



Jeremiah W. (Jay) Nixon, Governor * Kip A. Stetzler, Acting Director

DEPARTMENT OF NATURAL RESOURCES

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MISSOURI HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT PART I PERMIT NUMBER: MOD095038329

PERMITTEE

Owner: Archimica, Incorporated
2460 West Bennett Street
Springfield, MO 65807

Operator: Archimica, Incorporated
2460 West Bennett Street
Springfield, MO 65807

FACILITY LOCATION

2460 West Bennett Street
Springfield, Missouri 65807
T27N, R22W Greene County
North Latitude – 37°11'22"
West Longitude – 93°19'40"

FACILITY DESCRIPTION

The Archimica, Incorporated (Archimica), plant is located at 2460 West Bennett Street approximately one mile west of the intersection of Bennett Street and Kansas Expressway (U.S. Highway 13), in southwest Springfield, Missouri. The plant mailing address is P.O. Box 1246, Springfield, MO 65801. The primary plant site is situated within the flood plain formed by Jordan, Fassnight, and Wilson Creeks. The total acreage for the site is approximately 72 acres. The active portion of the facility occupies about seven acres and contains a number of buildings that house manufacturing, product and raw material storage facilities, quality control and process development laboratories, maintenance, and administrative buildings. The remaining acreage is undeveloped. A small portion of the site is leased from the Union Pacific Railroad. The Union Pacific Railroad and the associated easement form the western boundary for the northern half of the property. A public park (Ewing Park) with sports fields is located immediately west of the Union Pacific Railroad. Prestressed Casting Company and small



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property owners form the southwest boundary of the property. The southern most boundary of the facility extends to Sunshine Street. Bennett Street forms the northern property line, with undeveloped land and small commercial businesses north of Bennett Street. A municipal waste transfer station owned by WCA Waste Corporation of Missouri, bounds the northern one-third of the property on the east, and undeveloped land and multi-family housing bounds the remaining two-thirds of the property to the east. Land use in the vicinity of the facility is primarily industrial.

Archimica is a manufacturer of pharmaceutical chemicals. Hazardous wastes generated from various process units, areas, and maintenance activities are stored in containers prior to being disposed off site. The containers are managed under generator storage requirements under 10 CSR 25-5. Archimica has one closed hazardous waste management (land disposal) unit, the Former Surface Impoundment (FSI). Prior to the establishment of formal regulatory requirement for closure, the southern end of the FSI was filled with native soil, rock and concrete and capped with clay fill in 1975. The northern portion of the FSI was closed in accordance with applicable regulatory requirements in 1985 by removing approximately 250,000 gallons of contaminated water, sediment, backfilling with uncontaminated soil, and covering with clay fill and a concrete cap. There are several other solid waste management units (SWMUs) and areas of concern (AOCs) on the facility property (see Figure 2, Location of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs)).

Groundwater contamination resulting from releases from the FSI and other SWMUs/AOCs on the facility property is subject to corrective action under this Permit.

On May 16, 1989, Archimica and the U.S. Environmental Protection Agency (EPA) entered into a Corrective Action Administrative Order on Consent (Consent Order), U.S. EPA Docket Number VII-89-H-0017 pursuant to the authority of Section 3008(h) of the federal Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (RCRA). The Consent Order initially identified one SWMU as a possible release site. Since the signing of the Consent Order, additional SWMUs/AOCs have been identified as potential release sites.

All interim status regulated hazardous waste management units have been closed. All closure certifications were submitted by Archimica and have been accepted by the Department.

PERMITTED ACTIVITIES

This Permit requires Archimica to implement a sitewide corrective action program to address releases from SWMUs and AOCs. This Permit also contains contingent Corrective Action Conditions to address any newly-identified releases to the environment from previously- or newly-identified SWMUs and AOCs, as necessary and appropriate.

EFFECTIVE DATES OF PERMIT: September 30, 2010 to September 30, 2020

September 30, 2010
Date

[Original signed by David J. Lamb]

David J. Lamb, Director
HAZARDOUS WASTE PROGRAM

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INTRODUCTION

After public notice, according to Code of State Regulations 10 CSR 25-8.124, and review of Archimica, Incorporated's Missouri Hazardous Waste Management Facility Permit Application, (hereafter referred to as the application), the Missouri Department of Natural Resources (hereafter referred to as the Department) has determined that the application conforms to the provisions of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) and regulations promulgated thereunder by the U.S. Environmental Protection Agency (hereafter referred to as EPA) (codified and to be codified in Title 40 of the Code of Federal Regulations) and the Missouri Hazardous Waste Management Law (and all standards, rules, and regulations adopted under this act), Section 260.350, et seq., RSMo. Pursuant to Section 260.375.13, RSMo, and the Solid Waste Disposal Act, the Department hereby approves the application and issues Permit Number MOD095038329 to Archimica, Incorporated (hereafter referred to as the Permittee). This Permit addresses corrective action requirements for Solid Waste Management Units, Areas of Concern, and the requirements of the Hazardous and Solid Waste Amendments of 1984 (HSWA) as administered and enforced by the Department. Applicable regulations are found in 40 CFR Parts 260 through 264, 266, 268, and 270, and 10 CSR 25-7, as specified in this Permit. The Department is issuing this Missouri Hazardous Waste Management Facility (MHWMF) Part I Permit (hereafter referred to as the Permit) under state authority. EPA Region VII is issuing the HSWA Part II Permit under federal authority to address regulatory requirements of HSWA for which the state is not yet authorized. The MHWMF Part I Permit shall remain in effect even if the HSWA Part II Permit is terminated or has expired.

All citations to federal regulations throughout this Permit are for the sake of convenient reference. The federal regulations are adopted by reference in 10 CSR 25. In instances where state regulations are more stringent, the appropriate state reference is given and shall apply.

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

All permit application information shall be available to the public unless the Permittee requests nondisclosure, in writing, as described in Section 260.430, RSMo and 10 CSR 25-7.270(2)(B)2. This Permit and accompanying material shall be available for review by the public at the Springfield-Greene County Library Center, 4653 South Campbell, in Springfield, Missouri; the Department's central office in Jefferson City, Missouri; and the EPA Region VII office in Kansas City, Kansas.

Any appeals of this Permit based on state authority shall be filed in accordance with 10 CSR 25-2.020 and Sections 260.395.11 and 621.250, RSMo. If you are adversely affected by this decision, you may be entitled to pursue an appeal before the Administrative Hearing Commission (AHC). To appeal, you shall file a petition with the AHC within 30 days after the date this Permit was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, then it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Contact information for the AHC is as follows: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 West High Street, P.O. Box 1557, Jefferson City, MO 65102, telephone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc. The Department further requests that a copy of any appeal request be provided to the Director of the Department's Hazardous Waste Program, P.O. Box 176, Jefferson City, MO 65102-0176.

The following shall collectively be referred to as the “approved permit application”:

- The application submitted by the Permittee November 20, 2009, with additions dated December 18, 2009 and January 4, 2010, and revisions and additions dated February 18, 2010.

The “consolidated permit application” is defined as the approved permit application, any changes resulting from the public comment period, and all additional documents required to be submitted under the Schedule of Compliance contained in this Permit. The Permittee shall maintain a copy of all documents outlined above with the consolidated permit application at the facility.

Any inaccuracies found in information submitted by the Permittee may be grounds for the termination, revocation and reissuance, or modification of this Permit according to 40 CFR Part 270 Subpart D, incorporated by reference in 10 CSR 25-7.270(1) and modified in 10 CSR 25-7.270(2)(D), and for potential enforcement action. The Permittee shall inform the Department of any deviation from, or changes in, the information in the application, which would affect the Permittee's ability to comply with the applicable regulations or permit conditions.

