.17"W	Facility-Wide Bedrock	150.0	569.55	572.07	121.0-126.0	Nested Bedrock
RS1514D	BDY	34° 37' 16.10"N	86° 35' 30.17"W	Facility-Wide Bedrock	150.0	569.55	572.07	144.0-149.0	Nested Bedrock
RS1518a	BDY	34° 37' 02.71"N	86° 35' 12.12"W	Facility-Wide Bedrock	240.0	567.67	570.15	55.5-61.0	FLUTE Bedrock
RS1518b	BDY	34° 37' 02.71"N	86° 35' 12.12"W	Facility-Wide Bedrock	240.0	567.67	570.15	83.0-89.0	FLUTE Bedrock
RS1518c	BDY	34° 37' 02.71"N	86° 35' 12.12"W	Facility-Wide Bedrock	240.0	567.67	570.15	100.0-110.0	FLUTE Bedrock
RS1518d	BDY	34° 37' 02.71"N	86° 35' 12.12"W	Facility-Wide Bedrock	240.0	567.67	570.15	152.0-163.0	FLUTE Bedrock
RS1518e	BDY	34° 37' 02.71"N	86° 35' 12.12"W	Facility-Wide Bedrock	240.0	567.67	570.15	213.0-229.0	FLUTE Bedrock
RS1520a	BDY	34° 36' 22.62"N	86° 35' 16.66"W	Facility-Wide Bedrock	260.0	569.09	571.76	67.0 – 75.0	FLUTE Bedrock
RS1520b	BDY	34° 36' 22.62"N	86° 35' 16.66"W	Facility-Wide Bedrock	260.0	569.09	571.76	99.0-113.0	FLUTE Bedrock
RS1520c	BDY	34° 36' 22.62"N	86° 35' 16.66"W	Facility-Wide Bedrock	260.0	569.09	571.76	130.0-143.0	FLUTE Bedrock
RS1520d	BDY	34° 36' 22.62"N	86° 35' 16.66"W	Facility-Wide Bedrock	260.0	569.09	571.76	164.0-175.0	FLUTE Bedrock
RS1520e	BDY	34° 36' 22.62"N	86° 35' 16.66"W	Facility-Wide Bedrock	260.0	569.09	571.76	210.0-214.0	FLUTE Bedrock
RS1520f	BDY	34° 36' 22.62"N	86° 35' 16.66"W	Facility-Wide Bedrock	260.0	569.09	571.76	230.5-244.5	FLUTE Bedrock
RS1522S (off site)	BDY	34° 36' 39.14"N	86° 35' 14.43"W	Facility-Wide Bedrock	182.0	567.56	570.06	100.0-110.0	Nested Bedrock
RS1522D (off site)	BDY	34° 36' 39.14"N	86° 35' 14.43"W	Facility-Wide Bedrock	182.0	567.56	570.06	172.0-182.0	Nested Bedrock
RS1534a	BDY	34° 35' 50.22"N	86° 35' 24.43"W	Facility-Wide Bedrock	260.0	574.68	577.36	99.5-103.5	FLUTE Bedrock
RS1534b	BDY	34° 35' 50.22"N	86° 35' 24.43"W	Facility-Wide Bedrock	260.0	574.68	577.36	127.3-134.3	FLUTE Bedrock
RS1534c	BDY	34° 35' 50.22"N	86° 35' 24.43"W	Facility-Wide Bedrock	260.0	574.68	577.36	182.2-186.2	FLUTE Bedrock

TEST LOCATION	TYPE ¹	LATITUDE	LONGITUDE	UNIT(S) MONITORED	DEPTH (ft)	GROUND ELEVATION (ft. MSL)	TOP OF RISER ELEVATION (ft. MSL)	SCREENED INTERVAL (ft. bgs)	MONITORED ZONE ²
RS1534d	BDY	34° 35' 50.22"N	86° 35' 24.43"W	Facility-Wide Bedrock	260.0	574.68	577.36	218.6-225.9	FLUTE Bedrock
RS1534e	BDY	34° 35' 50.22"N	86° 35' 24.43"W	Facility-Wide Bedrock	260.0	574.68	577.36	235.0-235.9	FLUTE Bedrock
RS1534f	BDY	34° 35' 50.22"N	86° 35' 24.43"W	Facility-Wide Bedrock	260.0	574.68	577.36	252.0-257.0	FLUTE Bedrock
RS1673a	BDY	34° 40' 59.57"N	86° 37' 37.65"W	Facility-Wide Bedrock	125.0	595.82	597.48	72.9 – 77.9	Bedrock
RS1675S	BDY	34°39'27.698"N	86°36'41.371"W	Facility-Wide Bedrock	171.0	567.42	569.77	102.0-117.0	Nested Bedrock
RS1675D	BDY	34°39'27.698"N	86°36'41.371"W	Facility-Wide Bedrock	171.0	567.42	569.77	161.0-171.0	Nested Bedrock
RS1779	BDY	34° 41' 00.44"N	86° 42' 52.97"W	Facility-Wide Bedrock	121.0	600.69	603.19	116.0-121.0	Bedrock
RS1783S	BDY	34° 38' 08.09"N	86° 42' 32.72"W	Facility-Wide Bedrock	122.0	584.20	586.61	44.0 – 54.0	Nested Bedrock
RS1783D	BDY	34° 38' 08.09"N	86° 42' 32.72"W	Facility-Wide Bedrock	122.0	584.20	586.61	117.0-122.0	Nested Bedrock
RS1785S	BDY	34° 36' 36.12"N	86° 42' 31.56"W	Facility-Wide Bedrock	120.0	560.86	563.31	38.5 – 48.5	Nested Bedrock
RS1785D	BDY	34° 36' 36.12"N	86° 42' 31.56"W	Facility-Wide Bedrock	120.0	560.86	563.31	110.0-120.0	Nested Bedrock
RS1786S	BDY	34° 35' 46.68"N	86° 43' 14.14"W	Facility-Wide Bedrock	190.0	571.66	574.26	38.0 – 48.0	Nested Bedrock
RS1786D	BDY	34° 35' 46.68"N	86° 43' 14.14"W	Facility-Wide Bedrock	190.0	571.66	574.26	178.0-188.0	Nested Bedrock
RS1806a	BDY	34° 33' 20.19"N	86° 39' 07.77"W	Facility-Wide Bedrock	257.0	567.86	570.15	51.0 – 64.0	FLUTE Bedrock
RS1806b	BDY	34° 33' 20.19"N	86° 39' 07.77"W	Facility-Wide Bedrock	257.0	567.86	570.15	96.0-101.0	FLUTE Bedrock
RS1806c	BDY	34° 33' 20.19"N	86° 39' 07.77"W	Facility-Wide Bedrock	257.0	567.86	570.15	248.0-257.0	FLUTE Bedrock

¹ Well Type:

- POC - Point of Compliance Well
- EFF - Effectiveness Monitoring Well
- BDY – Boundary Well
- BKG – Background Well
- UPG – Upgradient Well

² Monitored Zone:

Interface – Well screened across the overburden and bedrock

CMT - Continuous Multichannel Tubing, multi-screened well in a single borehole

FLUTe – Flexible Liner Underground Technologies, multi-screened well in a single borehole

Nested – Two separate wells in a single borehole

³ – EP – Exit Pathway Well Clusters along southern boundary

⁴ – TBD - To Be Determined

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TABLE VII.2

GROUNDWATER QUALITY MONITORING CONSTITUENTS*

UNIT*	HAZARDOUS CONSTITUENT
RSA-003	2-Nitrotoluene
	1,1-Dichloroethene
	1,2-Dichloroethane
	cis-1,2-Dichloroethene
	Trichloroethene
	Vinyl Chloride
	Benzo(a)anthracene
	3-Nitrotoluene
	1,1-Dichloroethane
	trans-1,2-Dichloroethene
	Methylene chloride
RSA-009	Benzo(a)Anthracene
	Benzo(b)Fluoranthene
	Dibenz(a,h)Anthracene
	Indeno(1,2,3-cd)Pyrene
RSA-045	1,1-Dichloroethene
	Carbon tetrachloride
	cis-1,2-Dichloroethene
	Trichloroethene
	trans-1 2-Dichloroethene
	Vinyl chloride
	2-Nitrotoluene
	Benzo(a)anthracene
	Nitrobenzene
RSA-049	Arsenic
	Mercury
	Carbon Tetrachloride
	Trichloroethene (TCE)
RSA-053	Chlorobenzene
	Benzene
	4,4'-DDD
	4,4'-DDE
	4,4'-DDT
	Aldrin
	Alpha-BHC
	Alpha-Chlordane
	Beta-BHC
	Delta-BHC
	Dieldrin
	Endosulfan I
Endosulfan II	

UNIT*	HAZARDOUS CONSTITUENT
RSA-053	Endosulfan Sulfate
	Endrin
	Endrin Aldehyde
	Endrin Ketone
	Gamma-BHC (Lindane)
	Gamma-Chlordane
	Heptachlor
	Heptachlor Epoxide
	Methoxychlor
	Toxaphene
RSA-054/055	VOCs ¹
	SVOCs ²
	Pesticides ⁵
	TAL Metals ³
	Trichlorotrifluoroethane
	Methyl Acetate
	Cyclohexane
	1,3-Dichloropropene
	2-Hexanone
	1,2-Dibromo-3-Chloropropane
	Benzaldehyde
	Acetophenone
	2-Nitrophenol
	Bis(2-Chloroethoxy)Methane
	Hexachlorobutadiene
	Caprolactam
	1,1-Biphenyl
	Fluorine
	4,6-Dinitro-2-Methylphenol
	4-Nitroaniline
	Atrazine
	Dibenz(a,h)Anthracene
	Aldrin
	Alpha-Chlordane
	Delta-BHC
	Endosulfan I
	Endosulfan II
	Endosulfan Sulfate
Endrin Aldehyde	
Endrin Ketone	
Gamma-Chlordane	
RSA-056/139	Arsenic
RSA-060	Arsenic
	Cadmium

UNIT*	HAZARDOUS CONSTITUENT
RSA-060	Iron
	Manganese
	2,4,6-Trinitrotoluene
	2-nitrotoluene
	4,4' -DDD
	4,4' -DDE
	4,4' -DDT
	Aldrin
	Alpha-BHC
	Beta-BHC
	Dieldrin
	4-chloroaniline
	1,1,2,2-tetrachloroethane
	1,1-dichloroethene
	cis 1,2-dichloroethene
	Benzene
	Chlorobenzene
	Tetrachloroethene
Trichloroethene	
Vinyl Chloride	
RSA-083	Trichloroethene
	cis-1,2-Dichloroethene
	Vinyl Chloride
	Chlorobenzene
	1,1-Dichloroethene
	2,4-Dinitrotoluene
RSA-204	1,3-Dinitrobenzene
	Perchlorate
	2,6-Dinitrotoluene
	2-Amino-4,6-dinitrotoluene
	2-Nitrotoluene
	3-Nitrotoluene
	HMX
	Nitrobenzene
	RDX
	Trichloroethene
	cis-1,2-Dichloroethene
	trans-1,2-Dichloroethene
	Vinyl Chloride
RSA-206	cis-1,2-Dichloroethene
	1,1-Dichloroethene
	Trichloroethene
	Tetrachloroethene

UNIT*	HAZARDOUS CONSTITUENT	
RSA-206	Vinyl chloride	
	Carbon Tetrachloride	
	Perchlorate	
	2-Nitrotoluene	
	RDX	
	1,3-Dinitrobenzene	
	Nitrobenzene	
	trans-1,2-Dichloroethene	
RSA-209	Trichloroethene	
	Tetrachloroethene	
	Perchlorate	
	2- Nitrotoluene	
	RDX	
	cis-1,2-Dichloroethene	
	trans-1,2-Dichloroethene	
	Vinyl Chloride	
RSA-225	2,4-Dinitrotoluene	
	2,6-Dinitrotoluene	
	2- Nitrotoluene	
	RDX	
	Benzo(a)anthracene	
	Benzo(b)fluoranthene	
	1,1,2,2-Tetrachloroethane	
	Tetrachloroethene	
	Trichloroethene	
RSA-252	alpha-BHC	
	beta-BHC	
	4,4-DDD	
	Dieldrin	
	Heptachlor epoxide	
	4,4-DDE	
	4,4-DDT	
	Aldrin	
	Toxaphene	
	1,1,2,2-Tetrachloroethane	
	Trichloroethene	
	RSA-269	Trichloroethene
		1,2- Dichloroethene
cis-1,2-Dichloroethene		
trans-1,2-Dichloroethene		
Vinyl chloride		
RSA-271		1-Methylnaphthalene
	2-Nitrotoluene	
	Manganese	
	Perchlorate	

UNIT*	HAZARDOUS CONSTITUENT
RSA-271	Trichloroethene
	2-Amino-4,6-dinitrotoluene
	4-Amino-2,6-dinitrotoluene
	1,1-Dichloroethene
	1,3-Dinitrobenzene
	2-Methylnaphthalene
	3-Nitrotoluene
	2,4,6-Trinitrotoluene
	Benzo(a)anthracene
	cis-1,2-Dichloroethene
	Dibenz(a,h)anthracene
	Dibenzofuran
	Naphthalene
	Nitrobenzene
	Nitroglycerin
trans-1,2-Dichloroethene	
Vinyl Chloride	
RSA-306	1-Methylnaphthalene
	Benzene
	Iron
OB and OD	Energetics ⁶
	TAL Metals ³
	SVOCs ²
	PAHs ⁴
	Perchlorate
	VOCs ¹
Facility Wide	Energetics ⁶
	TAL Metals ³
	Perchlorate
	SVOCs ²
	PAHs ⁴
	PCBs ⁷
	Pesticides ⁵
	VOCs ¹
Facility-Wide Bedrock	Energetics ⁶
	TAL Metals ³
	Perchlorate
	SVOCs ²
	PAHs ⁴
	PCBs ⁷
	Pesticides ⁵
	VOCs ¹