When the Department receives any information, such as inspection results, information from the Permittee, or requests from the Permittee, it may decide whether cause exists to modify, revoke and reissue, or terminate this Permit. All such changes to this Permit shall be in accordance with 10 CSR 25-7.270(2)(D), 10 CSR 25-8.124, and 40 CFR Part 270 Subpart D, as incorporated by reference in 10 CSR 25-7.270(1).

Corrective action and post-closure care at this hazardous waste facility shall be according to the provisions of this Permit, the Missouri Hazardous Waste Management Law (Sections 260.350 to 260.434, RSMo), the rules and regulations promulgated thereunder [Code of State Regulations, Title 10, Division 25 (10 CSR 25)] as effective on the date of this Permit, all final engineering plans, petitions, specifications, and operating procedures that were submitted to the Department during the permit application review process, which are included in the final version of the permit application, and any other conditions, changes, or additions to the engineering plans, specifications, and operating procedures as specified in this Permit. The consolidated permit application, which includes the final engineering plans, specifications, and operating procedures, is therefore incorporated by this reference into the conditions of this Permit. All conditions specified in this Permit supersede any conflicting information in the consolidated permit application. Where conflicts arise between documents, the latest revision shall be effective.

This Permit for corrective action activities is issued only to the Permittee named above. This Permit is issued for a period of ten years and expires at midnight on _____.

This Permit is subject to review and modification by the Department according to Section 260.395.12, RSMo. According to 40 CFR 270.51, as incorporated in 10 CSR 25-7.270(1), the conditions of the expired permit continue in force until the effective date or denial of a new permit if a timely and complete application is submitted.

On July 6, 1999, Missouri received final authorization for revisions to its hazardous waste management program, including the corrective action portion of the HSWA Codification Rule (July 15, 1985, 50 FR 28702), which had been previously adopted by the state. Thus, the corrective action requirements implemented by the state in lieu of EPA are incorporated into this MHWMF Part I Permit and are under state authority. Authority for other HSWA requirements for which the state has not adopted the applicable federal regulation or for which the state is not authorized is retained by EPA in the HSWA Part II Permit.

40 CFR 264.101(a), as incorporated by reference in 10 CSR 25-7.264(1), requires all owners or operators of facilities seeking a Permit for the treatment, storage, or disposal of hazardous waste to institute corrective action as necessary to protect human health and the environment from all releases of hazardous wastes or hazardous constituents from any Solid Waste Management Unit, regardless of the time at which waste was placed in such unit.

40 CFR 264.101(b), as incorporated by reference in 10 CSR 25-7.264(1), requires that permits issued under the Hazardous Waste Management Law contain a schedule of compliance for corrective action (where corrective action cannot be completed before permit issuance) and assurances of financial responsibility for completing such corrective action.

40 CFR 264.101(c), as incorporated by reference in 10 CSR 25-7.264(1), requires that corrective action be taken by the facility owner or operator beyond the facility property boundary, where necessary to protect human health and the environment, unless the owner or operator

demonstrates that, despite the owner or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. 40 CFR 264.101(c) further stipulates that the owner or operator is not relieved of any responsibility to cleanup a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. In addition, assurances of financial responsibility for completing such corrective action must be provided.

40 CFR 270.32(b)(2), as incorporated by reference in 10 CSR 25-7.270(1), and Section 260.395.12, RSMo, require that each permit issued under that section contain terms and conditions as the Department determines necessary to protect human health and the environment.

The Permittee is required to comply with all applicable environmental laws and regulations enforced by the Department. These environmental laws and regulations are administered by the Air Pollution Control Program, Hazardous Waste Program, Land Reclamation Program, Solid Waste Management Program, and Water Protection Program. Failure to comply with these environmental laws and regulations may, in certain circumstances, result in the suspension or revocation of this Permit and may subject the permit holder to civil and criminal liability.

DEFINITIONS

For purposes of this Permit, terms used herein shall have the same meaning as those in RCRA and 40 CFR Parts 260, 261, 264, 266, 268, and 270, and 10 CSR 25, unless this Permit specifically provides otherwise. Where terms are not defined in RCRA, the regulations, this Permit, or EPA guidance or publications, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

“Approved Permit Application” means the original permit application and all subsequent revisions or addenda to the permit application, and any completeness and technical information submitted as referenced in the Introduction of this Permit.

“Area of Concern (AOC)” means any area where an actual or potential release of hazardous wastes or hazardous constituents that is not from a Solid Waste Management Unit has occurred or is occurring and is determined by the Department to pose a current or potential threat to human health or the environment. Investigation and/or remediation of AOCs may be required pursuant to Section 260.395, RSMo, and 40 CFR 270.32(b)(2), as incorporated by reference in 10 CSR 25-7.270(1).

“Consolidated Permit Application” means the approved permit application, any changes resulting from the public comment period, and all additional documents required to be submitted under the Schedule of Compliance contained in this Permit.

“Director” means the Director of the Missouri Department of Natural Resources or authorized delegate.

“Extraction well” means a well designated by the Permittee and approved by the Department that is used for removal of groundwater from the subsurface for treatment. For the purposes of this permit, “extraction well” is synonymous with the term “recovery well.” The two terms are used interchangeably, but for this Permit, “extraction well” has been the preferred term.

“Facility” means:

- (1) All contiguous land and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing hazardous waste; and

- (2) All contiguous property under the control of the owner or operator, for the purpose of implementing corrective action under 40 CFR 264.101, as incorporated by reference in 10 CSR 25-7.264(1) and as specified in Corrective Action Conditions I. through XXIV. of this Permit.

“Hazardous constituent” means any chemical compound listed in 40 CFR Part 261 Appendix VIII, as incorporated by reference in 10 CSR 25-4.261.

“Hazardous waste” means any waste, or combination of wastes as defined by or listed in 10 CSR 25-4, which, because of its quantity, concentration, physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness or which may pose a threat to the health of humans or other living organisms.

“Release” means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes or hazardous constituents into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes or hazardous constituents).

“Solid Waste Management Unit (SWMU)” means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.

“Stabilization” means actions to control or abate threats to human health and/or the environment from releases at RCRA facilities and/or to prevent or minimize the further spread of contamination while long-term remedies are pursued.

SCHEDULE OF COMPLIANCE

- I. Within 60 calendar days after the effective date of this Permit, the Permittee shall:
 - A. Submit to the Department two copies of the consolidated permit application as required by 10 CSR 25-7.270(2)(B)7 and defined in the Introduction of this Permit. This consolidated Permit application shall consist of the approved Permit application dated November 2009 with revisions and additions dated February 18, 2010.
 - B. Submit to the Department a certification by the Permittee that the Permittee has read this Permit in its entirety and understands all permit conditions contained in this Permit.
 - C. Submit to the Department a check or money order payable to “State of Missouri” for any outstanding engineering review costs.
 - D. Submit to the Department a check or money order payable to “State of Missouri” for \$1000 for each year this Permit is to be in effect beyond the first year. This Permit is effective for ten years. Since the Permittee has submitted a \$1000 deposit with the permit application, the remaining balance to be submitted by the Permittee is \$9,000 for this ten-year Permit. An invoice is included with this Permit. The check shall be directed to the Department’s Hazardous Waste Program, Permits Section.
 - E. Submit to the Department for approval, a Pilot Study Work Plan. The Pilot Study Work Plan shall comply with the requirements of this Permit.
- II. Within 90 calendar days after the effective date of this Permit, the Permittee shall:
 - A. Submit to the Department for approval, a Corrective Measures Implementation (CMI) Work Plan. The CMI Work Plan shall be based on the final remedy decision and shall comply with the requirements of this Permit.
 - B. Submit to the Department for approval, as part of the CMI Work Plan, a draft Environmental Covenant to be filed in the property chain-of-title, identifying portions of the permitted property where residual concentrations of hazardous wastes or hazardous constituents are present in soil and groundwater that exceed

background concentrations and any land disturbance, groundwater use or other restrictions that are needed to prevent unacceptable future exposures to residual contamination at the facility.

- III. Within 120 calendar days after the effective date of this Permit, the Permittee shall:
- A. Submit to the Department for approval, an Operation, Maintenance and Monitoring Plan (OM&M Plan). The OM&M Plan shall comply with the requirements of this Permit.
 - B. Submit to the Department for approval, an updated, detailed, written corrective action cost estimate, in current dollars, of the cost of hiring a third party to perform the corrective action activities required by this Permit, including the cost estimate for the Former Surface Impoundment. This cost estimate shall be developed using appropriate cost estimating software or other methods, and shall be certified by a registered professional engineer licensed by Missouri.
 - C. Submit to the Department for approval, as part of the OM&M Plan, a Monitoring, Sampling and Analysis Plan to incorporate all groundwater monitoring, groundwater containment, and surface water monitoring conditions, and any additional requirements contained in this Permit.
 - D. Submit as part of the OM&M Plan, a Health and Safety Plan, specifying health and safety procedures at the facility and provisions for activities performed including final remedy construction and long term groundwater, surface water, and groundwater containment performance monitoring.
 - E. Submit to the Department for approval, as part of the OM&M Plan, Standard Operating Procedures.
- IV. Within 15 calendar days after the execution (signature by all parties) of the approved Environmental Covenant, the Permittee shall record with the county recorder of deeds, the local zoning authority, or the authority with jurisdiction over local land use, according to state law, the approved Environmental Covenant in the chain of title for the facility property or on some other instrument that is normally examined during title search that will, in perpetuity, notify any potential purchaser of the environmental conditions of the property.
- V. Within 30 calendar days after recording the approved Environmental Covenant, the Permittee shall submit to the Department a notarized statement certifying that the

approved Environmental Covenant has been recorded, including a copy of the document in which the approved Environmental Covenant has been placed.

- VI. Within 30 calendar days after the Department's approval of the corrective action cost estimate, the Permittee shall submit all documentation necessary to demonstrate that the Permittee satisfies the financial assurance criteria, in accordance with 40 CFR 264.145, based on the updated corrective action cost estimate approved by the Department.
- VII. Within 60 calendar days after the completion of the Pilot Study Work Plan activities, the Permittee shall submit to the Department for approval, a Pilot Study Report. The Pilot Study Report shall comply with the requirements of this Permit.
- VIII. The Permittee shall comply with all planned and contingent corrective action requirements of this Permit as specified in the planned and contingent Corrective Action Conditions sections and as summarized in Tables 4-5.

SUBMITTAL OF REQUIRED INFORMATION

- I. The Permittee shall submit two copies, unless otherwise requested, of all reports, documents, plans/specifications, and consolidated permit application required under the terms of this Permit to:

Chief, Permits Section
Missouri Department of Natural Resources
Hazardous Waste Program
P.O. Box 176
Jefferson City, MO 65102-0176

- II. The Permittee shall submit two copies of all reports, documents, plans/specifications, and consolidated permit application required under the terms of this Permit to:

Chief, RCRA Corrective Action & Permits Branch
U.S. Environmental Protection Agency Region VII
Air and Waste Management Division
901 North Fifth Street
Kansas City, KS 66101

STANDARD PERMIT CONDITION

- I. The Permittee shall comply with the requirements set forth in the Missouri Hazardous Waste Management Law (and all standards, rules, and regulations adopted under this Law), Section 260.350, et seq., RSMo, 40 CFR Part 264 Subpart H, 40 CFR §§270.30, 270.40, 270.42, and 270.51, as incorporated and modified in 10 CSR 25-7 and 10 CSR 25-8.

GENERAL PERMIT CONDITIONS

The Permittee shall comply with the applicable requirements described in 40 CFR Part 264 Subpart B, C, D, E, G, and H, 40 CFR Part 268, and 40 CFR Part 270, as incorporated and modified in 10 CSR 25-7 and 10 CSR 25-8 and the following requirements:

I. General Facility Standards

The Permittee shall comply with Section B: FSI Corrective Action Permitting Requirements of the approved permit application and the provisions of this Permit to fulfill the requirements of 40 CFR Part 264, Subpart B - General Facility Standards, as incorporated in 10 CSR 25-7.264(1) and (2). The Archimica facility lies within a 100-year floodplain. A flood control wall bordering different portions of the property, as described in Section A: FSI Application Requirements of the approved permit application, provides protection against flood impacts of the magnitude of a 100-year flood event. The Permittee shall maintain the floodwall until such time as the corrective action activities specified in this Permit are complete.

II. Preparedness and Prevention and Emergency Procedures

The Permittee shall comply with Section B: FSI Corrective Action Permitting Requirements of the approved permit application and the provisions of this Permit to fulfill the requirements of 40 CFR Part 264, Subpart C - Preparedness and Prevention, and Subpart D - Contingency Plan and Emergency Procedures, each as incorporated in 10 CSR 25-7.264(1) and (2). The features and procedures of Section B of the approved permit application shall be included in the Standard Operating Procedures (SOPs) developed for excavation activities under Corrective Action Condition XVI., Site Operation, Maintenance and Monitoring (OM&M) Plan. The Health and Safety Plan (HASP) required by Corrective Action Condition XVI., OM&M Plan shall be regarded as compliance with 40 CFR Part 264 Subpart C - Preparedness and Prevention and Subpart D - Contingency Plan and Emergency Procedures, as these provisions are incorporated in 10 CSR 25-7.264.

III. Notification of an Emergency Situation [Chapter 260.505.4, RSMo]

The Permittee shall, at the earliest practical moment upon discovery of an emergency involving hazardous waste under the Permittee's control, notify the Department's emergency response hotline at (573) 634-2436 and the National Response Center at 1-800-424-8802.

Within 15 days of the incident occurrence, the Permittee shall submit a written report to the Department providing details. The content of the written report shall conform to 40 CFR 264.56(j), as incorporated in 10 CSR 25-7.264, and be provided to the addressees listed in “Submittal of Required Information” provision.

CORRECTIVE ACTION CONDITIONS

I. Introduction

The Permittee shall comply with all applicable post-closure care, groundwater monitoring, surface water monitoring, and corrective action requirements contained in 40 CFR Part 264 Subpart F and 40 CFR 270 Subpart C, as incorporated by reference in 10 CSR 25-7.264 and 10 CSR 25-7.270, and this Permit, for all identified Solid Waste Management Units (SWMUs) and any newly-identified SWMUs and Areas of Concern (AOCs) or releases identified pursuant to the provisions of this Permit.

The Former Surface Impoundment (FSI) is a closed unit that requires post-closure care under 40 CFR 270.1(c). The FSI is not considered a ‘regulated unit’ under the description of §264.90(a)(2) since it stopped receiving hazardous waste prior to July 26, 1982. The closure requirements for the FSI were completed and the Department received a closure certification letter October 25, 1990. The FSI is considered a SWMU subject to 40 CFR 264 Subpart F and post-closure requirements. The post-closure care elements that apply to the FSI are addressed in the corrective action conditions of this Permit.

II. Identification of SWMUs and AOCs [40 CFR 264.101]

A. On June 14, 1996, Archimica, Incorporated, then operating as Syntex Agribusiness, Incorporated, completed and delivered a Final Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report to comply with a Corrective Action Order on Consent that was entered into with EPA, Docket No. 89-H-0017, pursuant to the authority of Section 3008(h) of RCRA. Section 2 of the RFI Report identified the SWMUs which required further investigation. The general locations of the individual SWMUs are depicted in Figure 2.