- * Identifies the unit(s) at which the given constituent must be monitored.
1. VOCs shall include the following: acetone, acetonitrile, acrolein, acrylonitrile, aldrin, allyl chloride, benzene, bromodichloromethane (THM), bromoform (tribromomethane) (THM), bromomethane (methyl bromide), 2-butanone (methyl ethyl ketone), sec-butylbenzene, tert-butylbenzene, carbon disulfide, carbon tetrachloride, chlorobenzene (monochlorobenzene), chloroethane, chloroform (THM), chloromethane (methyl chloride), 2-chlorotoluene (o-chlorotoluene), dibromochloromethane (THM), 1,2-dibromo-3-chloropropane (DBCP), 1,2-dibromoethane (ethylene dibromide or edb), 1,3-dichlorobenzene (m-dichlorobenzene), dichlorodifluoromethane, 1,1-dichloroethane, 1,2-dichloroethane (EDC), 1,2-dichloroethene-(cis), 1,2-dichloroethene-(trans), 1,1-dichloroethene, 1,2-dichloropropane, 1,3-dichloropropene-(cis), 1,3-dichloropropene-(trans), ethylbenzene, formaldehyde, isobutyl alcohol (isobutanol), isopropylbenzene (cumene), methanol, methylene chloride (dichloromethane), 4-methyl-2-pentanone (methyl isobutyl ketone), methyl-tert-butyl-ether (MTBE), styrene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene (TCE), trichlorofluoromethane, 1,2,3-trichloropropane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, vinyl acetate, vinyl chloride, xylenes (total).
 2. SVOCs shall include the following: acenaphthene, acenaphthylene, aniline, anthracene, azobenzene, benzidine, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, benzyl alcohol, bis(2-chloroethyl)ether, bis(2-chloroisopropyl)ether (2,2-oxybis(1-chloropropane)), bis(2-ethylhexyl)phthalate (DEHP), butyl benzyl phthalate, carbazole, 4-chloroaniline, chlorobenzilate, chloro-m-cresol, p- (4-chloro-3-methylphenol), 2-chloronaphthalene (beta-chloronaphthalene), 2-chlorophenol, 3-chlorophenol (m-chlorophenol), chrysene, di (2-ethylhexyl) adipate, dichloroacetic acid, di-n-butyl phthalate (dibutyl phthalate), di-n-octyl phthalate (dioctyl phthalate), dibenzo(a,h)anthracene, dibenzofuran, 1,2-dichlorobenzene (o-dichlorobenzene), 1,4-dichlorobenzene (p-dichlorobenzene), 3,3-dichlorobenzidine, 2,4-dichlorophenol, diethyl phthalate, 2,4-dimethylphenol, 2,6-dimethylphenol, 3,4-dimethylphenol, dimethyl phthalate, 2,4-dinitrophenol, 2,4-dinitrotoluene, 2,6-dinitrotoluene, fluoranthene, fluorene, hexachlorobenzene, hexachlorobutadiene, hexachlorocyclopentadiene, hexachloroethane, , indeno(1,2,3-cd)pyrene, isophorone, 2-methylnaphthalene, methyl parathion, 2-methylphenol (o-cresol), 3-methylphenol (m-cresol), 4-methylphenol (p-cresol), monochloroacetic acid, naphthalene, n-nitroso-di-n-propylamine, n-nitrosodimethylamine, n-nitrosodiphenylamine, 2-nitroaniline, nitrobenzene, 4-nitrophenol (p-nitrophenol), parathion, pentachlorobenzene, pentachlorophenol, phenanthrene, phenol, propylene glycol, pyrene, 2,3,4,6-tetrachlorophenol, tetrahydrofuran, trichloroacetic acid, 1,2,4-trichlorobenzene, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 1,3,5-trinitrobenzene, and trinitrophenylmethylnitramine.
 3. TAL Metals shall include the following: Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium and Zinc.
 4. PAHs shall include the following: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, carbazole, 4-chloroaniline, 2-chlorophenol, chrysene, dibenzo(a,h)anthracene, 1,2-dichlorobenzene (o-dichlorobenzene), 1,4-dichlorobenzene (p-dichlorobenzene), 3,3-dichlorobenzidine, 2,4-dichlorophenol, diethyl phthalate, 2,4-dimethylphenol, di-n-butyl phthalate (dibutyl phthalate), 2,4-dinitrophenol, 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-octyl phthalate (dioctyl phthalate), fluoranthene, fluorene, hexachlorobenzene, hexachlorobutadiene, hexachlorocyclopentadiene, hexachloroethane,

indeno(1,2,3-cd)pyrene, isophorone, 2-methylnaphthalene, 2-methylphenol (o-cresol), naphthalene, nitrobenzene, n-nitroso di-n-propylamine, n-nitrosodiphenylamine, pentachlorophenol, phenanthrene, phenol, pyrene, 1,2,4-trichlorobenzene, 2,4,5-trichlorophenol and 2,4,6-trichlorophenol.

5. Pesticides shall include the following: alachlor, aldicarb, aldicarb sulfone, aldicarb sulfoxide, aldrin, atrazine, carbofuran, chlordane, chlorobenzilate, chlorpyrifos, 4,4' - DDD, 4,4' - DDE, 4,4' - DDT, diallate, 2,4-dichlorophenoxyacetic acid (2,4-d), dieldrin, dimethoate, 2,4-dinitro-6-sec-butylphenol (dinoseb), diquat, disulfoton, endosulfan, endothall, endrin, glyphosate, HCH (alpha) (alpha - BHC), HCH (beta) (beta - BHC), HCH (gamma) Lindane (gamma - BHC), heptachlor, heptachlor epoxide, kepone, malathion, methoxychlor, oxamyl (vydate), phorate, picloram, pronamide, simazine, sulfotep (tetraethyldithiopyrophosphate) and toxaphene.
6. Energetics shall include 1,3,5-Trinitrobenzene (TNB); 1,3-Dinitrobenzene (DNB); 2,4,6-Trinitrotoluene (TNT); 2,4 and 2,6-Dinitrotoluene (DNT); Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine or High Melting point Explosive (HMX); 2-Nitrotoluene (NT), 3-NT and 4-NT; 4-Amino-2,6-DNT; 2 Amino-4,6-DNT; Tetryl; Nitrobenzene (NB); Pentaerythritol tetranitrate (PETN); and Cyclotrimethylenetrinitramine or Hexahydro-1,3,5-trinitro-1,3,5-triazine or Research Department Explosive or Royal Demolition Explosive (RDX)
7. PCBs shall include Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 5460, 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189), 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167), 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157), 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 156), 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169), 2',3,4,4',5-Pentachlorobiphenyl (PCB 123), 2,3',4,4',5-Pentachlorobiphenyl (PCB 118), 2,3,3',4,4'-Pentachlorobiphenyl (PCB 105), 2,3,4,4',5-Pentachlorobiphenyl (PCB 114), 3,3',4,4',5-Pentachlorobiphenyl (PCB 126), 3,3',4,4'-Tetrachlorobiphenyl (PCB 77) and 3,4,4',5-Tetrachlorobiphenyl (PCB 81)

TABLE VII.3
GROUNDWATER PROTECTION STANDARD

UNIT ¹	HAZARDOUS CONSTITUENT	MAXIMUM CONCENTRATION LIMIT (µg/L) ²
OB and OD	Energetics ¹⁰	Background
	TAL Metals ⁴	Background
	SVOCs ⁵	Background
	PAHs ⁸	Background
	Perchlorate	See Note 3
	VOCs ⁶	Background
RSA-003	2-Nitrotoluene	2.7
	1,1-Dichloroethene	7
	1,2-Dichloroethane	5
	cis-1,2-Dichloroethene	70
	Trichloroethene	5
	Vinyl Chloride	2
	Benzo(a)anthracene	0.03
	3-Nitrotoluene	0.17
	1,1-Dichloroethane	2.8
	trans-1,2-Dichloroethene	100
	Methylene chloride	5
RSA-009	Benzo(a)Anthracene	EPA RSLs ⁹
	Benzo(b)Fluoranthene	EPA RSLs ⁹
	Dibenz(a,h)Anthracene	EPA RSLs ⁹
	Indeno(1,2,3-cd)Pyrene	EPA RSLs ⁹
RSA-045	1,1-Dichloroethene	7
	Carbon tetrachloride	5
	cis-1,2-Dichloroethene	70
	Trichloroethene	5
	trans-1,2-Dichloroethene	100
	2-Nitrotoluene	0.31
	Nitrobenzene	0.14
	Benzo(a)anthracene	0.03
	Vinyl chloride	2
RSA-049	Arsenic	Background
	Mercury	Background
	Carbon Tetrachloride	Background
	Trichloroethene (TCE)	Background
RSA-053	Chlorobenzene	100
	Benzene	5

TABLE VII.3 (con't)

UNIT ¹	HAZARDOUS CONSTITUENT	MAXIMUM CONCENTRATION LIMIT (µg/L) ²
RSA-053	4,4'-DDD	0.28
	4,4'-DDE	0.20
	4,4'-DDT	0.20
	Aldrin	0.00021
	Alpha-BHC	0.0062
	Alpha-Chlordane	2
	Beta-BHC	0.022
	Delta-BHC	0.27
	Dieldrin	0.0015
	Endosulfan I	7.8
	Endosulfan II	7.8
	Endosulfan Sulfate	7.8
	Endrin	2
	Endrin Aldehyde	0.17
	Endrin Ketone	0.17
	Gamma-BHC (Lindane)	0.2
	Gamma-Chlordane	2
	Heptachlor	0.4
	Heptachlor Epoxide	0.2
	Methoxychlor	40
Toxaphene	3	
RSA-054/055	VOCs ⁶	EPA RSLs ⁹
	SVOCs ⁵	EPA RSLs ⁹
	Pesticides ⁷	EPA RSLs ⁹
	TAL Metals ⁴	EPA RSLs ⁹
	Trichlorotrifluoroethane	530
	Methyl Acetate	1600
	Cyclohexane	5.3
	1,3-Dichloropropene	0.41
	2-Hexanone	3.4
	1,2-Dibromo-3-Chloropropane	0.2
	Benzaldehyde	150
	Acetophenone	150
	2-Nitrophenol	60
	Bis(2-Chloroethoxy)Methane	4.6
	Hexachlorobutadiene	0.26
	Caprolactam	770
	1,1-Biphenyl	0.83
	Fluorine	4000

TABLE VII.3 (con't)

UNIT ¹	HAZARDOUS CONSTITUENT	MAXIMUM CONCENTRATION LIMIT (µg/L) ²
RSA-054/055	4,6-Dinitro-2-Methylphenol	0.12
	4-Nitroaniline	3.3
	Atrazine	3
	Dibenz(a,h)Anthracene	0.0029
	Aldrin	0.004
	Alpha-Chlordane	2
	Delta-BHC	0.27
	Endosulfan I	7.8
	Endosulfan II	7.8
	Endosulfan Sulfate	7.8
	Endrin Aldehyde	0.17
	Endrin Ketone	0.17
	Gamma-Chlordane	2
RSA-056/139	Arsenic	10
RSA-060	Arsenic	10
	Cadmium	5
	Iron	1100
	Manganese	32
	2,4,6-Trinitrotoluene	0.76
	2-Nitrotoluene	0.27
	4,4'-DDD	0.28
	4,4'-DDE	0.20
	4,4'-DDT	0.20
	Aldrin	0.004
	Alpha-BHC	0.0062
	Beta-BHC	0.022
	Dieldrin	0.0015
	4-Chloroaniline	0.32
	1,1,2,2-Tetrachloroethane	0.066
	1,1-dichloroethene	7
	cis-1,2-Dichloroethene	70
	Benzene	5
	Chlorobenzene	100
	Tetrachloroethene	5
Trichloroethene	5	
Vinyl Chloride	2	
RSA-083	Trichloroethene	5
	cis-1,2-Dichloroethene	70

TABLE VII.3 (con't)

UNIT ¹	HAZARDOUS CONSTITUENT	MAXIMUM CONCENTRATION LIMIT (µg/L) ²
RSA-083	Vinyl Chloride	2
	Chlorobenzene	100
	1,1-Dichloroethene	7
	2,4-Dinitrotoluene	1.08
RSA-204	Trichloroethene	5
	Perchlorate	15
	cis-DCE	EPA RSLs ⁹
	trans-DCE	EPA RSLs ⁹
	Vinyl Chloride	EPA RSLs ⁹
	1,3-Dinitrobenzene	EPA RSLs ⁹
	2,6-Dinitrotoluene	0.1
	2-Amino-4,6-dinitrotoluene	EPA RSLs ⁹
	2-Nitrotoluene	0.7
	3-Nitrotoluene	EPA RSLs ⁹
	HMX	EPA RSLs ⁹
	Nitrobenzene	EPA RSLs ⁹
	RDX	0.5
RSA-206	cis-1,2-Dichloroethene	70
	1,1-Dichloroethene	7
	Trichloroethene	5
	Tetrachloroethene	5
	Vinyl chloride	2
	Carbon Tetrachloride	5
	Perchlorate	15
	2-Nitrotoluene	2.5
	RDX	1.4
	1,3-Dinitrobenzene	0.2
	Nitrobenzene	0.14
	trans-1,2-Dichloroethene	100
RSA-209	Perchlorate	15
	Trichloroethene	5
	Tetrachloroethene	5
	2- Nitrotoluene	1.35
	RDX	1.35
	cis-1,2-Dichloroethene	70

TABLE VII.3 (con't)

UNIT ¹	HAZARDOUS CONSTITUENT	MAXIMUM CONCENTRATION LIMIT (µg/L) ²
RSA-209	trans- 1, 2- Dichloroethene	100
	Vinyl Chloride	2
RSA-225	2,4-Dinitrotoluene	0.11
	2,6-Dinitrotoluene	0.05
	2- Nitrotoluene	0.31
	RDX	0.71
	Benzo(a)anthracene	0.020
	Benzo(b)fluoranthene	0.012
	1,1,2,2-Tetrachloroethane	0.38
	Tetrachloroethene	5
	Trichloroethene	5
RSA-252	4,4'-DDD	0.042
	4,4'-DDE	0.23
	4,4'-DDT	0.23
	Aldrin	0.0046
	alpha-BHC	0.0085
	beta-BHC	0.093
	Dieldrin	0.0029
	Heptachlor epoxide	0.2
	Toxaphene	3
	1,1,2,2-Tetrachloroethane	0.37
	Trichloroethene	5
	RSA-269	Trichloroethene
1,2- Dichloroethene		EPA RSLs ⁹
cis-1,2-Dichloroethene		70
trans-1,2-Dichloroethene		100
Vinyl chloride		2
RSA-271	1-Methylnaphthalene	10.1
	2-Nitrotoluene	3.13
	Manganese	433
	Perchlorate	15
	Trichloroethene	5
	2-Amino-4,6-dinitrotoluene	EPA RSLs ⁹
	4-Amino-2,6-dinitrotoluene	EPA RSLs ⁹
	1,1-Dichloroethene	7
	1,3-Dinitrobenzene	EPA RSLs ⁹
	2-Methylnaphthalene	EPA RSLs ⁹
	3-Nitrotoluene	EPA RSLs ⁹

TABLE VII.3 (con't)

UNIT ¹	HAZARDOUS CONSTITUENT	MAXIMUM CONCENTRATION LIMIT (µg/L) ²
RSA-271	2,4,6-Trinitrotoluene	EPA RSLs ⁹
	Benzo(a)anthracene	EPA RSLs ⁹
	cis-1,2-Dichloroethene	70
	Dibenz(a,h)anthracene	EPA RSLs ⁹
	Dibenzofuran	EPA RSLs ⁹
	Naphthalene	EPA RSLs ⁹
	Nitrobenzene	EPA RSLs ⁹
	Nitroglycerin	EPA RSLs ⁹
	trans-1,2-Dichloroethene	100
	Vinyl Chloride	2
RSA-306	1-Methylnaphthalene	11
	Benzene	5
	Iron	Background
Facility-Wide	SVOCs ⁵	EPA RSLs ⁹
	PAHs ⁸	EPA RSLs ⁹
	Pesticides ⁷	EPA RSLs ⁹
	PCBs ¹¹	EPA RSLs ⁹
	VOCs ⁶	EPA RSLs ⁹
Facility-Wide Bedrock	Energetics ¹⁰	EPA RSLs ⁹
	Perchlorate	See Note 3
	VOCs ⁶	EPA RSLs ⁹
	TAL Metals ⁴	EPA RSLs ⁹
	SVOCs ⁵	EPA RSLs ⁹
	PAHs ⁸	EPA RSLs ⁹
	Pesticides ⁷	EPA RSLs ⁹
	PCBs ¹¹	EPA RSLs ⁹

Notes:

1. Identifies the unit(s) at which the given constituent must be monitored.
2. Drinking Water Standards and Health Advisories, USEPA MCL (latest edition). Background values are the calculated site-specific background concentration in accordance with ADEM Admin. Code R.335-14-5-Appendix IV. MDL must not exceed established MCL (Maximum Concentration Limit) regulatory levels. Where Background values do not exist, the values listed in the most recent US EPA Regional Screening Level (RSL) Table, using a Hazard Quotient (HQ) of 0.1 shall be referenced.
3. Perchlorate is not listed as a hazardous constituent in Appendix IX; however, it is a constituent of concern for RSA and shall be included in the groundwater protection standards. A background level for perchlorate does not exist; therefore, the standard listed in the most recent US EPA RSL Table, using a HQ of 0.1, shall be referenced.

4. TAL Metals shall include the following: Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium and Zinc.
5. SVOCs shall include the following: acenaphthene, acenaphthylene, aniline, anthracene, azobenzene, benzidine, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, benzoic acid, benzyl alcohol, bis(2-chloroethyl)ether, bis(2-chloroisopropyl)ether (2,2-oxybis(1-chloropropane)), bis(2-ethylhexyl)phthalate (DEHP), butyl benzyl phthalate, carbazole, 4-chloroaniline, chlorobenzilate, chloro-m-cresol, p- (4-chloro-3-methylphenol), 2-chloronaphthalene (beta-chloronaphthalene), 2-chlorophenol, 3-chlorophenol (m-chlorophenol), chrysene, di (2-ethylhexyl) adipate, dichloroacetic acid, di-n-butyl phthalate (dibutyl phthalate), di-n-octyl phthalate (dioctyl phthalate), dibenzo(a,h)anthracene, dibenzofuran, 1,2-dichlorobenzene (o-dichlorobenzene), 1,4-dichlorobenzene (p-dichlorobenzene), 3,3-dichlorobenzidine, 2,4-dichlorophenol, diethyl phthalate, 2,4-dimethylphenol, 2,6-dimethylphenol, 3,4-dimethylphenol, dimethyl phthalate, 2,4-dinitrophenol, 2,4-dinitrotoluene, 2,6-dinitrotoluene, fluoranthene, fluorene, hexachlorobenzene, hexachlorobutadiene, hexachlorocyclopentadiene, hexachloroethane, indeno(1,2,3-cd)pyrene, isophorone, 2-methylnaphthalene, methyl parathion, 2-methylphenol (o-cresol), 3-methylphenol (m-cresol), 4-methylphenol (p-cresol), monochloroacetic acid, naphthalene, n-nitroso di-n-propylamine, n-nitrosodimethylamine, n-nitrosodiphenylamine, 2-nitroaniline, nitrobenzene, 4-nitrophenol (p-nitrophenol), parathion, pentachlorobenzene, pentachlorophenol, phenanthrene, phenol, propylene glycol, pyrene, 2,3,4,6-tetrachlorophenol, tetrahydrofuran, trichloroacetic acid, 1,2,4-trichlorobenzene, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 1,3,5-trinitrobenzene, and trinitrophenylmethylnitramine. Where background values do not exist, the values listed in the most recent US EPA RSL Table, using a HQ of 0.1 shall be referenced.
6. VOCs shall include the following: acetone, acetonitrile, acrolein, acrylonitrile, aldrin, allyl chloride, benzene, bromodichloromethane (THM), bromoform (tribromomethane) (THM), bromomethane (methyl bromide), 2-butanone (methyl ethyl ketone), sec-butylbenzene, tert-butylbenzene, carbon disulfide, carbon tetrachloride, chlorobenzene (monochlorobenzene), chloroethane, chloroform (THM), chloromethane (methyl chloride), 2-chlorotoluene (o-chlorotoluene), dibromochloromethane (THM), 1,2-dibromo-3-chloropropane (DBCP), 1,2-dibromoethane (ethylene dibromide or edb), 1,3-dichlorobenzene (m-dichlorobenzene), dichlorodifluoromethane, 1,1-dichloroethane, 1,2-dichloroethane (EDC), 1,2-dichloroethene-(cis), 1,2-dichloroethene-(trans), 1,1-dichloroethene, 1,2-dichloropropane, 1,3-dichloropropene-(cis), 1,3-dichloropropene-(trans), ethylbenzene, formaldehyde, isobutyl alcohol (isobutanol), isopropylbenzene (cumene), methanol, methylene chloride (dichloromethane), 4-methyl-2-pentanone (methyl isobutyl ketone) , methyl-tert-butyl-ether (MTBE), styrene, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethene (PCE), toluene, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene (TCE), trichlorofluoromethane, 1,2,3-trichloropropane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, vinyl acetate, vinyl chloride and xylenes (total). Where background values do not exist, the values listed in the most recent US EPA RSL Table, using a HQ of 0.1 shall be referenced.
7. Pesticides shall include the following: alachlor, aldicarb, aldicarb sulfone, aldicarb sulfoxide, aldrin, atrazine, carbofuran, chlordane, chlorobenzilate, chlorpyrifos, 4,4' - DDD, 4,4' - DDE, 4,4' - DDT, diallate, 2,4-dichlorophenoxyacetic acid (2,4-d), dieldrin, dimethoate, 2,4-dinitro-6-sec-butylphenol (dinoseb), diquat, disulfoton, endosulfan , endothall, endrin, glyphosate, HCH (alpha) (alpha - BHC), HCH (beta) (beta - BHC), HCH (gamma) Lindane (gamma - BHC), heptachlor, heptachlor epoxide, kepone, malathion, methoxychlor, oxamyl (vydate), phorate, picloram, pronamide, simazine, sulfotep

(tetraethyldithiopyrophosphate) and toxaphene. Where background values do not exist, the values listed in the most recent US EPA RSL Table, using a HQ of 0.1 shall be referenced.

8. PAHs shall include the following: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, carbazole, 4-chloroaniline, 2-chlorophenol, chrysene, dibenzo(a,h)anthracene, 1,2-dichlorobenzene (o-dichlorobenzene), 1,4-dichlorobenzene (p-dichlorobenzene), 3,3-dichlorobenzidine, 2,4-dichlorophenol, diethyl phthalate, 2,4-dimethylphenol, di-n-butyl phthalate (dibutyl phthalate), 2,4-dinitrophenol, 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-octyl phthalate (dioctyl phthalate), fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, isophorone, 2-methylnaphthalene, 2-methylphenol (o-cresol), naphthalene, nitrobenzene, n-nitroso-di-n-propylamine, n-nitrosodiphenylamine, pentachlorophenol, phenanthrene, phenol, pyrene, 1,2,4-trichlorobenzene, 2,4,5-trichlorophenol and 2,4,6-trichlorophenol. Where background values do not exist, the values listed in the most recent US EPA RSL Table, using a HQ of 0.1 shall be referenced.
9. EPA RSLs are the values listed for Tap Water in the most recent US EPA Regional Screening Level (RSL) Table, using a Hazard Quotient (HQ) of 0.1.
10. Energetics shall include 1,3,5-Trinitrobenzene (TNB); 1,3-Dinitrobenzene (DNB); 2,4,6-Trinitrotoluene (TNT); 2,4 and 2,6-Dinitrotoluene (DNT); Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine or High Melting point Explosive (HMX); 2-Nitrotoluene (NT), 3-NT and 4-NT; 4-Amino-2,6-DNT; 2 Amino-4,6-DNT; Tetryl; Nitrobenzene (NB); Pentaerythritol tetranitrate (PETN); and Cyclotrimethylenetrinitramine or Hexahydro-1,3,5-trinitro-1,3,5-triazine or Research Department Explosive or Royal Demolition Explosive (RDX)
11. PCBs shall include Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 5460, 2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189), 2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167), 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157), 2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 156), 3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169), 2',3,4,4',5-Pentachlorobiphenyl (PCB 123), 2,3',4,4',5-Pentachlorobiphenyl (PCB 118), 2,3,3',4,4',5-Pentachlorobiphenyl (PCB 105), 2,3,4,4',5-Pentachlorobiphenyl (PCB 114), 3,3',4,4',5-Pentachlorobiphenyl (PCB 126), 3,3',4,4'-Tetrachlorobiphenyl (PCB 77) and 3,4,4',5-Tetrachlorobiphenyl (PCB 81)

Table VII.4.**ADDITIONAL MONITORING PARAMETERS**

PARAMETER	UNIT OF MEASURE	LOCATION
Temperature	Degrees, (°F or °C)	Field*
Conductivity	Mhos/cm	Field*
pH	Standard Units (S.U.)	Field*
Reduction oxidation potential	Millivolts (mV)	Field*
Dissolved Oxygen	Milligrams/liter (mg/l)	Field*
Turbidity	Nephelometric turbidity Units (NTU)	Field*

* To be submitted as raw data in the annual reports required by Permit Condition VII.B.6.b.

PART VIII

CORRECTIVE MEASURES IMPLEMENTATION

VIII.A. APPLICABILITY

The conditions of this Part apply to SWMUs and AOCs identified in Table VIII.1.

VIII.B. GENERAL CONDITIONS

1. The Permittee is required to perform corrective measures for the SWMUs and AOCs identified in Condition VIII.A. The approved remedy for these defined units, waterway areas, or land parcels includes any and all actions set forth in this permit and in the approved Interim Measures Plans, Corrective Measures Studies (CMSs), Corrective Measures Implementation (CMI) Plans, Records of Decision (RODs), Remedial Action Work Plans (RA WPs) and Land Use Control Remedial Design (LUC RD) Plans approved by the Department, as noted in Table VIII.1.

2. Remedial Cleanup Levels

Upon approval, pursuant to the Condition VI.E, of the CMI Plan designating applicable cleanup level(s), the cleanup level(s) for the areas specific to the CMI Plan will be deemed to be a condition of this permit.

3. Groundwater Monitoring and Remediation

Where required pursuant to Conditions VIII.B.1 and VIII.C of this permit, the Permittee shall comply with the general groundwater monitoring requirements of Part VII of this permit.

4. Land Use Controls

Where required pursuant to Conditions VIII.B.1 and VIII.C of this permit, the Permittee shall establish appropriate land use controls to achieve protection of human health and the environment. The Permittee shall comply with Conditions VIII.B.5 and VIII.B.6 of this permit when implementing corrective measures requiring land use controls. In the event an off-site property owner will not allow an environmental covenant to be imposed, the Permittee shall notify the Department within 14 calendar days of receipt of such written notification of the refusal by the off-site property owner. If the property owner does not provide a written refusal of the request to allow an environmental covenant to be imposed, the Permittee shall notify the Department within 14 days of delivery of the request to the off-site property owner. In such cases, the Department may allow the Permittee to propose an alternate area-specific land use control subject to the Department's review and approval.

5. Survey Plat

For corrective measures where residual concentrations of contaminants will remain in-place at levels greater than those appropriate for unrestricted land use, or for corrective measures that rely on land use controls, the Permittee must:

- a. No later than the submission of the certification of closure of each hazardous waste disposal unit, the Permittee shall submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Department, a survey plat indicating the location and dimensions of the SWMUs, AOCs, and capped or partially remediated areas with respect to permanently surveyed benchmarks, the locations of sampling points, and the concentrations of hazardous constituents detected. This plat must be prepared and certified by a professional land surveyor registered in the State of Alabama. The plat must be filed with the local zoning authority or the authority with jurisdiction over local land use and must contain a note, prominently displayed, which states the Permittee's obligation to limit the property to the specified restricted uses.
- b. Maintain the survey plat as described in Condition VIII.B.5.a of this permit and in the CMI Report, until the Permittee has demonstrated, to the satisfaction of the Department that the levels of hazardous constituents in all contaminated media are within limits appropriate for unrestricted land uses.

6. Environmental Covenant

No later than the submission of the survey plat required in Condition VIII.B.5, the Permittee must:

- a. Record in the probate judge's office of the county in which the property is located or a portion thereof an environmental covenant or a notice of environmental use restriction (NEUR) in accordance with ADEM Admin. Code r. 335-5 that will in perpetuity notify any potential purchaser of the property that:
 - i. The land is contaminated with hazardous constituents in concentrations that exceed unrestricted use standards;
 - ii. The use of the property is restricted by this permit for certain residential, municipal, or industrial purposes and may lead to an increased risk of exposure to hazardous constituents depending upon the activities initiated at the site. Such activities may yield an increased level of human health risk to the owner;
 - iii. The potential purchaser or entity that desires to work in the contaminated area should notify the Permittee before mobilizing to the area covered by the land use control.

- b. Submit to the Department a certification, signed by the Permittee in accordance with Permit Condition I.C.11, that the environmental covenant or NEUR specified in this part has been performed. This certification must include a copy of the environmental covenant or NEUR and of the document in which the notation has been placed.
- c. Maintain the environmental covenant or NEUR described in Permit Condition VIII.B.6 until the Permittee has demonstrated, to the satisfaction of the Department that the levels of hazardous constituents in all contaminated media are within limits appropriate for unrestricted land uses.

7. Security

Security measures, where required by Conditions VIII.B.1 and VIII.C of this permit, will be conducted in accordance with ADEM Admin. Code r. 335-14-5-.02(5) and as prescribed in the approved CMI Plan, LUC RD or RA WP.

8. Inspection

Where corrective measures addressed in Conditions VIII.B.1 include provisions to cap in place or partially remediate properties or land areas, whether owned or not owned by the Permittee, the Permittee shall specify inspection protocols on a scheduled basis to ensure continued integrity of the remedy and to ensure that land use remains appropriately restricted per the environmental covenant or NEUR established pursuant to Permit Condition VIII.B.6. Inspection provisions shall be as prescribed in the approved CMI Plan.

VIII.C. AREA SPECIFIC CONDITIONS

The Permittee shall implement the actions and conditions as described in the referenced CMI Plans identified in Table VIII.1 and this Permit; the current area specific conditions are as follows:

- 1. Open Burning/Open Detonation (OB/OD) Area, RSA-012 and RSA-131: The Permittee shall increase the surface elevation in the OD area. The existing pedestals, firing pins and any excavated, contaminated soils shall be disposed offsite. The Permittee shall remove the berms that are located on three sides of the OD area. The materials excavated from the berms shall be tested to determine whether they can be stockpiled for reuse as fill in the OD area. The Permittee shall then place a stone base layer, a 30-mil polypropylene liner, a drainage layer, a geotextile, and compacted embankment over the OD area.

The surface elevation in the OD shall be increased to 580 feet above mean sea level, 9 feet above the 100-year flood elevation. The Permittee shall construct a holding pond southwest of the OD area to collect the water that accumulates in the drainage layer in accordance with the plans. A hazardous waste determination shall be made prior to

discharging the water from the holding pond. The Permittee shall conduct groundwater monitoring in accordance with Section VII of this permit.

- a. The open detonation (OD) area surface shall be visually inspected at least weekly to ensure that it remains at least nine feet above the 100-year flood elevation.
- b. The holding pond shall be inspected at least weekly to verify it has not sustained any damage. Repair of a disturbance or breach of the holding pond shall be initiated within 10 days of identifying the need for such repairs.
- c. The pits used for OD shall be excavated to a maximum depth of four feet. No other intrusive activities, including excavations and well installations, shall be permitted at the OD area that may compromise the newly installed liner and drainage system.
- d. The site shall not be developed with residential, school, child care or playground facilities. A NEUR shall be completed in accordance with ADEM Admin. Code r. 335-5, incorporated into the facility Master Plan and recorded in the land records for the property.
- e. The existing chain link fence, gates and warning signs shall be maintained and inspected at least weekly at the OB/OD area.
- f. The Army shall monitor the presence and effectiveness of land use restrictions and controls in accordance with Section F-2 and Table F-1 of RSA's permit application. The Permittee shall report on the land use restrictions and controls annually.
- g. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
- h. The LUCs shall be maintained until the concentrations of hazardous substances at the OB/OD area are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J, to remove the LUCs is submitted to the Department for review and approval.