The RCRA Facility Investigations (i.e., RFI Work Plans and associated reports), were completed and approved for all listed SWMUs. Figure 2 shows the approximate locations of the SWMUs at the facility. The SWMUs identified in the RFI are as follows:

1. Former Chemical Sewer Lines (FCSL) (including the Pilot Plant and Laboratory Sewers);
2. Former Surface Impoundment (FSI);

3. Wastewater Treatment System (WWTS);
4. Site Sewer Lines (SSL);
5. West Ditch Area/Lactone Pit (WDA or WDDS);
6. Solvent Recovery Areas (SRA);
7. Waste Solvent Tanks (WST);
8. Drum Storage Areas (DSA);
9. Hazardous Waste Storage Building (HWSB), also known as the Interim Storage Pad (ISP);
10. Former Sludge Storage Facility (SSF); and
11. Groundwater Treatment System (GWTS).

B. Each SWMU was evaluated in the final approved Corrective Measures Study (CMS) Report, dated January 9, 2002, to determine if any hazardous constituents associated with the SWMU posed any threat to human health and the environment. It was determined at that time that further remediation was not required to protect human health and the environment at the following SWMUs:

1. Site Sewer Lines (SSL);
2. West Ditch Area/Lactone Pit (WDA or WDDS);
3. Waste Solvent Tanks (WST);
4. Drum Storage Areas (DSA);
5. Hazardous Waste Storage Building (HWSB); also known as the Interim Storage Pad (ISP);
6. Former Sludge Storage Facility (SSF); and
7. Groundwater Treatment System (GWTS).

- C. Based upon the final approved CMS Report and the Statement of Basis, it has been determined that further corrective action is needed at the following SWMUs to protect human health and the environment:
 - 1. Former Chemical Sewer Lines (FCSL) (including the Pilot Plant and Laboratory Sewers);
 - 2. Former Surface Impoundment (FSI);
 - 3. Wastewater Treatment System (WWTS) (brick-lined settling pit); and
 - 4. Contaminated sewer pipes of Building S-14 in the Solvent Recovery Area (SRA).

- D. The Permittee shall conduct additional investigations and/or remediation as deemed appropriate by the Department for any newly-identified SWMUs and AOCs or releases at the facility, as specified in Corrective Action Conditions VI. and VII. of this Permit.

- E. In the event new information becomes available indicating that human health or the environment may be adversely impacted, the Permittee will be required to re-evaluate any previously approved report to determine the need for additional corrective action for the previously-identified SWMUs and AOCs or any newly-identified SWMUs and AOCs, including any off-site release(s), as specified in Corrective Action Conditions VI. and VII. of this Permit.

- F. The Permittee shall notify the Department prior to any future construction or excavation activities that disturb residual contamination at any SWMUs or other areas subject to institutional controls. The provisions of Corrective Action Condition XVIII. of this Permit prescribe procedures and restrictions for activities in contaminated areas that involve disturbance of the subsurface soil and groundwater. The objective of this requirement is to ensure that necessary precautions are taken when disturbing and/or exposing any contaminated environmental media at the facility. Future construction, excavation activities, or land use changes may require further evaluation of site conditions at affected SWMUs according to 40 CFR 264.117(c).

III. Groundwater Monitoring and Corrective Action Program [40 CFR 264.101, 40 CFR 270.32]

A. Groundwater Protection Standards (GPS), Hazardous Constituents, and Concentration Limits

1. The GPS establishes the maximum concentration limits for hazardous constituents (a.k.a., constituents of concern, or ‘COCs’) in the groundwater at and beyond the Point of Compliance during the compliance period. The COCs and protection levels specified in Table 1 of this Permit, as determined by the final approved CMS Report, constitute the GPS for the Permittee’s closed FSI and other SWMUs and AOCs. The COCs listed in Table 1 have been detected in the groundwater beneath and beyond the subject units and are reasonably expected to be in or derived from wastes managed at the facility.
2. The protection levels for the GPS hazardous constituents are listed on Table 1 for the Springfield Plateau Aquifer Groundwater Flow System. The list of COCs was developed based on protection of human health and the environment. This list was derived from evaluation of all chemicals detected during historical sampling at the facility using selection criteria focused on risk-based considerations and corrective measures efforts. The protection level for each GPS constituent is based on and equal to the current Maximum Contaminant Level (MCL) published in 40 CFR Part 141 Subpart B, the current Missouri Water Quality Standards for drinking water published in 10 CSR 20-7.031, or EPA Region 6 Regional Screening Levels, as appropriate. The Department reserves the right to modify this Permit to require the Permittee to achieve GPS protection levels that are equal to revised MCLs, Missouri Water Quality Standards, or EPA Region 6 Regional Screening Levels, as they are updated in the future.
3. The Permittee may make a demonstration to the Department, at any time during the term of this Permit, for establishment of Alternate Concentration Limits (ACLs) in lieu of the GPS protection levels (Table 1) contained in this Permit. Any such demonstration shall ensure that any and all ACLs proposed in lieu of the GPS protection levels are protective of human health and the environment. In proposing any ACL(s), the Permittee shall consider formally addressing the factors listed in 40 CFR 264.94(b)(1) and (2). Any ACLs proposed by the Permittee

shall be handled as a Class 3 Permit Modification, including public notice and opportunity for comment, in accordance with 40 CFR 270.42, prior to final approval by the Department.

4. The Permittee shall propose modifications of the GPS to include any additional hazardous constituent(s) (40 CFR Part 261, Appendix VIII.) in the groundwater that may be identified during future sampling and analysis, if such constituent(s) may be attributed to past operation of the unit(s) and/or the degradation products of hazardous constituent(s) known to be present in the groundwater. Any addition of hazardous constituent(s) to the GPS as a result of the above determination shall require a Class 1 Permit Modification with prior Director approval. Any other changes to the GPS list of hazardous constituents shall require a Class 3 Permit Modification, in accordance with 40 CFR 270.42.
5. The allowable GPS maximum detection limit shall never be greater than the GPS maximum concentration limit. If the GPS maximum detection limit for specific GPS parameters cannot be achieved due to matrix interferences or other reasonable analytical limitations (provided that appropriate supporting documentation is furnished), the affected sample and associated chemical analysis shall be exempted from this requirement. However, such an exemption does not in any way relieve the Permittee from complying with the GPS maximum concentration limits.
6. The GPS maximum concentration limit for 2,3,7,8-tetrachlorodibenzo-p-dioxin is below the lowest, reasonably achievable detection limit (due to limitations in current analytical technology). In this case, the GPS maximum concentration limit shall be equal to the corresponding GPS maximum detection limit.
7. The Department reserves the right, based on future advances in analytical technology, to modify this Permit to require the Permittee to achieve analytical detection limits for the hazardous constituents in Table 1, which allow for comparison with appropriate health- or environmental protection-based concentration limit(s).

Table 1 - Groundwater Protection Standards

| Hazardous Constituent | Maximum Concentration Limit (µg/L) | Maximum Detection Limit (µg/L)^(d) |
|--|---|---|
| Benzene | 5 (a) | 1 |
| Chloroform | 5.7(b) | 1 |
| 1,1-Dichloroethane* | 2.4(c) | 1 |
| 1,2-Dichloroethane | 5(a) | 1 |
| Ethylbenzene | 700(a) | 1 |
| Methylene Chloride | 4.7(b) | 2 |
| 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)** | 0.000013(b) | 0.001*** |
| Toluene | 1,000(a) | 1 |
| Trichloroethene* | 5(a) | 1 |
| Vinyl Chloride* | 2(a) | 1 |
| Xylenes (total) | 10,000(a) | 3 |

(a) Denotes limits derived from the EPA’s National Primary Drinking Water Standards (MCLs) (40 CFR, Part 141, Subpart B), May 2009.