2. Groundwater at the following SWMUs, where the contamination in the soil media was addressed under an approved document identified in Permit Condition VIII.B.1., shall be addressed as part of separate SWMUs. The Permittee shall conduct groundwater monitoring in accordance with Part VII of this permit.

- a. RSA-011, Former Sewage Treatment Plant No. 1, Operable Unit 10: No further action required for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
- b. RSA-087, Inactive Temporary Waste Storage Pads 1 & 2, Building 7368: No further action required for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
- c. RSA-088, Inactive Temporary Waste Storage Pad, Building 7625: No further action required for surface media (i.e., surface soil, subsurface soil and soil

- vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
- d. RSA-094, Chlorinated Solvent Distillation Unit 1, Operable Unit 10: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - e. RSA-095, Chlorinated Solvent Distillation Unit 2, Building 7368: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - f. RSA-096, Chlorinated Solvent Distillation Unit 3, Building 7740: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - g. RSA-140, Inactive Disposal Area near T/S Tower, Operable Unit 12: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-219.
 - h. RSA-194, Physical Test Laboratory and Storage Facilities: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - i. RSA-196/RSA-098, Test Stand and Cleaning Building, Operable Unit 10: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - j. RSA-198, Equipment/Tool Cleaning Facility, Bldg 7359/Inactive Temporary Storage Pad 1: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - k. RSA-199, Propellant Mixing Facility #2, Bldg 7382: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - l. RSA-200, ROP Line 5 Area Operations Facilities: No further action required for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - m. RSA-201, Research Laboratory, Bldg 7632: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.

- n. RSA-227, Inactive Washrack (adjacent to Bldg 5492): No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-147.
 - o. RSA-242, Hazardous Waste Storage Igloo, Building 7314, Operable Unit 10: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - p. RSA-247, Steel Fabrication/Maintenance Facility, Bldg 7644: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - q. RSA-275, Film Processing Laboratory, Former Building S-7173, Operable Unit 09: No further action required at this time for surface media (i.e., surface soil, subsurface soil and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-146.
 - r. MSFC-002/087, Inactive Abandoned Drum Disposal Site/Inactive Cyanide Lagoon, Operable Unit 18: No further action required for surface media (i.e., surface soil, subsurface soil, surface water, sediment, spring water, and soil vapor). The groundwater shall be investigated and/or remediated as part of RSA-149.
 - s. MSFC-027, Inactive Waste Accumulation Area, Operable Unit 18: No further action required for surface media (i.e., surface soil, subsurface soil, surface water, sediment, spring water, and soil vapor). The groundwater shall be investigated and/or remediated as part of MSFC.
3. RSA-003, In-Ground Oil/Water Separator, Building 3617, Operable Unit 24: The Permittee shall survey and mark the 14 proposed in-situ enhanced bioremediation (ISEB) injection locations. Initial full-scale ISEB via 14 direct-push technology (DPT) shall be conducted. Four additional ISEB injections shall be conducted after two years. The Permittee shall conduct groundwater monitoring in accordance with Section VII of this permit. The effectiveness of the remedy shall be evaluated based on the groundwater monitoring results. Additional ISEB injections may be completed depending on the monitoring results.
4. RSA-009, Inactive Sewage Treatment Plant #3, Operable Unit 23: This corrective action has been designed to achieve unrestricted site use. If unrestricted site use is not achieved, additional corrective actions will be required.
- a. The Permittee shall excavate contaminated soil and replace it with clean soil. The excavated, contaminated soil will be stockpiled on impervious material and covered with waterproof material to prevent contaminant migration before transport to a Subtitle D landfill. Composite samples will be taken from the completed excavation sidewalls and from the excavation floor for COC analyses. One floor sample for every 2,500 square feet and one sidewall sample

- for every 50 linear feet of sidewall will be collected. At locations where detected concentrations exceed cleanup goals, over-excavation may be performed. Excavated soil with concentrations exceeding the cleanup goal will be shipped to a permitted Subtitle D landfill for disposal as a non-hazardous special waste. Prior to transport and disposal of excavated waste, appropriate approval from ADEM and the selected waste disposal facility is required.
- b. The Permittee shall conduct groundwater monitored natural attenuation (MNA) monitoring in accordance with Section VII of this permit. The Permittee shall maintain the administrative controls currently in place for groundwater including the installation-wide groundwater IROD as implemented using the RSA site access control (SAC) program. While this IROD is interim in nature, it will apply to the groundwater at RSA-009 until groundwater at the site meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with the RSA-149 groundwater unit.
5. RSA-013, Unlined Inactive Burn Pad, Operable Unit 14: This corrective action has been designed to achieve unrestricted site use. If unrestricted site use is not achieved, additional corrective actions will be required.
 - a. The Permittee shall excavate contaminated soil and replace it with clean soil. The excavated, contaminated soil will be stockpiled on impervious material and covered with waterproof material to prevent contaminant migration before transport to a Subtitle D landfill. Composite samples will be taken from the completed excavation sidewalls for COC analyses. One sidewall sample for every 125 square feet of sidewall will be collected. At locations where detected concentrations exceed cleanup goals, over-excavation may be performed. Excavated soil with concentrations exceeding the cleanup goal will be shipped to a permitted Subtitle D landfill for disposal as a non-hazardous special waste. Prior to transport and disposal of excavated waste, appropriate approval from ADEM and the selected waste disposal facility is required.
 - b. The Permittee shall maintain the administrative controls currently in place for groundwater including the installation-wide groundwater IROD as implemented using the RSA site access control (SAC) program. While this IROD is interim in nature, it will apply to the groundwater at RSA-013 until groundwater at the site meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with the RSA-151 groundwater unit.
 6. RSA-014S, Unlined Inactive Burn Trenches, Operable Unit 2: This corrective action has been designed to achieve industrial site use. If industrial site use is not achieved, additional corrective actions will be required.
 - a. The Permittee shall excavate contaminated soil and replace it with clean soil. The excavated, contaminated soil will be stockpiled on impervious material and covered with waterproof material to prevent contaminant migration before transport to a Subtitle D landfill. Composite samples will be taken from the completed excavation sidewalls and from the excavation floor for COC analyses. At locations where detected concentrations exceed cleanup goals, over-excavation may be performed. Excavated soil with concentrations exceeding the cleanup goal shall be shipped to a permitted Subtitle D landfill for disposal as a non-hazardous special waste. Prior to transport and disposal of excavated waste,

- appropriate approval from ADEM and the selected waste disposal facility is required.
- b. Due to the “Moderate/High” UXO probability, the Permittee shall conduct a MEC surface clearance and subsurface removal in excavation areas during the corrective measures. Intrusive activities within the site LUC boundaries shall be conducted with appropriate approvals and safety controls (e.g., anomaly avoidance, on-site UXO construction support, etc.).
 - c. The Permittee shall implement the following engineering and institutional LUCs to address the potential presence of munitions and explosives of concern (MEC) based on the designated "Moderate/High" UXO probability for RSA-014S:
 - i. No residential use or development, including development for residential housing, elementary and secondary schools, child care facilities, and playgrounds shall be permitted at RSA-014.
 - ii. The LUCs shall include 6-foot high chain link fencing with three-strand barbed wire around the perimeter of the site and a total of 27 signs posted 100 feet apart. The lettering shall be visible from a distance of 25 feet.
 - iii. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan, and recorded in the land records for the property.
 - iv. Notice shall be provided to ADEM in an annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. The Permittee shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
7. RSA-045, Former Smoke Munitions Filling Plant 3, Operable Unit 02: This corrective action has been designed to achieve unrestricted site use. If unrestricted site use is not achieved, additional corrective actions will be required.
- a. As described in the Revision 1 CMI Work Plan for RSA-045, the Permittee shall excavate contaminated soil, dispose it off-site, and replace it with clean soil. The excavated, contaminated soil will either be loaded directly for transport to a Subtitle D landfill or stocked piled into impervious material within RSA-045 and covered with waterproof material to prevent contaminant migration. Composite samples of the stockpile will be taken at a frequency of one sample per 200 cubic yards of material for toxicity characteristic leaching procedure (TCLP) pesticides. Prior to transport and disposal of excavated waste, appropriate approval from ADEM and the selected waste disposal facility is required.
 - b. The Permittee shall implement in situ enhanced bioremediation (ISEB) for groundwater via direct push-technology injection points and shall conduct groundwater monitoring in accordance with the CMI Plan and Part VII of this permit to monitor and evaluate monitored natural attenuation (MNA) as described in the CMI Plan.
 - c. The Permittee shall maintain the administrative controls currently in place for groundwater, including the installation-wide groundwater IROD as implemented using the RSA site access control (SAC) program. While this IROD is interim in nature, it will apply to the groundwater at RSA-045 until groundwater at the site

meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with the RSA-145 groundwater unit

8. RSA-049, Capped Arsenic Waste Ponds – West, Operable Unit 05: The Permittee shall conduct groundwater monitoring in addition to inspecting and maintaining the existing multi-layer RCRA-type cap that was installed in 1997 and the following engineering and administrative controls. The Permittee shall conduct groundwater monitoring in accordance with Section VII of this permit.
 - a. No intrusive activities, including excavations and well installations, shall be permitted at RSA-049 that may compromise the existing cap.
 - b. The site shall not be developed with residential, school, child care or playground facilities.
 - c. An NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - d. The cap shall be maintained by mowing and performing necessary repairs in a timely manner.
 - e. Cap inspections shall be performed as required in Appendix D of the operative edition of Redstone Arsenal Regulation 200-7 (Site Access Control Program), and whenever mowing is done.
 - f. No buildings that are to be occupied shall be constructed at RSA-049 without vapor barrier studies or engineered controls to prevent vapor intrusion. The Permittee shall submit building plans and engineering control remedial design plans to the Department for review and approval at least 90 days prior to scheduled commencement of construction activities.
 - g. No structures which have the potential to breach or negatively impact the cap shall be constructed on RSA-049.
 - h. The existing chain link fence and gates shall be maintained and warning signs shall be installed, inspected and maintained at RSA-049. The warning signs shall be installed at entrance locations and other locations to be seen from any approach legible from a distance of 25 feet.
 - i. The Army shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.
 - j. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
 - k. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-049 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J, to remove the LUCs is submitted to the Department for review and approval.

9. RSA-053, Inactive Sanitary and Industrial Landfill, Operable Unit 07: The Permittee shall excavate soil from the southern waste disposal trench area (WDTA) and consolidate it in the northern WDTA. A low-permeability soil cap shall be installed and maintained to prevent exposure to the waste material remaining in the northern WDTA. The

Permittee shall conduct groundwater monitoring in accordance with Part VII of this permit in addition to maintaining the following institutional and engineering controls:

- a. Signs shall be maintained around the soil cover identifying it as a “No Dig Area”. The warning signs must meet the requirements specified in ADEM Admin. Code r. 335-14-5-.02(5)(c) and 335-14-6-.02(5)(c), which state that signs shall be posted at each entrance to the active portion of the facility and at other locations in sufficient numbers to be seen from any approach to the active portion and that they must be legible from 25 feet.
- b. Fencing at RSA-053 shall meet the requirements specified in Alabama Admin. Code 335-14-5-.02(5).
Residential use and/or residential development of the WDTA area of the site (southern and northern), including use or development for residential housing, elementary and secondary schools, child care facilities, and playgrounds, are prohibited. A NEUR shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
- c. No intrusive activities, including excavations and well installations, that would compromise the effectiveness of the multilayer RCRA-type cap are permitted at the site unless prior approval is obtained from ADEM.
- d. Routine maintenance requirements include, but are not limited to the following:
 - i. Mowing shall be conducted a minimum of twice a year.
 - ii. Quarterly inspections must be performed on the soil cap in the northern WDTA.
 - iii. Repair of any disturbance or breach of the soil cap shall be conducted within 10 days of identifying the need for such repairs.
 - iv. Repairs to the warning signs shall be completed on an as-needed basis and shall be conducted within 10 days of identifying the need for such repairs.
- e. Annually, the Permittee shall evaluate and determine whether any changes in site use or construction have occurred which are inconsistent with the restrictions described herein. If uses inconsistent with the CMI Plan are identified, ADEM shall be notified within 10 days after such uses are identified.
- f. Inspection requirements include, but are not limited to the following:
 - i. Inspection of the warning signs surrounding the northern WDTA soil cap to ensure that they are present and legible shall be performed on an annual basis.
 - ii. Inspection of the soil cap for the northern WDTA shall be performed on a quarterly basis to ensure that no breach of the soil cap has occurred and that underlying waste is not exposed.
 - iii. An inspection/maintenance report shall be submitted to ADEM no less frequent than annually. This report may be submitted as a separate report or as part of another report for the site or as part of another inspection/maintenance report for other sites. The report shall document the results of the quarterly inspections, include a discussion of any maintenance activities conducted, and identify the status of the LUCs identified in the CMI Plan and how any deficiencies or inconsistent uses have been addressed. The annual evaluation should address whether the use restrictions and controls referenced previously were recorded in the land records and base master plan, whether the owners and state and local agencies were notified of the use restrictions and controls affecting

- the property, and whether use of the property has conformed to such restrictions and controls. The report should include a copy of the annual inspection report, any violations noted, and recommendations for any changes to the CMI Plan.
- g. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Memorandum #304.
 - h. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-053 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.
10. RSA-054/RSA-055, Inactive Sanitary and Industrial Landfill, Operable Unit 1: The Permittee shall excavate soil and waste from the southern portion of the landfill (RSA-055), from under Fowler Road and from adjacent to Lindner Road near its intersection with Jungerman Road. The wastes shall be moved to and consolidated in the northern portion of the landfill (RSA-054). A low-permeability soil cover shall be installed over the consolidated wastes and maintained to prevent exposure to the waste. The Permittee shall conduct groundwater monitoring in accordance with Part VII of this permit in addition to installing and maintaining the following institutional and engineering controls:
- a. Signs shall be installed and maintained around the soil cap identifying it as a “No Dig Area”. The warning signs shall be placed a maximum of 200 feet apart along Fowler and Lindner Roads and a maximum of 400 feet apart along the northern and western soil cover boundaries. The signs must be legible from 25 feet.
 - b. No structures are to be built over the northern portion of RSA-054/055 where the clay cover will be placed.
The entire site is unsuitable for residential use or residential development. No residential housing, elementary or secondary schools, child care facilities or playgrounds are to be constructed. Industrial structures may be constructed in the southern portion of RSA-054/055 (south of Fowler Road) provided that further evaluation indicates that there would be no unacceptable health risk associated with vapor intrusion or indoor air exposure. The Permittee shall obtain ADEM approval prior to any planned construction at RSA-054/055.
 - c. A NEUR shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - d. No intrusive activities, including excavations and well installations, that would compromise the effectiveness of soil cap, are permitted at RSA-054/055 unless prior approval is obtained from ADEM.
 - e. Routine maintenance and inspection requirements include, but are not limited to the following:
 - i. Mowing shall be conducted at least twice a year. Inspect the soil cap in the northern portion of RSA-054/055 at least once a quarter to ensure that no breach of the cap has occurred. Inspect the storm water conveyance system in the northern portion of RSA-054/055 at least