(b) Denotes limits derived from Missouri Water Quality Standards (10 CSR 20-7.031), September 2009. These limits differ from the values presented in the final approved CMS Report.

(c) Denotes limit derived from EPA Region 6 Regional Screening Levels, May 2010.

(d) Detection Limit based upon the lowest achievable practical quantitation limit available from the Permittee’s contract laboratory.

* Note: Hazardous constituents differ from those presented in the final approved CMS Report.

** For the purpose of estimating equivalent concentrations of 2,3,7,8-TCDD to allow risk comparisons, toxicity equivalence factors (TEFs) of complex mixtures of chlorinated dibenzo-p-dioxins and dibenzofurans will be multiplied by the respective congener concentrations. The TEF values to be utilized in this risk comparison should be obtained from the EPA recommended document: The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (Van den Berg, et al., 2005), or the latest revision of this document.

*** The quantitation limit for dioxin compounds analysis per EPA SW-846 Method 8280 exceeds the MCL for 2,3,7,8-TCDD. The maximum detection limit in Table 1 shall be revised as lower quantitation limits become achievable.

B. Point of Compliance

The Point of Compliance is the location at and beyond which the GPS shall be achieved as defined in the final approved CMS Report. The Point of Compliance represents where the Permittee shall meet groundwater cleanup levels within the contaminated aquifer at the completion of the final remedy, that is, where the Permittee shall achieve the final remediation goals.

1. At the facility, the Point of Compliance is established at the perimeter of the four SWMUs serving as the original source of groundwater contamination, i.e., the main trunks of the FCSL, the FSI, the brick lined settling pit of the historical WWTS, and contaminated sewer pipes and plumbing of building S-14 (in the SRA). The Point of Compliance is described in the Statement of Basis and the final approved CMS Report. The Point of Compliance is currently defined by the following wells, based on their proximity to the four SWMUs:

Table 2 - Point of Compliance Wells

| Hydrogeologic Zone | Point of Compliance Wells |
|---------------------------|----------------------------------|
| Alluvial | ITA3 |
| Weathered Burlington (B1) | ITO2, ITO4, RFI-7B1 |
| Upper Burlington (UB1) | ITD3, ITD5 |
| UB1/Burlington (B2) | SXD3, 5-Core |
| B2 | RFI-6B2 |

2. Groundwater contamination at and beyond the Point of Compliance that exceeds the GPS shall be subject to corrective action pursuant to 40 CFR 264.101.
3. For the purposes of this permit, corrective action consists of groundwater containment and remediation.

C. Compliance Period [40 CFR 264.96]

The compliance period for corrective action shall last for 30 years, based on the requirements of 40 CFR 264.96, and shall begin on the effective date of this Permit. If one, or more, of the GPS maximum concentration limits are being exceeded at the end of the compliance period at or beyond the Point of Compliance, the Permittee’s corrective action program shall continue until the Permittee demonstrates that these limits have not been exceeded at and beyond the Point of Compliance for a period of three consecutive years.

D. General Groundwater Monitoring Requirements [40 CFR 264.101]

1. The Permittee’s groundwater monitoring systems shall be designed, installed, operated, and maintained during the compliance period in a manner that ensures:

- a. Detection and/or delineation of the horizontal and vertical extent of groundwater contamination at and beyond the Point of Compliance, including beyond the facility property boundary;
 - b. Determination of representative concentrations of hazardous constituents and contaminant plume indicator parameters in the groundwater; and
 - c. The Permittee's ability to determine the effectiveness of any groundwater corrective action activities in terms of contaminant removal, destruction, and containment (plume stability).
2. The Permittee shall comply with the Monitoring, Sampling and Analysis Plan (MSAP) element of the Operation, Maintenance and Monitoring Plan (OM&M Plan), required by Corrective Action Condition XVI. of this Permit. Prior to MSAP submission and approval, the Permittee shall abide by the current approved Sampling and Analysis Plan (SAP), dated September 30, 1996, and all approved revisions/additions.
3. The number, location, and depth of the Permittee's monitoring wells shall be sufficient to define the horizontal and vertical extent of groundwater contamination beneath the Permittee's property and beyond the facility property boundary. If, at any time during the compliance period, including any necessary extensions, the Permittee or the Department determines that the existing monitoring system fails to define the horizontal and vertical extent of groundwater contamination, the Permittee shall submit, within 30 calendar days of such determination by the Permittee or written notification by the Department, a proposal for the installation of additional monitoring wells to define such extent. Procedures cited in the MSAP element of the OM&M Plan shall be followed in the collection and analysis of samples from any new wells required under this Permit.
4. At such time as the Department determines that the Permittee has adequately redefined the horizontal and/or vertical extent of groundwater contamination, the wells defining such extent shall be incorporated into and designated for continued monitoring in the Permittee's MSAP. The Department shall notify the Permittee in writing regarding this determination. Within 30 calendar days of receipt of this notification, the Permittee shall submit appropriate MSAP revisions to the Department for approval.

5. Any new groundwater monitoring well(s) installed by the Permittee to meet the requirements of this Permit shall be designed and constructed according to the requirements of 40 CFR 264.97, 10 CSR 23-1 through 10 CSR 23-4, Monitoring Well Construction Code of the Missouri Well Construction Rules, and/or well-specific plans and specifications approved by the Department.

The Permittee shall submit to the Department a copy of the well certification report form and the resulting certification acceptance required by 10 CSR 23-4.020 for any new monitoring wells installed pursuant to this Permit. This information shall be reported as part of the Annual Groundwater Corrective Action Report, as defined in Corrective Action Condition XX. of this Permit.

Changes in the number, location, depth, or design of upgradient or downgradient wells (not including Point of Compliance wells) shall require prior written approval by the Department. Within 30 calendar days of written approval, the Permittee shall submit appropriate MSAP revisions to the Department. Point of Compliance well changes shall be made in accordance with Corrective Action Condition III.D.9. of this Permit.

6. Plugging and abandonment of any groundwater monitoring well(s) operated by the Permittee pursuant to the requirements of this Permit shall meet the requirements of 10 CSR 23-4.080.
 - a. The Permittee shall submit to the Department's Hazardous Waste Program, a copy of the well registration report form and resulting registration acceptance required by 10 CSR 23-4.080, for any monitoring wells abandoned and plugged pursuant to this Permit. This information shall be reported as part of the Annual Groundwater Corrective Action Report, as defined in Corrective Action Condition XX. of this Permit.
 - b. At such time as the Permittee's well registration has been accepted by the Department's Division of Geology and Land Survey (DGLS), the plugged wells shall be removed from the Permittee's MSAP. Within 30 calendar days of the DGLS's registration acceptance, the Permittee shall submit appropriate MSAP revisions to the Department's Hazardous Waste Program.

7. All revisions to MSAP procedures and techniques used in groundwater sampling, analysis, and measurement of groundwater-related parameters shall be designed to meet the requirements of 40 CFR Part 264 Subpart F, as incorporated in 10 CSR 25-7.264(1), and this Permit. The Permittee's sampling, analysis, and measurement protocols shall ensure the representative nature of all analysis and measurement results.
8. The Permittee shall retain a copy of the approved MSAP on site and comply with the sampling and analysis procedures. The MSAP shall describe sample collection, including provisions for the proper handling of any purged water, preservation, and shipment methodology; chain-of-custody procedures; and analytical methodology for field samples, trip blanks, and other quality control samples.
9. A Class 2 Permit Modification is required for any change in the number, location, depth, or design of the Point of Compliance wells, in accordance with 40 CFR 270.42. Replacement of any Point of Compliance wells without changing their location, depth, or design shall require a Class 1 Permit Modification without prior Director approval, in accordance with 40 CFR 270.42. The Permittee may elect to submit an annual permit modification to address these changes in lieu of a modification for each individual change. Within 30 calendar days of Departmental approval of the permit modification, the Permittee shall submit appropriate MSAP revisions to the Department.
10. The Permittee shall contact the Department's Hazardous Waste Program, Permits Section, at least five working days before conducting any field work associated with the construction or modification of the groundwater monitoring system required by this Permit. The Department shall then have the option of observing any part of the system's construction or modification. This notification requirement applies to major work such as new wells, retrofitting of existing wells, or abandonment of wells. It does not apply to minor repairs, minor maintenance, or other minor modifications.
11. A monitoring well inspection and maintenance program shall be implemented for the duration of the compliance period, including any necessary extensions. This program shall be designed to ensure the

structural integrity of all monitoring well installations during the compliance period. The Permittee's MSAP shall address the details of this program according to the following requirements.