- quarterly to ensure that the system is uncompromised and in good working order.
- ii. Repair any disturbance or breach of the soil cap or storm water conveyance system within 10 days of identifying the need for such repairs.
 - iii. Inspect the warning signs around the capped landfill area to ensure that they are present and legible at least annually.
 - iv. Repair the warning signs on an as-needed basis and within 10 days of identifying the need for such repairs.
 - v. At least annually, evaluate RSA-054/055 to determine whether any changes in site use or construction have occurred that are inconsistent with the restrictions described herein. If inconsistent uses are identified, ADEM shall be notified within 10 days.
 - vi. An inspection/maintenance report shall be submitted to ADEM at least annually. This report may be submitted as a stand-alone report or as part of another report for RSA-054/055 or as part of another inspection/maintenance report for other sites. The report shall document the results of the quarterly cap and storm water conveyance system inspections, include a discussion of the maintenance activities conducted, and identify the status of the Land Use Controls (LUCs) identified in the CMI Plan and how any deficiencies or inconsistent uses have been addressed. The annual report should address whether the use restrictions and controls were recorded in the land records and base master plan, whether the owners and state and local agencies were notified of the use restrictions and controls affecting the property, and whether use of the property has conformed to such restrictions and controls. The report should include any violations noted and the procedures followed to address the violations.
 - f. The annual monitoring report shall provide ADEM information regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work that is inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Memorandum #304.
 - g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-054/055 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.
11. RSA-056, Closed Arsenic Waste Ponds (South) Area U and RSA-139, Closed Arsenic Waste Pond (North) Area U, – Operable Unit 06: The Permittee shall conduct groundwater monitoring in accordance with Part VII of this permit in addition to maintaining the following institutional and engineering controls:
- a. Inspection and maintenance of the existing capped areas shall be conducted to ensure their continued integrity.
 - b. An NEUR shall be completed, incorporated into the facility Master Plan and documented in the land records for the property. The NEUR shall restrict the RSA-056 and RSA-139 soil cover areas to industrial/commercial uses: prohibit activities that would disturb the soil cover areas; and require inspection,

- maintenance, and repair of fencing, signage, and the capped areas including the cap/creek interface.
- c. At RSA-056, single wire, high visibility fencing shall be installed around the perimeter except for an approximately ten-foot distance on the eastern perimeter at a service road. A locking, single-chain gate will be installed at the service road to allow controlled site access.
 - d. At RSA-139, single wire, high visibility fencing shall be installed along the north, west and south boundaries. Riprap, shotcrete and a creek bed are present on the east side of RSA-139.
 - e. Signs shall be included along the perimeter of both RSA-056 and RSA-139 to identify the site as a “No Dig Area”. A minimum of three new signs shall be installed along the eastern border of RSA-139, spaced no more than 100 feet apart.
 - f. Semiannual site inspections, consisting of complete walkthroughs and visual inspections of the covered areas, fencing, signs, cap/creek interface, and existing well network, shall be completed. The results of the inspections shall be submitted to the Department annually.
 - g. Repair of a capped area disturbance or breach that potentially impacts the integrity of the cover shall be initiated within 10 days of identifying the need for such repairs.
 - h. Repairs/replacements of the warning signs and fencing shall be completed on an as needed basis to maintain access control and shall be initiated within 10 days of identifying the need for such repairs/replacements.
 - i. Mowing of the soil covers shall be conducted at least twice a year to prevent growth of trees that could impact the capped areas and to allow adequate inspection of the capped areas.
 - j. Vegetation clearing along the cap/creek interface and removal of silt, debris, downed trees, and other impairments (e.g., beaver dams) that impact free flow through the creek shall be conducted as needed.
 - k. The existing monitoring well network shall be inspected during each sampling event at the sites to ensure the integrity of the monitoring wells is maintained. Repair or replacement of damaged wells shall be initiated within 10 days of identifying the need for such repairs.
 - l. The Army shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.
 - m. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
 - n. The LUCs listed above shall be maintained until the concentrations of hazardous substances at RSA-056 and RSA-139 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the above LUCs is approved by the Department.
12. RSA-057, Inactive Arsenic Waste Lagoons – East, Operable Unit 6: The Permittee shall inspect and maintain LUCs required as follows.
- a. No residential use or development shall be permitted at RSA-057.

- b. Maintain warning signs at key site entry points. The warning signs shall be installed at entrance and other locations to be seen from any approach legible from a distance of 25 feet.
 - c. Prevent exposure of construction worker to soils with arsenic concentrations of greater than 100 mg/kg.
 - d. No soils shall be excavated at the site without a use permit.
 - e. Special handling procedures shall be required for future site excavations for industrial development as outlined in all applicable documents (e.g., Soils Management Plan, Investigation-Derived Waste Management Plan, etc.)
 - f. The Permittee shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.
 - g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-057 are at levels to allow for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J, to remove the LUCs is approved by the Department.
13. RSA-058, Inactive Rubble Fill/Waste Pile: The Permittee shall excavate soil, dispose off-site, and replace with clean soil. The corrective action has been designed to achieve industrial site use for surface media. The Permittee shall conduct fish tissue, surface water, and sediment monitoring annually in accordance with the CMI plan and inspect and maintain LUCs required as follows.
- a. No residential use or development, including development for residential housing, elementary and secondary schools, child care facilities, and playgrounds shall be permitted at RSA-058.
 - b. Recreational fishing within the Central Swamp is prohibited.
 - c. Maintain warning signs for restrictions on fishing at locations to be seen from any approach legible from a distance of 25 feet.
 - d. Implement the long-term monitoring plan for fish tissue, surface water, and sediment at the site. Maintain biological fish tissue sampling locations 058-Fish01 and 058-Fish02, and surface water/sediment sampling locations 058-SWSD001, 058-SWSD002, 058-SWSD003 for RSA-058 as identified in the CMI Plan.
 - e. An NEUR shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property
 - f. An annual monitoring report on the presence and effectiveness of land use restrictions and controls shall be submitted to ADEM for the site. This report shall document the annual inspection and identify the status of the NEUR and how any deficiencies or inconsistent uses have been addressed. The annual evaluation shall address whether the use restrictions and controls referenced previously are communicated in the deed(s), whether the owners and state and local agencies are notified of the use restrictions and controls affecting the property, and whether use of the property has conformed with such restrictions and controls. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Memorandum #304.
 - g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-058 are suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.

14. RSA-060, Inactive Sanitary and Industrial Landfill, Operable Unit 7: The Permittee shall excavate soil from the southern portion of the site and consolidate it in the northern portion of the site. A low-permeability soil cap shall be installed and maintained to prevent exposure to the waste material remaining in the northern area of the site. The Permittee shall conduct groundwater monitoring in accordance with Part VII of this permit in addition to maintaining the following institutional and engineering controls:
- a. Signs shall be maintained around the soil cover identifying it as a “No Dig Area”. The warning signs must meet the requirements specified in ADEM Admin. Code r. 335-14-5-.02(5)(c) and 335-14-6-.02(5)(c), which state that signs shall be posted at each entrance to the active portion of the facility and at other locations in sufficient numbers to be seen from any approach to the active portion and that they must be legible from 25 feet.
 - b. Fencing at RSA-060 shall consist of high visibility, plastic coated, single strand wire that will be maintained at a three-foot height above the ground surface with steel posts. The fence shall be installed as described in Appendix J of the CMI work plan and shall meet the requirements specified in Alabama Administrative Code r. 335-14-5-.02(5).
 - c. Residential use and/or residential development of the waste disposal area of the site (southern and northern), including use or development for residential housing, elementary and secondary schools, child care facilities, and playgrounds, are prohibited.
 - d. A NEUR shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - e. No intrusive activities, including excavations and well installations, that would compromise the effectiveness of the multilayer RCRA-type cap are permitted at the site unless prior approval is obtained from ADEM.
 - f. Routine maintenance requirements include, but are not limited to the following:
 - i. Mowing shall be conducted a minimum of twice a year.
 - ii. Quarterly inspections must be performed on the soil cap in the northern disposal area. Repair of any disturbance or breach of the soil cap shall be conducted within 10 days of identifying the need for such repairs.
 - iii. Repairs to the warning signs shall be completed on an as-needed basis and shall be conducted within 10 days of identifying the need for such repairs.
 - iv. Repairs to the perimeter fencing shall be completed on an as-needed basis and shall be conducted within 10 days of identifying the need for such repairs.
 - g. Annually, the Permittee shall evaluate and determine whether any changes in site use or construction have occurred which are inconsistent with the restrictions described herein. If uses inconsistent with the CMI Plan are identified, ADEM shall be notified within 10 days after such uses are identified.
 - h. Inspection requirements include, but are not limited to the following:
 - i. Inspection of the warning signs surrounding the northern disposal area soil cap to ensure that they are present and legible shall be performed on an annual basis.
 - ii. Inspection of the perimeter fence to ensure the fence is positioned at the proper height, not covered by vegetation, the components (wire, posts,

- fasteners, gates, locking mechanisms) meet the engineering specifications shall be performed on an annual basis.
- iii. Inspection of the soil cap for the northern disposal area shall be performed on a quarterly basis to ensure that no breach of the soil cap has occurred and that underlying waste is not exposed.
 - iv. An inspection/maintenance report shall be submitted to ADEM no less frequent than annually. This report may be submitted as a separate report or as part of another report for the site or as part of another inspection/maintenance report for other sites. The report shall document the results of the quarterly inspections, include a discussion of any maintenance activities conducted, and identify the status of the Land Use Controls (LUCs) identified in the CMI Plan and how any deficiencies or inconsistent uses have been addressed. The annual evaluation should address whether the use restrictions and controls referenced previously were recorded in the land records and base master plan, whether the owners and state and local agencies were notified of the use restrictions and controls affecting the property, and whether use of the property has conformed to such restrictions and controls. The report should include a copy of the annual inspection report, any violations noted, and recommendations for any changes to the CMI Plan.
 - i. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
 - j. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-060 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.
15. RSA-065, Former Chemical Drum Storage Area, Area X, Operable Unit 8; RSA-067, Former Chemical Drum Storage Area, Area AA, Operable Unit 8; and RSA-069/070, Former Chemical Drum Storage Area, Area Y/ Inactive Toxic Chemical Storage, Area Y1, Operable Unit 8: The Permittee shall implement restrictions on land use due to hazards with the potential presence of residual mustard, which includes signage, educational materials, and on-call unexploded ordnance (UXO) support for intrusive activities. The Permittee shall inspect and maintain LUCs required as follows:
- a. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - b. Inspection of the signs installed at the boundary of the LUC areas shall be performed annually to ensure that they are present and legible. Sign repair or replacement will be made on an as-needed basis. The Army will notify ADEM with 10-days if the inspections identify any site uses inconsistent with the restrictions imposed on the site.
 - c. Workers and sportsmen who access the sites shall receive educational briefings/fact sheets on the potential site hazards before allowing entry.

- d. Intrusive activities within site LUC boundaries will be conducted with appropriate approvals and safety controls (e.g., anomaly avoidance, on-call UXO support).
 - e. An annual monitoring report on the presence and effectiveness of land use restrictions and controls shall be submitted to ADEM for the sites. This report shall document the annual inspection and identify the status of the NEUR and how any deficiencies or inconsistent uses have been addressed. The annual evaluation shall address whether the use restrictions and controls referenced previously are communicated in the deed(s), whether the owners and state and local agencies are notified of the use restrictions and controls affecting the property, and whether use of the property has conformed with such restrictions and controls.
 - f. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR.
 - g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-065, RSA-067, and RSA-069 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.
16. RSA-083, Paint Spray Booth Sump, Building 7344, Operable Unit 09: The Permittee shall conduct monitored natural attenuation (MNA) groundwater monitoring in accordance with Section VII of this permit. The Permittee shall maintain the administrative controls currently in place for groundwater including the installation-wide groundwater IROD as implemented using the RSA site access control (SAC) program. While this IROD is interim in nature, it will apply to the groundwater at RSA-083 until groundwater at the site meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with the RSA-146 groundwater unit.
17. RSA-101 shall be addressed in accordance with the Olin Consent Decree and the *Joint Technical Proposal to Implement Remedial Activities Pursuant to Consent Decree* (Reference Civil Action No. CV80-PT-5300-NE Filed May 31, 1983).
18. RSA-109, Former Chemical Munitions Staging Area, Operable Unit 04: The Permittee shall excavate contaminated soil and replace it with clean soil. The excavated, contaminated soil will be stockpiled onto impervious material within RSA-109 and covered with waterproof material to prevent contaminant migration. Composite samples will be taken from each stockpile and arsenic analyses will be performed. Soil meeting regulatory levels will be shipped to an off-site, permitted, Subtitle D landfill for disposal as a non-hazardous special waste. Prior to transport and disposal of excavated waste, appropriate approval from ADEM and the selected waste disposal facility is required. This corrective action has been designed to achieve unrestricted site use. If unrestricted site use is not achieved, additional corrective actions will be required.
19. RSA-122, Dismantled Lewisite Manufacturing Plant Sites, Operable Unit 06: This corrective action has been designed to achieve industrial site use. If industrial site use is not achieved, additional corrective actions will be required.

- a. As described in the Revision 0 CMI Work Plan (with slip pages) for RSA-122 and RSA-183, the Permittee shall excavate and dispose off-site contaminated soil and potentially contaminated relict structures (e.g., below-ground process chemical lines, waste transfer lines, sumps, collection pits, and spill collection trenches).
 - b. The excavated material shall be temporarily stockpiled on impervious material (i.e., plastic sheeting) and covered with waterproof material (i.e., tarpaulin or 10-mil plastic sheeting) prior to waste characterization sampling. At locations where detected concentrations exceed cleanup goals, over-excavation may be performed. The final disposal shall be transported to an approved off-site facility.
 - c. Upon verification that the confirmation samples from the excavation areas are below the relevant cleanup goals for that area, the excavation area shall be backfilled until the area has been restored to its original grade.
 - d. All excavated soil and relict structures located in areas with an elevated probability designation for chemical warfare materiel (CWM) shall be checked for the presence of chemical agent.
 - e. The Permittee shall implement the following engineering and institutional LUCs to address the potential presence of arsenic, benzo(a)pyrene, and CWM at RSA-122:
 - i. No residential use or development, including development for residential housing, elementary and secondary schools, child care facilities, and playgrounds shall be permitted at RSA-122.
 - ii. Groundskeepers or other commercial receptors shall be restricted from contact to soils deeper than 6 feet below ground surface.
 - iii. On-call or on-site UXO construction support is required for onsite intrusive activities in remaining areas with a CWM Probability Designation of “Seldom” or “Occasional.”
 - iv. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - v. Notice shall be provided to ADEM in an annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. The Permittee shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
20. RSA-141-R-01, 4.2 Inch Mortar Disposal Site, Building 4656: The Permittee shall implement restrictions on land use due to potential hazards with MEC, which includes signage and on-call UXO support for intrusive activities within the boundaries of RSA-141-R-01. In addition, the Permittee shall implement LUCs (i.e., installation of signage, inspections, etc.) for soils in two areas that do not meet unrestricted reuse (i.e., arsenic and benzo[a]pyrene). LUCs will also be required for future construction on RSA-141-R-

01 due to potential vapor intrusion hazards from groundwater [i.e., trichloroethene (TCE)]. The Permittee shall inspect and maintain LUCs required as follows:

- a. RSA-141-R-01 shall be restricted to industrial/commercial uses. Residential use and/or residential development of the LUC area of the site, including use or development for residential housing, elementary and secondary schools, child care facilities, and playgrounds, are prohibited.
 - b. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - c. Inspection of the signs installed at the boundaries of the LUC areas shall be performed annually to ensure that they are present and legible. Sign repair or replacement will be made on an as-needed basis. The Army will notify ADEM within 10-days if the inspections identify any site uses inconsistent with the restrictions imposed on the site.
 - d. Intrusive activities within the site LUC boundaries will be conducted with appropriate approvals and safety controls (e.g., anomaly avoidance, on-call UXO support).
 - e. An annual monitoring report on the presence and effectiveness of land use restrictions and controls shall be submitted to ADEM for the site. This report shall document the annual inspection and identify the status of the NEUR and how any deficiencies or inconsistent uses have been addressed. The annual evaluation shall address whether the use restrictions and controls referenced previously are communicated in the deed(s), whether the owners and state and local agencies are notified of the use restrictions and controls affecting the property, and whether use of the property has conformed with such restrictions and controls.
 - f. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR.
 - g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-141-R-01 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department
21. RSA-142, TCE Spill by Thiokol Degreasing Process, Operable Unit 9: As described in the Revision 1 CMI Work Plan for RSA-095 and RSA-142, the Permittee shall excavate perchlorate-contaminated vadose zone soil and dispose it off-site, implement soil, groundwater, condensate and vapor monitoring, ERH of soil and groundwater, groundwater filtration, liquid-phase carbon adsorption of groundwater and vapors, thermal oxidation of vapors and sewer discharge of the filtered groundwater. The Permittee shall maintain the following institutional and engineering controls as described in the Revision 1 Addendum to the Revision 1 CMI Work Plan, RSA-095 and RSA-142:
- a. Intrusive activities, including excavations or other activities that would disturb the contaminated soil within the LUC area under Building 7700 and the engineered cover, are prohibited unless prior approval is granted by ADEM and the activities are conducted with appropriate health and safety precautions. If

- such activities are conducted, the features of Building 7700 and the engineered cover that was disturbed must be restored upon completion of the work.
- b. Any waste generated from the intrusive activity within the LUC and engineered cover area must be disposed of in accordance with ADEM regulations. This restriction does not apply to soils within the utility corridor under a portion of the engineered cover.
 - c. Soil currently underlying Building 7700 and the engineered cover must remain covered unless soil confirmation sampling demonstrates that perchlorate concentrations are below the 1.7 milligrams per kilogram cleanup goal.
 - d. The portion of the engineered cover over the utility corridor may be temporarily (less than 30 days) removed to allow access to the utility corridor. Temporary measures shall be taken to reduce the possibility of storm water infiltration while the utility corridor (and soil underneath) is uncovered. The engineered cover must be restored upon completion of the work.
 - e. The boundary of the LUC area shall be identified with signage prohibiting digging without approval of the Chief of the Installation Restoration Branch of the Environmental Management Division at the United States Army Garrison, Redstone Arsenal.
 - f. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - g. The Army shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.
 - h. Routine maintenance requirements include, but are not limited to the following:
 - i. Site inspections shall consist of complete walkthroughs and visual inspections of the LUC area and engineered cover.
 - ii. ADEM must be notified within 10 days after uses inconsistent with the NEUR are identified.
 - iii. Repair of any disturbance or breach of the engineered cover shall be conducted within three months of identifying the need for such repairs.
 - iv. Repairs to the signage prohibiting digging shall be completed on an as-needed basis and shall be conducted within 30 days of identifying the need for such repairs.
 - i. Inspection requirements include, but are not limited to the following:
 - i. Inspection of the signs installed at the boundary of the LUC area shall be performed annually to ensure that they are present and legible.
 - ii. ADEM must be notified within 10 days after uses inconsistent with the NEUR are identified.
 - iii. Inspection of the LUC and engineered cover area shall be performed annually to ensure that no breach of the engineered cover has occurred and that underlying waste is not exposed.
 - iv. An inspection/maintenance report shall be submitted to ADEM at least annually. This report may be submitted as a separate report or as part of another report for the site or as part of another inspection/maintenance report for other sites. The report shall document the results of the annual inspections, include a discussion of any maintenance activities conducted, and identify the status of the LUCs and how any deficiencies or inconsistent uses have been addressed. The annual report should address whether the use restrictions and controls have been recorded in the land records and base master plan, whether the owners and state and

- local agencies were notified of the use restrictions and controls affecting the property, and whether use of the property has conformed to such restrictions and controls.
- v. Prior to modifying the inspection frequency, the Army shall submit a permit modification request to ADEM for review and approval.
 - j. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
 - k. The LUCs shall be maintained until Building 7700 and the engineered cover are removed and sampling confirms that the concentrations of hazardous substances at RSA-142 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is submitted to the Department for review and approval.
23. RSA-183, Former Lewisite Manufacturing Plants 1 and 2 Sites, Operable Unit 05: This corrective action has been designed to achieve industrial site use. If industrial site use is not achieved, additional corrective actions will be required.
- a. As described in the Revision 0 CMI Work Plan (with slip pages) for RSA-122 and RSA-183, the Permittee shall excavate and dispose off-site contaminated soil and potentially CA-contaminated relict structures (e.g., below-ground process chemical lines, waste transfer lines, sumps, collection pits, and spill collection trenches).
 - b. The excavated material shall be temporarily stockpiled or staged prior to waste characterization sampling. At locations where detected concentrations exceed cleanup goals, over-excavation may be performed. The final disposal shall be transported to an approved off-site facility.
 - c. Upon verification that the confirmation samples from the excavation areas are below the relevant cleanup goals for that area, the excavation area shall be backfilled until the area has been restored to its original grade.
 - d. All excavated soil and relict structures located in areas with an elevated probability designation for CWM shall be checked for the presence of chemical agent.
 - e. The Permittee shall implement the following engineering and institutional LUCs to address the potential presence of arsenic and CWM at RSA-183:
 - i. No residential use or development, including development for residential housing, elementary and secondary schools, child care facilities, and playgrounds shall be permitted at RSA-183.
 - ii. Groundskeepers or other commercial receptors shall be restricted from contact to soils deeper than 6 feet below ground surface.
 - iii. On-call or on-site UXO construction support is required for onsite intrusive activities in remaining areas with a CWM Probability Designation of “Seldom” or “Occasional.”

- iv. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - v. Notice shall be provided to ADEM in an annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. The Permittee shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
24. RSA-204, Oxidizer Facility, Building 7691, Operable Unit 10: This corrective action has been designed to achieve unrestricted site use. If unrestricted site use is not achieved, additional corrective actions will be required.
- a. As described in the Revision 2 CMI Work Plan for RSA-204, the Permittee shall excavate contaminated soil, dispose it off-site, and replace it with clean soil. The excavated, contaminated soil will be stockpiled onto impervious material within or nearby RSA-204 and covered with waterproof material to prevent contaminant migration. Composite samples of the stockpile will be taken at a frequency of one sample per 200 cubic yards of material for perchlorate analysis. If perchlorate concentrations are below the cleanup goal, the soil will be used as backfill during site restoration. Soil with perchlorate concentrations exceeding the cleanup goal will be shipped to a permitted Subtitle D landfill for disposal as a non-hazardous special waste. Prior to transport and disposal of excavated waste, appropriate approval from ADEM and the selected waste disposal facility is required.
 - b. The Permittee shall implement in situ enhanced bioremediation (ISEB) for groundwater, introducing emulsified vegetable oil (EVO) via well points and direct push-technology injection points. The groundwater shall be monitored for attenuation (groundwater sampling and reporting) in accordance with the CMI Plan and Part VII of this permit.
 - c. The Permittee shall maintain the administrative controls currently in place for groundwater, including the installation-wide groundwater IROD as implemented using the RSA site access control (SAC) program. While this IROD is interim in nature, it will apply to the groundwater at RSA-204 until groundwater at the site meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with the RSA-146 groundwater unit.
 - d. If not all of the perchlorate contaminated soil can be removed adjacent to the foundations of Building 7689, an impermeable, multi-layer cap, as described in the CMI WP, shall be installed and maintained to prevent exposure to any contaminated soil. In case a cap is required, the Permittee shall maintain the following institutional and engineering controls:
 - i. Excavation or other activities that would disturb the cap adjacent to Building 7689 are prohibited, unless prior approval by ADEM and conducted with appropriate health and safety precautions. If such activities are conducted, the cover must be restored upon completion of the work.
 - ii. The area of the cap shall be identified with signage prohibiting digging without approval of the Chief of the Installation Restoration Branch of

- the Environmental Management Division at the United States Army Garrison, Redstone Arsenal.
- iii. Soil currently covered by Building 7689 must remain covered with the building unless soil confirmation sampling demonstrates that perchlorate concentrations are below the 1.7 milligrams per kilogram cleanup goal.
 - iv. An NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - v. The Army shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.
 - vi. Routine maintenance requirements include, but are not limited to the following:
 - I. Site inspections shall consist of complete walkthroughs and visual inspections of the capped area.
 - II. Although the capped area will be paved with concrete, mowing shall be conducted in areas adjacent to the cap at least twice a year.
 - III. Repair of any disturbance or breach of the cap shall be conducted within 10 days of identifying the need for such repairs.
 - IV. Repairs to the signage prohibiting digging shall be completed on an as-needed basis and shall be conducted within 10 days of identifying the need for such repairs.
 - vii. Inspection requirements include, but are not limited to the following:
 - I. Inspection of the signs prohibiting digging near the cap shall be performed semiannually to ensure that they are present and legible.
 - II. Inspection of the capped area shall be performed semiannually to ensure that no breach of the cap has occurred and that underlying waste is not exposed.
 - III. An inspection/maintenance report shall be submitted to ADEM at least annually. This report may be submitted as a separate report or as part of another report for the site or as part of another inspection/maintenance report for other sites. The report shall document the results of the semiannual inspections, include a discussion of any maintenance activities conducted, and identify the status of the LUCs and how any deficiencies or inconsistent uses have been addressed. The annual report should address whether the use restrictions and controls have been recorded in the land records and base master plan, whether the owners and state and local agencies were notified of the use restrictions and controls affecting the property, and whether use of the property has conformed to such restrictions and controls.
 - IV. Prior to modifying the inspection frequency, the Army shall submit a permit modification request to ADEM for review and approval.
 - viii. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in

- advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
- ix. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-204 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.
25. RSA-206, Propellant Mixing Facility #2 and Casting Facility, Bldg 7339/7340: This corrective action has been designed to achieve unrestricted site use. If unrestricted site use is not achieved, additional corrective actions will be required.
- a. The Permittee shall implement in situ enhanced bioremediation (ISEB) for groundwater via direct push-technology injection points and shall conduct groundwater monitoring in accordance with the CMI Plan and Part VII of this permit to monitor and evaluate monitored natural attenuation (MNA) as described in the CMI Plan.
 - b. The Permittee shall maintain the administrative controls currently in place for groundwater, including the installation-wide groundwater IROD as implemented using the RSA site access control (SAC) program. While this IROD is interim in nature, it will apply to the groundwater at RSA-206 until groundwater at the site meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with the RSA-146 groundwater unit.
26. RSA-209, Propellant Crushing/Grinding and Fuse Production, Operable Unit 09: This corrective action has been designed to achieve unrestricted site use. If unrestricted site use is not achieved, additional corrective actions will be required.
- a. The Permittee shall implement in situ enhanced bioremediation (ISEB) for groundwater via direct push-technology injection points and shall conduct groundwater monitoring in accordance with the CMI Plan and Part VII of this permit to monitor and evaluate monitored natural attenuation (MNA) as described in the CMI Plan.
 - b. The Permittee shall maintain the administrative controls currently in place for groundwater, including the installation-wide groundwater IROD as implemented using the RSA site access control (SAC) program. While this IROD is interim in nature, it will apply to the groundwater at RSA-209 until groundwater at the site meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with the RSA-146 groundwater unit.
27. RSA-221-R-01, Fuse Storage and Munitions Disposal Area, Operable Unit 15: The Permittee shall implement restrictions on land use due to potential hazards with munitions and explosives of concern (MEC) which includes signage, and on-call unexploded ordinance (UXO) support for intrusive activities. The Permittee shall inspect and maintain LUCs required as follows:
- a. RSA-221-R-01 shall be restricted to industrial/commercial uses. Residential use and/or residential development of the LUC area of the site, including use or development for residential housing, elementary and secondary schools, child care facilities, and playgrounds, are prohibited.

- b. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - c. Inspection of the signs and high visibility fencing installed at the boundaries of the LUC areas shall be performed annually to ensure that they are present and legible. Sign and fence repair or replacement will be made on an as-needed basis. The Army will notify ADEM within 10-days if the inspections identify any site uses inconsistent with the restrictions imposed on the site.
 - d. Intrusive activities within the site LUC boundaries will be conducted with appropriate approvals and safety controls (e.g., anomaly avoidance, on-call unexploded ordnance (UXO) support).
 - e. An annual monitoring report on the presence and effectiveness of land use restrictions and controls shall be submitted to ADEM for the site. This report shall document the annual inspection and identify the status of the NEUR and how any deficiencies or inconsistent uses have been addressed. The annual evaluation shall address whether the use restrictions and controls referenced previously are communicated in the deed(s), whether the owners and state and local agencies are notified of the use restrictions and controls affecting the property, and whether use of the property has conformed with such restrictions and controls.
 - f. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR.
 - g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-221-R-01 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.
28. RSA-225, Former Fuze Modification Line No. 7: The Permittee shall conduct monitored natural attenuation (MNA) groundwater monitoring in accordance with Section VII of this permit. The Permittee shall maintain the administrative controls currently in place for groundwater including the installation-wide groundwater IROD as implemented using RSA site access control (SAC) program. While this IROD is interim in nature it will apply to groundwater at RSA-225 until groundwater at the site meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with RSA-147 groundwater unit.
29. RSA-250, Former Storage Warehouse, Building 778/5678, Operable Unit 03: This corrective action has been designed to achieve unrestricted site use.
- a. The Permittee shall excavate contaminated soil and replace it with clean soil. The excavated, contaminated soil will either be loaded directly for transport to a Subtitle D landfill or be stockpiled onto impervious material within RSA-250, surrounded by a one-foot high berm and covered with a waterproof material to prevent contaminant migration. Composite samples will be taken from each stockpile and TCLP metals analyses will be performed. Soil meeting regulatory levels will be shipped to an off-site, permitted, Subtitle D landfill for disposal as a non-hazardous special waste. Prior to transport and disposal of excavated waste, appropriate approval from ADEM and the selected waste disposal facility is required.

- b. If unrestricted site use is not achieved, additional corrective actions will be required and/or the Permittee shall maintain the following institutional and engineering controls as shown below:
 - i. An NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - ii. The Army shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.
 - iii. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
 - iv. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-250 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.