- a. Surface well integrity inspections shall be performed for all wells at the time of each sampling event and shall be documented on a well inspection checklist. Surface integrity evaluations for each monitoring well shall include a visual inspection of the outer protective casing, inner casing riser, surface well seal, well cap, and locking mechanism, to document any damage or deterioration. The ground surface in the immediate vicinity of each monitoring well and the annular space between the outer protective casing and casing riser shall be inspected for visible anomalies (e.g., collection or ponding of water, ground subsidence, etc.).
- b. Subsurface well integrity evaluations shall be performed annually in 1/3 of all wells designated within, and in accordance with the provisions that shall be contained in the Permittee's MSAP, and shall be documented on a well inspection log sheet, with all wells being evaluated once every three years. Subsurface well integrity inspections may consist of a combination of elements, including total well depth measurements, groundwater turbidity measurements, in-situ hydraulic conductivity tests, casing caliper logs, down-hole television camera surveys, and/or other methods capable of verifying the subsurface integrity of the well casing and screen.
- c. The Permittee's MSAP shall specify performance of an annual wellbore siltation evaluation to assess downwell siltation and well screen or monitored interval occlusion in 1/3 of all monitoring wells, with all wells being evaluated once every three years. This requirement shall be designed to ensure the representative nature of the Permittee's groundwater sampling, analysis, and field measurement results through minimization of sampling and measurement interferences (e.g., turbidity, excessive well screen/open hole occlusion, etc.).

The Permittee's MSAP shall specify a well redevelopment trigger criterion based on a percentage of well screen/open hole occlusion and the potential of such occlusion to compromise the

representative nature of the Permittee's groundwater sample analysis and field measurement results. Wells demonstrating well screen/open hole occlusion equal to or in excess of the selected criterion shall be redeveloped prior to the next sampling event.

- d. The Permittee shall perform well-specific integrity inspections as specified in the MSAP within seven calendar days following any contact of wells by flood waters. Monitoring well repairs shall be undertaken within 30 calendar days of identification of any surface or subsurface well integrity problem(s). If adverse weather or site conditions preclude the Permittee from gaining access to and/or repairing monitoring wells within the above-noted periods, then the Permittee shall take appropriate action as soon as practicable. Written justification for any delay, completed well inspection log sheets, a narrative description of any well repairs, and before and after photographic documentation (in the case of visible surface well repairs) shall be provided to the Department as part of the Annual Groundwater Corrective Action Reports required by Corrective Action Condition XX. of this Permit.

E. Corrective Action Program - FSI [40 CFR Part 264 Subpart F and 40 CFR 270 Subpart C]

The completion of closure for the FSI was on or about October 25, 1990. Corrective action (post-closure) activities for releases from the FSI began October 25, 1990, and shall continue 30 years until October 24, 2020. Corrective action shall be extended, at a minimum, until such time as the GPS maximum concentration limits or ACLs, as applicable, are met for a period of three consecutive years, unless otherwise approved by the Department.

1. During the corrective action activity period for the FSI, the Permittee shall comply with the requirements of this Permit and the MSAP element of the OM&M Plan, Corrective Action Condition XVI., which shall specify the following, including, but not limited to:
 - a. Regular inspections and repair, as needed, in accordance with the items, frequencies and guidelines in the inspection schedule of the approved permit application;
 - b. Maintenance of the integrity and effectiveness of the concrete cap;

- c. Operation of the French Drain as outlined in the approved permit application; and
 - d. Maintenance of and monitoring of the groundwater and surface water monitoring and groundwater containment systems and complying with all applicable requirements of 40 CFR Part 264 Subpart F.
2. The Permittee shall continue to provide for the proper operation and maintenance of engineering controls as described in Section B of the approved permit application and in this Permit. These actions are necessary to prevent human exposure to soils and/or groundwater contaminated with hazardous wastes or hazardous constituents in concentrations exceeding applicable regulatory risk-based thresholds/standards. The engineering controls shall not be disturbed and shall remain in place and be effective unless or until the Department provides written approval to alter, modify, eliminate, or otherwise cease operation/maintenance of such controls via modification of the Environmental Covenant required pursuant to Corrective Action Condition XVIII. of this Permit.
3. Use of the property shall be restricted by the Permittee to prevent disturbance of the integrity of the final cover on the FSI and to prevent damage to the monitoring systems. The Department may approve a use of the property that disturbs the integrity of the final cover if it is necessary for the proposed use of the property and will not increase the potential hazard to human health or the environment, or if it is necessary to reduce a threat to human health or the environment.
4. The Permittee may submit a request to the Department to shorten the corrective action activity period. Justification for shortening the corrective action activity period shall accompany any such request. If the Department finds that a shortened corrective action activity period is sufficient to protect human health and the environment, shortening of the corrective action activity period shall require a Class 3 Permit Modification, in accordance with 40 CFR 270.42.

5. Corrective Action Plan for the FSI and Amendments
 - a. Corrective action activities for the FSI shall be conducted according to the corrective action requirements of this Permit. If the conditions of this Permit are found to be in conflict with the approved permit application, the conditions of this Permit shall be authoritative.
 - b. The approved corrective action final remedy for the FSI may be amended at any time during the term of this Permit. The Permittee shall submit a written request to the Department for a permit modification to authorize a change in the approved corrective action plan. The written notification or request shall include a copy of the amended corrective action final remedy for review. Amendments are subject to the applicable permit modification requirements of 40 CFR Part 270 Subpart D, 10 CSR 25-7.270(2)(D), and 10 CSR 25-8. Written requests for amendments shall be submitted at least 60 calendar days prior to the proposed change in site operations, or not later than 60 calendar days after an unexpected event that has affected the plan. The Department may request modifications to the plan if changes in site operations affect the approved plan. The Permittee shall submit the modified plan no later than 60 calendar days after a Department request for modification of the plan. Any modifications requested by the Department shall be approved, disapproved, or modified in accordance with the procedures in 40 CFR 270 and 10 CSR 25-8.124.
 - c. Inspection and maintenance of the cap for the FSI shall be in accordance with the requirements of this Permit. The inspection and maintenance procedures provided in the approved permit application may be modified during development and approval of the OM&M Plan required by this Permit, including standard operating procedures (SOPs) covering maintenance and inspection activities for the existing cap and other areas as part of the final remedy described in the Corrective Action Condition XIII. of this Permit. The OM&M Plan shall address the maintenance activities, including routine inspections, for the existing cap at the FSI and all asphalt- and concrete-covered areas. The OM&M Plan is required under Corrective Action Condition XVI. of this Permit. Inspection

and maintenance of the cap for the FSI shall become part of the final remedy upon approval of the OM&M Plan.