- 30. RSA-252, Incendiary Bomb Facility Plant 2 Area, Building 5681: This corrective action has been designed to 1) monitored natural attenuation (MNA) of groundwater and land use controls (LUCs); 2) removal and disposal of contaminated soils from 10-separate areas within RSA-252 to achieve conditions suitable for industrial/commercial site use and employ LUCs around Building 5681 and any portions of the site that still exceed residential cleanup goals (CGs); 3) reduce leaching of contaminated soils from RSA-252 east unit to groundwater at concentrations that would pose an unacceptable health hazard to current receptors; and 4) LUCs will be employed at RSA-252 to address soils under Building 5681, which could not be accessed. In addition, long-term groundwater monitoring will continue and an annual report will be submitted to the Department to evaluate the effectiveness of MNA at RSA-252.
 - a. As described in the Revision 2 CMI Work Plan for RSA-252, the Permittee shall excavate contaminated soil, dispose it off-site, and replace it with clean soil. Due to the combination of wastes potentially present in these areas, staged soil will be segregated based on the location and anticipated type and then characterized for waste disposal. The following types of waste are potentially present in RSA-252 soil excavations and include; 1) nonhazardous special waste, 2) waste hazardous by characteristic of toxicity that meets land disposal restrictions (LDRs), 3) waste hazardous by characteristic of toxicity that exceeds LDRs, 4) listed waste that meets LDRs, and 5) listed waste that exceeds LDRs. The excavated, contaminated soil will either be loaded directly for transport to a Subtitle D landfill or to a landfill based on its characterization or stocked piled into impervious material within RSA-252 and covered with waterproof material to prevent contaminant migration. Composite samples of the stockpile will be taken at a frequency of one sample per 200 cubic yards of material for TCLP pesticide and PCBs. Waste characterization samples from Excavation Area EA-8 will also be sampled for PAHs analysis as appropriate. Prior to transport and disposal of excavated waste, appropriate approval from ADEM and the selected waste disposal facility is required.

- b. LUCs will be implemented around Building 5681 and any portions of the site that still exceed residential CGs. Within these portions of the site, the Permittee shall maintain the following institutional and engineering controls:
- i. Installation of signage around Building 5681 and the LUC areas identifying them as a “No Dig Area”.
 - ii. Removal and relocation of existing signs along with any revisions to the site boundary.
 - iii. An NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - iv. The Army shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.
 - v. Routine maintenance requirements include, but are not limited to the following:
 - I. Site inspections shall consist of complete walkthroughs and visual inspections of the LUC areas and around Building 5681.
 - II. Repairs to the signage prohibiting digging shall be completed on an as-needed basis and shall be conducted within 10 days of identifying the need for such repairs.
 - vi. Inspection requirements include, but are not limited to the following:
 - I. Inspection of the signs prohibiting digging within the LUC areas and around Building 5681 shall be performed semiannually to ensure that they are present and legible.
 - II. An inspection/maintenance report shall be submitted to ADEM at least annually. This report may be submitted as a separate report or as part of another report for the site or as part of another inspection/maintenance report for other sites. The report shall document the results of the semiannual inspections, include a discussion of any maintenance activities conducted, and identify the status of the LUCs and how any deficiencies or inconsistent uses have been addressed. The annual report should address whether the use restrictions and controls have been recorded in the land records and base master plan, whether the owners and state and local agencies were notified of the use restrictions and controls affecting the property, and whether use of the property has conformed to such restrictions and controls.
 - III. Prior to modifying the inspection frequency, the Army shall submit a permit modification request to ADEM for review and approval.
 - IV. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3)
- c. As described in the Revision 2 CMI Work Plan for RSA-252, MNA was selected as the remediation technology for groundwater and the Permittee shall monitor COCs in groundwater following the removal of contamination-impacted soil at

- RSA-252 and track the concentrations of contaminants in groundwater toward the attainment of the groundwater CGs. In addition, long-term monitoring will continue and an annual report will be submitted to the Department to evaluate the effectiveness of MNA at RSA-252.
- d. The Permittee shall maintain the administrative controls currently in place for groundwater, including the installation-wide groundwater IROD as implemented using the RSA site access control (SAC) program. While this IROD is interim in nature, it will apply to the groundwater at RSA-252 until groundwater at the site meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with the RSA-147 and RSA-148 groundwater unit.
31. RSA-269, Former UST, Bldg 7852: The Permittee shall conduct monitored natural attenuation (MNA) groundwater monitoring in accordance with Section VII of this permit. The Permittee shall maintain the administrative controls currently in place for groundwater including the installation-wide groundwater IROD as implemented using the RSA site access control (SAC) program. While this IROD is interim in nature, it will apply to the groundwater at RSA-269 until groundwater at the site meets cleanup goals. The decision to implement permanent LUCs for groundwater will occur in conjunction with the RSA-154/155 groundwater unit. This corrective action has been designed to achieve unrestricted site use. If unrestricted site use is not achieved, additional corrective actions will be required.
32. RSA-271, Former Boiler House, Building 7729, Operable Unit 10: This corrective action has been designed to achieve industrial site use. If industrial site use is not achieved, additional corrective actions will be required.
- a. The Permittee shall excavate contaminated soil, dispose it off-site, and replace it with clean soil. Following the excavation, soil confirmation samples will be collected from the sidewalls of each excavation to verify that the cleanup goals (CGs) for PAHs have been achieved. The excavated material will be temporarily stockpiled or staged prior to waste characterization sampling and off-site disposal.
- b. Upon verification that the confirmation samples from the excavation area are below the relevant CGs for that area, the excavation area will be backfilled until the area has been restored to its original grade. Prior to backfilling, 400 pounds of oxygen-releasing compound (ORC) will be spread evenly across the bottom of the excavation to dissolve and add oxygen to the aquifer in the source area enhancing biodegradation of the PAHs in the area.
- c. LUCs for groundwater implemented as part of RSA's Installation-wide groundwater IROD shall be continued until final remedies are selected for groundwater site RSA-146.
- d. Groundwater monitoring shall be performed in two phases: baseline groundwater sampling during Year 0 followed by annual groundwater sampling until COCs reach CGs in the monitored wells for three consecutive years. The Permittee shall provide corrective measures effectiveness reports to ADEM on an annual basis.
33. RSA-280-R-01, Skunk Hollow Small Arms Range: The Permittee shall excavate contaminated soil and replace it with clean soil. The excavated, contaminated soil will

either be loaded directly for transport to a Subtitle C or D landfill with preapproval or be stockpiled onto impervious material within RSA-280-R-01 and covered with waterproof material to prevent contaminant migration. Composite samples will be taken from each stockpile and lead analyses will be performed. Soil meeting regulatory levels will be shipped to an off-site, permitted, Subtitle D landfill for disposal as a non-hazardous special waste. The excavated soil that is stockpiled may undergo stabilization to render the material nonhazardous for waste disposal purposes. The Permittee shall ship excavated soil to an off-site, permitted, Subtitle C landfill for disposal as hazardous waste should stabilization not meet requirements to render the material as nonhazardous. Prior to transport and disposal of excavated waste, appropriate approval from ADEM and the selected waste disposal facility is required. This corrective action has been designed to achieve unrestricted site use. If unrestricted site use is not achieved, additional corrective actions will be required.

34. RSA-282, Former Mortar Test Site (Not in Range) – also known as RSA-072-R-01, Operable Unit 15: The Permittee shall implement restrictions on land use due to potential hazards with munitions and explosives of concern (MEC) which includes signage, and on-call unexploded ordinance (UXO) support for intrusive activities. The Permittee shall inspect and maintain LUCs required as follows:
- a. RSA-282 shall be restricted to industrial/commercial uses. Residential use and/or residential development of the LUC area of the site, including use or development for residential housing, elementary and secondary schools, childcare facilities, and playgrounds, are prohibited.
 - b. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - c. Inspection of the signs installed at the boundary of the LUC area shall be performed annually to ensure that they are present and legible. Sign repair or replacement will be made on an as-needed basis. The Army will notify ADEM within 10-days if the inspections identify any site uses inconsistent with the restrictions imposed on the site.
 - d. Intrusive activities within the site LUC boundaries will be conducted with appropriate approvals and safety controls (e.g., anomaly avoidance, on-call unexploded ordnance (UXO) support).
 - e. An annual monitoring report on the presence and effectiveness of land use restrictions and controls shall be submitted to ADEM for the site. This report shall document the annual inspection and identify the status of the NEUR and how any deficiencies or inconsistent uses have been addressed. The annual evaluation shall address whether the use restrictions and controls referenced previously are communicated in the deed(s), whether the owners and state and local agencies are notified of the use restrictions and controls affecting the property, and whether use of the property has conformed with such restrictions and controls. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Memorandum #304.
 - f. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on

- any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
- g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-282 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.
35. RSA-294-R-01, Field Training Exercise Area E, South of Martin Road, Operable Unit 15: The Permittee shall inspect and maintain LUCs required as follows:
- a. RSA-294-R-01 shall be restricted to industrial/commercial uses. Residential use and/or residential development of the LUC area of the site, including use or development for residential housing, elementary and secondary schools, child care facilities, and playgrounds, are prohibited.
 - b. An NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - c. Inspection of the signs installed at the boundary of the LUC area shall be performed annually to ensure that they are present and legible. Sign repair or replacement will be made on an as-needed basis. The Army will notify ADEM within 10-days if the inspections identify any site uses inconsistent with the restrictions imposed on the site.
 - d. Intrusive activities within the site LUC boundaries will be conducted with appropriate approvals and safety controls (e.g., anomaly avoidance, on-call unexploded ordnance (UXO) support).
 - e. An annual monitoring report on the presence and effectiveness of land use restrictions and controls shall be submitted to ADEM for the site. This report shall document the annual inspection and identify the status of the NEUR and how any deficiencies or inconsistent uses have been addressed. The annual evaluation shall address whether the use restrictions and controls referenced previously are communicated in the deed(s), whether the owners and state and local agencies are notified of the use restrictions and controls affecting the property, and whether use of the property has conformed with such restrictions and controls. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Memorandum #304.
 - f. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
 - g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-294-R-01 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.
36. RSA-306, Steam Heating Plant, Building 7291, Operable Unit 24: The permittee shall perform passive, light non-aqueous phase liquid (LNAPL) recovery through absorbent socks, LNAPL source zone depletion, monitored natural attenuation (MNA) groundwater

monitoring, long-term monitoring (LTM) and land use controls (LUCs). Monitored natural attenuation (MNA) groundwater monitoring and LNAPL recovery and monitoring frequency shall be conducted in accordance with Part VII of this permit. The Permittee shall maintain the following institutional and engineering controls as shown below:

- a. The Permittee shall maintain the administrative controls currently in place for groundwater including the installation-wide groundwater IROD as implemented using RSA site access control (SAC) program. While this IROD is interim in nature it will apply to groundwater at RSA-306 until site groundwater concentrations meet cleanup goals.
 - b. The decision to implement permanent LUCs for groundwater will occur in conjunction with RSA-146 groundwater unit.
 - c. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - d. Notice shall be provided to ADEM in an annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. The Permittee shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
37. RSA-312-R-01, Former Range Area for Gate 7 Expansion, Operable Unit 15: The Permittee shall excavate all single point anomalies detected using digital geophysical Mapping (DGM) within and near the Former M50 Testing Area, implement restrictions on land use due to potential hazards with munitions and explosives of concern (MEC) which includes signage, and on-call unexploded ordnance (UXO) support for intrusive activities. The Permittee shall inspect and maintain LUCs required as follows:
- a. RSA-312-R-01 shall be restricted to industrial/commercial uses. Residential use and/or residential development of the LUC area of the site, including use or development for residential housing, elementary and secondary schools, childcare facilities, and playgrounds, are prohibited.
 - b. A NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - c. Inspection of the signs installed at the boundary of the LUC area shall be performed annually to ensure that they are present and legible. Sign repair or replacement will be made on an as-needed basis. The Army will notify ADEM within 10-days if the inspections identify any site uses inconsistent with the restrictions imposed on the site.
 - d. Intrusive activities within the site LUC boundaries will be conducted with appropriate approvals and safety controls (e.g., anomaly avoidance, on-call unexploded ordnance (UXO) support).
 - e. An annual monitoring report on the presence and effectiveness of land use restrictions and controls shall be submitted to ADEM for the site. This report shall document the annual inspection and identify the status of the NEUR and how any deficiencies or inconsistent uses have been addressed. The annual evaluation shall address whether the use restrictions and controls referenced

previously are communicated in the deed(s), whether the owners and state and local agencies are notified of the use restrictions and controls affecting the property, and whether use of the property has conformed with such restrictions and controls.

- f. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR.
- g. The LUCs shall be maintained until the concentrations of hazardous substances at RSA-312-R-01 are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J., to remove the LUCs is approved by the Department.

38. RSA-315, Abandoned Drum Area Near the Golf Course, Operable Unit 01: The Permittee shall inspect and maintain LUCs required as follows:

- a. Intrusive activities, including excavations or other activities that would disturb the soil within the defined LUC area, are prohibited unless conducted with appropriate health and safety precautions and with Army approval.
- b. An NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
- c. Residential use or development, including use or development for residential housing, elementary and secondary schools, child care facilities, and playgrounds, are prohibited.
- d. Routine inspection and maintenance activities on signage must be performed in accordance with the EUR.
- e. Maintain warning signs at key site entry points. The warning signs shall be installed at entrance and other locations to be seen from any approach legible from a distance of 25 feet.
- f. The Permittee shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.
- g. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
- h. The LUCs shall be maintained until the Army can demonstrate that arsenic in soil no longer remains above the cleanup goals. Upon confirmation that concentrations of hazardous substances at RSA-315 are at levels suitable for unrestricted use and exposure, the Army may submit a permit modification request to remove the LUCs, in accordance with Permit Condition 1.J, to ADEM for review and approval.

39. MSFC-033A, Surface Soils East of Building 4815, Adjacent to MSFC-033: The Permittee shall maintain the following institutional and engineering controls:

- a. MSFC-033A will be restricted to industrial/commercial uses. No residential use or development shall be permitted.

- b. Intrusive activities, including excavations or other activities that would disturb the concrete utility pad or the contaminated soil under Building 4815 are prohibited.
 - c. The areas under the concrete utility pad and Building 4815 addition shall be identified with signage prohibiting digging without approval of the Chief, Installation Restoration Branch of the Environmental Management Division. The signs must be legible from 25 feet.
 - d. Soil currently covered by the Building 4815 addition and concrete utility pad must remain covered with concrete or other impermeable material until confirmation samples and risk analysis demonstrates that the PAH concentrations are below the risk thresholds.
 - e. The Army shall monitor and report on the presence and effectiveness of land use restrictions and controls annually.
 - f. An NEUR, in accordance with ADEM Admin. Code r. 335-5-1-.02(3), shall be completed, incorporated into the facility Master Plan and recorded in the land records for the property.
 - g. Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the NEUR. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Admin. Code r. 335-5-1-.02(3).
 - h. The LUCs shall be maintained until Building 4815 and the concrete utility pad are removed and sampling confirms that concentrations of hazardous substances at MSFC-033A are at levels suitable for unrestricted use and exposure, and a permit modification, in accordance with Permit Condition I.J, to remove the LUCs is submitted to the Department for review and approval.
40. Groundwater, Installation-Wide; As indicated in the IROD dated September 2007, LUCs are required as follows:
- a. No drinking water wells shall be installed on the Arsenal. Groundwater, including springs and seeps shall not be used for drinking water, or irrigation.
 - b. Groundwater shall only be used for non-potable purposes, preventing human consumption and controlling other exposures.
 - c. The Permittee shall pursue formal coordination with the adjacent local government agencies (e.g., Madison County, Morgan County, and the City of Huntsville) regarding any pending groundwater actions (e.g., installation of groundwater wells where potentially contaminated groundwater may be encountered, etc.) off the Arsenal. The Permittee shall report the status of the coordination with the local governmental agencies in the annual corrective action effectiveness report.
 - d. The Permittee shall control the vapors from the groundwater by mitigating the plume off the Arsenal. The Permittee shall monitor and report on the land use restrictions and controls annually.
 - e. To determine the effectiveness of the Installation Wide Groundwater IROD, and in accordance with Permit Condition VII.B.1.c, the Permittee shall submit a Site Wide Groundwater Monitoring Plan to the Department for review and approval. The Site Wide Groundwater Monitoring Plan shall be submitted to the Department within 180 days from the effective date of this permit.

VIII.D. CORRECTIVE MEASURES IMPLEMENTATION (CMI) AND ANNUAL MONITORING REPORTS

1. CMI Progress and Annual Reports

If the time required to complete implementation of a specific set of corrective measures, as described in the Department-approved CMI Plan, is greater than 180 calendar days, the Permittee shall provide ADEM with progress reports according to the schedule approved by ADEM in the CMI Plan. If no schedule has been approved as part of the associated plan, progress reports shall be submitted at least quarterly. The progress reports shall, at a minimum, contain the following information:

- a. A description of the portion of CMI Plan, completed;
- b. Summaries of and deviations from the approved CMI Plan, during the reporting period;
- c. Summaries of current and potential problems, including recommended solutions and alternatives as well as corrective actions undertaken;
- d. Any monitoring data (soil, air, dust, water) collected for any reason during the construction period for the purposes of monitoring potential for human and ecological exposure; and,
- e. Projected work for the next period and impacts to the approved schedule.

2. Final CMI Reports

Upon completion of construction of corrective measures systems, implementation of land use controls, interim removal actions, or other short-term activities required by this permit, or the approved CMI Plan, the Permittee shall submit to the Department a Final Report containing, at a minimum, the following:

- a. A description of activities completed;
- b. For cap and cover remedies, as-built construction drawings presenting the final in-place three-dimensional location of contaminated material. A plan view of the remediated areas shall be presented in addition to a cross section of the in-place capped areas;
- c. Hazardous waste manifests indicating the handling of any excavated material that has been shipped off-site to a Department-approved, certified landfill;
- d. For remedies involving land use controls, a copy of the survey plat and environmental covenant or NEUR required by Condition VIII.B of this permit;

- e. Monitoring data (soil, air, dust, water) collected for any reason during the construction period for the purposes of monitoring potential for human and ecological exposure; and
 - f. Certification, prepared in accordance with ADEM Admin. Code Rule r. 335-14-8-02 (2)(d) by the Permittee and a registered Professional Engineer (State of Alabama), that the corrective measures implementation phase (*i.e.*, construction) required by this permit is complete and that the approved system and/or facilities are ready for operation in accordance with the intended design (*i.e.*, CMI Plan).
3. Corrective Measures (CM) Effectiveness Reports
- a. For corrective measures that have been fully implemented and where the corrective measures system(s) must operate for a period of time to achieve cleanup goals or levels, the Permittee shall submit an overall CM Effectiveness Report (addressing all Corrective Measures systems at the facility which are subject to this permit condition) annually, unless otherwise approved by the Department, beginning 180 calendar days following the Department's approval of the Final CMI Report for the initial Corrective Measures system subject to this permit condition. The overall CM Effectiveness Report shall include, at a minimum, the following information for each SWMU and/or AOC included in the report:
 - i. A detailed narrative presenting an evaluation of the effectiveness of the selected remedy;
 - ii. Summaries of compliance with and progress toward achieving cleanup goals;
 - iii. Any significant revisions, adjustments, or proposed modifications to the selected remedy;
 - iv. Tabulated environmental sampling and monitoring data including, but not limited to, groundwater quality, elevation data, and a graphical representation of all constituents detected during each sampling event from recovery wells, monitoring wells, drinking water wells, and other locations;
 - v. Chain of custody, field reports, and laboratory data sheets to include the date of collection, the date the sample was extracted, and the date of sample analysis for samples collected during the reporting period;
 - vi. Any monitoring data (soil, air, dust, water) collected for any reason during the post-construction period for the purposes of monitoring potential for human and ecological exposure;
 - vii. Isoconcentration maps depicting the distribution of parameters for each sampling event;
 - viii. Time versus concentration plots for each monitoring parameter for each recovery well and a representative number of effectiveness wells;

- ix. Tabulated volumetric data on groundwater pumped and pumping rates (monthly and cumulative) for each recovery well;
 - x. Records of any groundwater recovery system operation time, including shutdown periods, not including any minor (less than 24 hours) shutdowns for repairs, maintenance, etc.;
 - xi. Potentiometric surface maps;
 - xii. Description of land use during the reporting period at the designated area requiring corrective measures; and,
 - xiii. Findings of the Permittee's investigation into the continued effectiveness of land use controls per Condition VIII.B.
- b. If, at any time, the Permittee determines that any remedy selection specified in Condition VIII.B or VIII.C of this permit no longer satisfies the applicable requirements of ADEM Admin. Code r. 335-14-5-.06(12) or this permit for releases of hazardous waste or hazardous constituents originating from SWMUs or AOCs, the Permittee must, within 90 calendar days, submit an application for a permit modification, pursuant to Permit Condition I.J, to make any appropriate changes to the CMI Plan.
- c. The application for changes in the CMI Plan, including changes in inspection and monitoring provisions of the CMI Plan, shall be submitted as an application for a permit modification pursuant to the requirements of ADEM Admin. Code r. 335-14-8-.04.
4. Final Report of Corrective Measures

Within 90 calendar days following attainment of cleanup levels or goals as outlined in this Permit and the approved CMI Plans, the Permittee shall submit to the Department a Final Report of Corrective Measures (FRCM). The FRCM shall contain a certification by the Permittee and a registered Professional Engineer (State of Alabama), that all remedial measures required by this permit and the approved CMI Plan has been completed. The FRCM shall outline any procedures and schedules for dismantling of corrective measures systems, groundwater monitoring or recovery systems, removal of land use controls, and any other remedial systems or controls required by this permit or the approved CMI Plan.

Table VIII.1

The following Solid Waste Management Unit(s) (SWMU) and/or Area(s) of Concern (AOC) numbers and descriptions correspond with those noted in the RCRA Facility Assessment (RFA) Report. Where discrepancies exist, the permit will take precedence.

List of SWMUs and AOCs requiring Corrective Measures:

Although some sites are listed within this table as having corrective measures for specific media, additional corrective measures may be required for other media. For example, RSA-282 is included on this table as having corrective measures for surface media and is also included on Table VI.6 as requiring a CMI plan for the groundwater underlying the site.

Applicable SWMU/AOC	*CMS/CMI/ROD/LUC RD	Approval Date
Open Burning/Open Detonation Area	Revision 1 CMI Work Plan, OB/OD, dated August 17, 2017	01/08/2018
RSA-003, In-ground Oil/Water Separator, Bldg 3617	Revision 1 CMI Work Plan, RSA-003, dated October 1, 2018	08/20/2019
RSA-009, Inactive Sewage Treatment Plant #3, OU-23	Revision 1 CMI Work Plan, RSA-009, dated August 8, 2018	08/20/2019
RSA-013, Unlined Inactive Burn Pad, OU-14	Revision 0 CMI Work Plan, RSA-013, dated November 11, 2021, Revised February 14, 2022	08/08/2022
RSA-014, Unlined Inactive Burn Trenches Unit #2	Revision 1 CMI Work Plan, RSA-014S, dated March 29, 2022	XX/XX/XXXX
RSA-045, Former Smoke Munitions Filling Plant 3, OU-2	Revision 1 CMI Work Plan for RSA-045, dated September 25, 2020	07/19/2021
RSA-049, Capped Arsenic Waste Ponds – West, OU-5	Final LUC RD for Surface Media at RSA-049, dated June 1, 2009	07/02/2009
RSA-053, Inactive Sanitary and Industrial Landfill, OU-7	CMI for Surface Media and Groundwater, RSA-053, dated September 10, 2012	04/16/2013
RSA-054/RSA-055, Inactive Sanitary and Industrial Landfill, OU-1	Revision 2, CMI Work Plan for Surface Media and Groundwater, RSA-054/055, dated December 10, 2012	04/16/2013
RSA-056, Closed Arsenic Waste Ponds (South) Area U	CMI Work Plan, RSA-056 and RSA-139, dated March 13, 2019	08/20/2019
RSA-058, Inactive Rubble Fill/Waste Pile	Revision 2 CMI Work Plan, RSA-058, dated November 14, 2014	05/15/2015
RSA-058, Inactive Rubble Fill/Waste Pile	Phase II CMI Work Plan, RSA-058, dated May 18, 2018	08/20/2019
RSA-060, Inactive Sanitary and Industrial Landfill, OU-7	Revision 1 CMI Work Plan, RSA-060, dated August 8, 2017	01/08/2018

Table VIII.1 (con't)

Applicable SWMU/AOC	*CMS/CMI/ROD/LUC RD	Approval Date
RSA-065, Former Chemical Drum Storage Area, Area X	Revision 2 CMI Work Plan, RSA-065, RSA-067, and RSA-069, dated August 10, 2021	08/08/2022
RSA-067, Former Chemical Drum Storage Area, Area AA	Revision 2 CMI Work Plan, RSA-065, RSA-067, and RSA-069, dated August 10, 2021	08/08/2022
RSA-069, Former Chemical Drum Storage Area, Area Y/ RSA-070, Inactive Toxic Chemical Storage, Area Y1	Revision 2 CMI Work Plan, RSA-065, RSA-067, and RSA-069, dated August 10, 2021	08/08/2022
RSA-083, Paint Spray Booth Sump, Bldg 7344	Revision 1 CMI Work Plan, RSA-083, dated April 11, 2019	08/20/2019
RSA-101, DDT Contaminated Area DD	Consent Decree and <i>Joint Technical Proposal to Implement Remedial Activities Pursuant to Consent Decree</i> (Reference Civil Action No. CV80-PT-5300-NE)	Filed 05/31/1983
RSA-109, Former Chemical Munitions Staging Area, OU-04	Revision 0 CMI Work Plan, RSA-109, dated March 22, 2021	08/08/2022
RSA-122, Dismantled Lewisite Mfg. Plant, Area U	Revision 0 CMI Work Plan, RSA-122 and RSA-183, dated June 06, 2022 and Revised Slip Sheets, dated November 7, 2022	XX/XX/XXXX
RSA-139, Closed Arsenic Waste Pond (North) Area U	CMI Work Plan, RSA-056 and RSA-139, dated March 15, 2019	08/20/2019
RSA-141, 4.2-inch Mortar Disposal Site, Bldg 4656, OU-15	Revision 1 CMI Work Plan, RSA-141-R-01, dated April 12, 2021	08/08/2022
RSA-142, TCE Spill by Thiokol Degreasing Process, OU-9	Revision 1 CMI Work Plan for Surface Media, RSA-095 and RSA-142, dated September 6, 2013, Revised May 18, 2016	06/03/2016
	Revision 1 Addendum to the Revision 1 CMI Work Plan for Surface Media, RSA-095 and RSA-142, dated July 26, 2018, Revised October 24, 2018	08/20/2019
RSA-183, Former Lewisite Manufacturing Lines 1 & 2	Revision 0 CMI Work Plan, RSA-122 and RSA-183, dated June 06, 2022 and Revised Slip Sheets, dated November 7, 2022	XX/XX/XXXX

Table VIII.1 (con't)

Applicable SWMU/AOC	*CMS/CMI/ROD/LUC RD	Approval Date
RSA-204, Oxidizer Facility, Bldg 7691	Revision 2 CMI Work Plan for Surface Media and Groundwater, RSA-204, dated September 23, 2016	02/15/2017
RSA-206, Propellant Mixing Facility #2 and Casting Facility, Bldg 7339/7340	Revision 1 CMI Work Plan for Groundwater, RSA-206, dated November 19, 2020	07/19/2021
RSA-209, Propellant Crushing/Grinding and Fuse Production	Revision 1 CMI Work Plan for Groundwater, RSA-209, dated April 22, 2020	09/23/2020
RSA-221, Fuse Storage and Munitions Disposal Area, OU-15	Revision 1 CMI Work Plan for Soil, RSA-221-R-01, dated April 15, 2021	08/08/2022
RSA-225, Former Fuze Modification Line No. 7	Revision 1 CMI Work Plan for Groundwater, RSA-225, dated October 21, 2020	07/19/2021
RSA-250, Former Storage Warehouse, Building 778/5678, OU-3	Revision 1 CMI Work Plan for Surface Media, RSA-250, dated July 20, 2016	9/29/2016
	CMI Report, RSA-250, dated September 14, 2017	2/20/2018
RSA-252, Incendiary Bomb Facility Plant 2 Area, Building 5681	Revision 2 CMI Work Plan, RSA-252, dated November 10, 2020	07/19/2021
RSA-269, Former UST, Bldg 7852	CMI Work Plan, RSA-269, dated December 8, 2020	07/19/2021
RSA-271, Former Boiler House, Bldg 7729, OU-10	Revision 1 CMI Work Plan, RSA-271, dated November 21, 2021 and Revised Slip Sheets, dated May 10, 2022	XX/XX/XXXX
RSA-280, Skunk Hollow Small Arms Range	Slip Pages to Rev 1 CMI Work Plan, RSA-280-R-01, dated May 29, 2020	09/23/2020
RSA-282, Former Mortar Shell Test Site (Not in Range), OU-15	Revision 1 CMI WP and Revised Slip Pages, RSA-072-R-01 (RSA-282), dated May 03, 2022	08/08/2022
RSA-294, Field Training Exercise Area E	Revision 0 CMI Work Plan, RSA-294-R-01, dated June 20, 2019	09/23/2020
RSA-306, Steam Heating Plant, Bldg 7291	Revision 1 CMI Work Plan, RSA-306, dated April 27, 2023	XX/XX/XXXX
RSA-312, Former Range Area for Gate 7 Expansion	Revision 0 CMI Work Plan, RSA-312-R-01, dated December 1, 2021; March 25, 2022	08/08/2022
RSA-315, Abandoned Drum Area Near the Golf Course	Revision 1 CMI Work Plan, RSA-315, dated July 30, 2020	07/19/2021

Table VIII.1 (con't)

Applicable SWMU/AOC	*CMS/CMI/ROD/LUC RD	Approval Date
Installation-Wide Groundwater Interim Record of Decision (IROD)	Interim ROD, Interim Remedial Action for Installation-Wide Groundwater, dated September 2007	09/21/2007
	Installation-Wide Groundwater LUC RD, dated June 1, 2009	
MSFC-033A, Surface Soils East of Building 4815	CMI Work Plan, MSFC-033A, dated March 30, 2018	08/20/2019

*Note: RODs, LUC RD and/or RA WP documents serve as the CMI Plan for some SWMUs/AOCs pursuant to this Permit and are subject to the same Permit requirements.

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