6. Future Removal of Hazardous Wastes

If the Permittee wishes to remove hazardous wastes, hazardous waste residues, contaminated soils, or contaminated sludges within the boundaries of the FSI, the Permittee shall request a modification of this Permit, according to the applicable requirements of 40 CFR Part 270 Subpart D, 10 CSR 25-7.270(2)(D), and 10 CSR 25-8. The request for a modification shall include a demonstration that the action will not increase the potential hazard to human health or the environment, or the action is necessary to reduce the threat to human health or the environment. In addition, a demonstration shall be made that the action will satisfy 40 CFR 264.117(c). By removing contaminants, the Permittee may become a generator of hazardous waste and shall manage any removed material according to all applicable laws, regulations, and ordinances.

F. Corrective Action Program - SWMUs [40 CFR 264.101]

All SWMUs, including the FSI, are subject to the corrective action requirements of 40 CFR 264.101, as incorporated by reference in 10 CSR 25-7.264(1), and this Permit, until such time as these requirements have been satisfied.

The corrective action program recognizes many elements specific to the facility. The corrective action program takes into account the inability to differentiate groundwater contamination related to releases from various SWMUs and AOCs. The corrective action program also takes into account the desirability of implementing a holistic, sitewide approach to groundwater investigation, monitoring, and contaminant control/containment and removal.

The corrective action program for groundwater is premised on exceedance of the GPS at and beyond the Point of Compliance as of the effective date of this Permit. The GPS and Point of Compliance are described in Corrective Action Condition III. of this Permit. The corrective action to control/contain and remove hazardous constituents exceeding the GPS is to be implemented under Corrective Action Conditions III., IV., V., XIV., and XVI. of this Permit.

The MSAP mentioned throughout this Permit is an element of the OM&M Plan required by Corrective Action Condition XVI. of this Permit. Prior to MSAP

submission and approval, the Permittee shall abide by the current SAP, dated September 30, 1996, and all approved additions and revisions.

1. The Permittee's corrective action program for SWMUs shall consist of Alternative 3, with modifications, as described in the final approved CMS, dated January 9, 2002, and further described in the Statement of Basis. Alternative 3 includes the installation of new wells for recovery of dense non-aqueous phase liquid (DNAPL) contamination, institutional controls, groundwater recovery and treatment systems, and enhanced groundwater, surface water and DNAPL monitoring. Enhanced monitoring shall consist of a combination of subsurface hydraulic control measurements and chemical monitoring to verify groundwater plume containment and to track associated long-term trends in groundwater quality and the effectiveness of the final remedy.
2. The Permittee shall perform hydraulic control monitoring of specified wells in each contaminated hydrogeologic zone (Alluvial, Weathered Burlington (WB1), Upper Burlington (UB1), and Burlington (B2)). These wells shall be noted in the MSAP element of the OM&M Plan, required by Corrective Action Condition XVI. of this Permit.
 - a. The parameters specified in Table 3 shall be monitored. Procedures and techniques for monitoring shall be accomplished in accordance with provisions of the MSAP element of the OM&M Plan, once approved, and this Permit.
 - b. Monitoring wells for hydraulic control monitoring serve a dual purpose:
 - (1) Provide semi-continuous water level data to verify capture, containment, and control of groundwater within the B1 hydrogeologic zone as specified in the MSAP; and
 - (2) Provide evidence of hydraulic control needed to demonstrate minimal discharge of contaminated groundwater or impacts to Jordan Creek, in conjunction with the Surface Water Monitoring Program, described in Corrective Action Condition IV. of this Permit.

3. The Permittee shall perform groundwater sampling and analysis for chemical monitoring according to the parameter measurement schedule in Table 3 and the well classifications to be noted in the MSAP element of the approved OM&M Plan.
 - a. Sampling and analysis in accordance with this schedule shall be performed as described in the MSAP.
 - (1) Chemical sampling locations at the facility are classified into three categories: perimeter wells, performance wells and Point of Compliance wells. Point of Compliance wells are discussed under Corrective Action Condition III.B. of this Permit. The purposes of perimeter and performance wells, as shall be discussed in the MSAP, are to document plume stability through the measurement of horizontal and vertical trends in groundwater contamination over time and to provide continued verification of the efficiency and effectiveness of the groundwater portion of the corrective action final remedy.
 - (2) Perimeter wells shall be monitored to ensure adequate delineation of the extent of groundwater contamination and to assure that the known extent of groundwater contamination is maintained vertically and horizontally within the boundaries of the monitoring network.
 - (3) Performance wells shall be monitored to verify control and containment within the contaminated areas of each hydrogeologic zone, and to provide a means of monitoring changes in contaminant concentration trends over time.
 - b. Specific perimeter and performance wells to be monitored shall be specified in the MSAP element of the OM&M Plan, Corrective Action Condition XVI. of this Permit.
 - c. If the horizontal and vertical extent of groundwater contamination does not remain contained/under control as confirmed by the groundwater monitoring data, installation of additional perimeter wells may be necessary to meet the requirements of 40 CFR Part 264 Subpart F, as incorporated by reference in 10 CSR

25-7.264(1), and this Permit. If any such wells are installed, they shall be subject to the monitoring requirements contained in Table 3 of this Permit and the MSAP.

- d. Installation of new monitoring wells following the effective date of this Permit that are used for the purpose of delineation of the extent of groundwater contamination shall be subject to quarterly sampling and analysis for a period of time which is sufficient to establish contaminant trends in such wells. Thereafter, the monitoring frequency may be modified to reflect the long-term monitoring strategy and usage of such wells.
 - e. Any future changes to the list of monitoring wells (except for Point of Compliance wells) established in the Permittee's MSAP shall be approved, in writing, by the Department. Within 30 calendar days of receipt of the Department's approval, the Permittee shall submit additional MSAP revisions to incorporate the approved changes. Point of Compliance well changes shall be made in accordance with Corrective Action Condition III.D.9. of this Permit.
4. Only single sample analyses (as opposed to replicates) are required for the parameters listed in Table 3 and the MSAP, with the exception of duplicate samples taken for Quality Assurance/Quality Control (QA/QC) purposes.
 5. Downwell measurement of non-aqueous phase liquid (NAPL) presence and thickness and groundwater elevation level shall be taken quarterly in all currently or previously known NAPL-producing wells in addition to those in which dedicated pumping equipment has or would be installed, as shall be specified in the MSAP element of the OM&M Plan. Quarterly measurements shall be taken for a period of time which is sufficient to establish NAPL trends. Thereafter, measurement frequency may be modified to reflect the long-term monitoring strategy. Total well depth shall be taken annually in wells as specified in the MSAP.
 6. Every two years, the Permittee shall sample and analyze groundwater from selected wells for all constituents contained in 40 CFR Part 264, Appendix IX., as per MSAP protocol. The Permittee may resample the groundwater according to 40 CFR 264.99(g), as incorporated in 10 CSR 25-7.264, if hazardous constituents are identified that are not currently specified in the GPS, Table 1, and the monitoring program, Table 3. If the

Permittee's subsequent groundwater analyses confirm the presence of additional hazardous constituents, the Permittee shall propose a Class 1 Permit Modification with prior Director approval to add the confirmed hazardous constituent(s) to the GPS, Table 1, and the monitoring program specified in Table 3. If the Permittee chooses to waive the resampling option, the hazardous constituent shall be added to the GPS, regardless of concentration. Refer to Corrective Action Condition III.A. of this Permit.

- a. One Point of Compliance well (Table 2) shall be selected by the Permittee, in consultation with the Department, for this sampling. In selecting the compliance well to sample, the Permittee shall review the Annual Groundwater Corrective Action Report (required by Corrective Action Condition XX. of this Permit) for the prior year. In reviewing the report, the Permittee shall determine the Point of Compliance well that was most heavily contaminated based on the number and concentration of contaminants found in that well during the previous year and target that well for the Appendix IX sampling and analysis.
- b. This sampling and analysis is required to determine if additional hazardous constituents listed in 40 CFR Part 261, Appendix VIII, are present in the groundwater that may be attributable to a release(s) from the previously identified SWMUs, or to degradation of currently known hazardous constituents.

Table 3 - Groundwater Monitoring, Sampling, Analysis, and Parameter Measurement Schedule

| Parameters | Type | Maximum Detection Limit (ug/l) | Frequency |
|-------------------------|------|--------------------------------|-----------------|
| Volatiles (1)(a) | HC | Per Table 1 | * |
| Dioxin compounds (2)(a) | HC | Per Table 1 | ** |
| Appendix IX (3)(a) | HC | PQLs per SW-846 | Every two years |
| NAPL Thickness | FM | NA | Quarterly*** |
| Groundwater Elevation | FM | NA | Quarterly**** |
| Total Well Depth | FM | NA | Annually |

HC = Hazardous Constituent, FM = Field Measurement, NA = Not Applicable

PQL = Practical Quantitation Limit

(a) Current EPA SW-846 method at the time of sampling.

(1) EPA SW-846 Method 8260B or equivalent.

(2) 2,3,7,8-tetrachlorodibenzo-*p*-dioxin, EPA SW-846 Method 8280B or equivalent.

(3) See Corrective Action Condition III.F.6. and 40 CFR Part 264, Appendix IX.

* Samples from Point of Compliance wells (Table 2) and performance wells (specified in MSAP) shall be analyzed for volatiles annually. Samples from Perimeter wells (specified in MSAP) shall be analyzed for volatiles semi-annually. Samples from new wells shall be analyzed for volatiles quarterly as per Corrective Action Condition III.F.3.d.

** Samples from Point of Compliance wells (Table 2), and performance and perimeter wells (specified in the MSAP) that historically have had detectable levels of dioxin compounds shall be analyzed for dioxin compounds annually. Samples from new wells containing DNAPL or suspected to contain DNAPL shall be analyzed for dioxin compounds quarterly as per Corrective Action Condition III.F.3.d.

*** NAPL thickness shall be taken in all known NAPL-containing wells in addition to those in which dedicated pumping equipment has or would be installed, as shall be specified in the MSAP.

**** Elevation measurements shall be to the nearest 0.01 foot in all wells.

Note: The full suite of constituents for each EPA SW-846 method used shall be tested for and reported in the Annual Groundwater Corrective Action Reports, Corrective Action Condition XX.

IV. Surface Water Monitoring [10 CSR 25-7.264(2)(F)4.]

A. The Permittee shall implement a surface water monitoring program, in accordance with the requirements of 10 CSR 25-7.264(2)(F)4. and this Permit, throughout the compliance period or until such time as the Permittee makes a successful demonstration for exemption from these requirements. Compliance with this monitoring program is for the purposes of this Permit only and does not relieve the Permittee of the obligation to comply with any other federal, state or local water monitoring requirements. The Permittee's surface water monitoring program shall be performed as described in this Permit and in accordance with

procedures that shall be contained in the MSAP element of the OM&M Plan required by Corrective Action Condition XVI. of this Permit. Prior to MSAP approval under this Permit, the Permittee shall continue to conduct surface water monitoring in accordance with the approved SAP, dated September 30, 1996, and all approved revisions/additions, the approved permit application, and the document entitled Proposal for Surface-Water Monitoring Program at Clariant LSM (Missouri) Inc., Facility, August 2, 2005.

1. The purpose of the surface water monitoring program is to directly verify no adverse impact to surface waters from groundwater contamination at the facility in compliance with 10 CSR 25-7.264(2)(F)4. Surface water monitoring will also provide an indication of the effectiveness of the groundwater containment/control portion of the final remedy.
2. The MSAP shall include the surface water monitoring program, including methods and procedures to accomplish sampling and analysis of surface water. The Permittee's analytical methods for surface water shall be consistent with those methods specified in Table 3 for groundwater. Specific procedures and protocols for selection of chemical sampling times, hydraulic and chemical data collection and processing, and data evaluation and statistical analysis shall be included in the MSAP.
3. Unless otherwise approved in the MSAP, surface water samples shall be taken at the locations identified and for the parameters described in Section C, Corrective Measures Permitting Requirements, of the approved permit application. The Permittee may propose changes in the Surface Water Monitoring Program in the MSAP that shall be submitted for review and approval as part of the OM&M Plan, Corrective Action Condition XVI. of this Permit. Any proposed changes shall be reviewed and approved by the Department in writing prior to implementation.
4. Reporting of data/information collected as part of the surface water monitoring program shall be sufficient to ensure that the requirements of 10 CSR 25-7.264(2)(F)4. are met, and shall be included in the Annual Groundwater Corrective Action Report required by Corrective Action Condition XX. of this Permit. Conclusions regarding the analysis of the data shall be included in each Annual Groundwater Corrective Action Report.

- B. The Permittee may, at any time during the compliance period, make a demonstration to the Department for a surface water monitoring exemption. This demonstration shall be certified by a geologist or professional engineer registered in Missouri, as described in 10 CSR 25-7.264(2)(F)4. A successful demonstration for such an exemption shall, at a minimum, adequately address the elements described in 40 CFR 264.94(b), as applied to potentially affected surface water bodies. Departmental approval of the Permittee's surface water monitoring exemption shall necessitate a permit modification, in accordance with 40 CFR 270.42.

V. Groundwater Containment/Control

The Permittee submitted a Proposed Pilot Study Work Plan for Hydraulic Testing for Control and Compliance (hereafter referred to as the Pilot Study Work Plan) on August 7, 2006. The Department and EPA approved the Pilot Study Work Plan on September 15, 2006. On February 18, 2010, the Permittee submitted a document entitled Preliminary Groundwater Containment Standard.

Performance goals are based on the ongoing effectiveness of groundwater containment/control and ultimately, achievement of the maximum concentration limits specified in Table 1. The groundwater containment/control system is an integral part of the final remedy at the facility. The Permittee shall continue operating this system pursuant to this Permit, until such time as the Permittee submits, and the Department approves, a demonstration that operation of this system is no longer necessary to protect human health and the environment.

A. Intermediate Performance Goals

Ongoing effectiveness of the final remedy for groundwater is governed by intermediate performance standards related to containment/control of contaminated groundwater. The goals for this remedy element are to prevent/minimize adverse impacts to the streams adjacent to the facility and to ensure that groundwater contamination does not spread beyond its current limits. The Permittee shall, at the earliest practical moment upon discovery of a significant release of contaminated groundwater into the adjacent streams, notify the Department's Southwest Regional Office and Hazardous Waste Program to facilitate discussion of what, if any, additional action(s), including modification of the Missouri State Operating Permit, may be necessary. Intermediate performance standards are gauged in three ways, by measurement of the: 1) cone of depression developed by capturing groundwater contamination via pumping, 2) groundwater flow patterns reflecting minimal discharge to the streams, and 3)

potentiometric (elevation) head differences between the streams and underlying contaminated groundwater. The intermediate performance standards shall be described in the MSAP element of the OM&M Plan, required by Corrective Action Condition XVI. of this Permit. Prior to MSAP submission and approval, the Permittee shall abide by the current approved SAP, dated September 30, 1996, and all approved revisions/additions. The Permittee shall operate the groundwater containment/control system in accordance with the following intermediate performance standards:

1. The groundwater level within the primary extraction wells specified in the MSAP shall be maintained at 30 feet or greater below the well head measurement reference point. Compliance with this performance standard shall be determined by calculation of the 30-day rolling average groundwater level for each specified well. The groundwater level shall be calculated by subtracting the 30-day rolling average groundwater elevation for the well from the wellhead measurement reference elevation for that well. The value of this calculation shall be equal to or greater than the 30-foot compliance level.
2. The groundwater containment/control system shall maintain a positive groundwater flow potential (hydraulic gradient) from the adjacent streams towards the extraction wells, as expressed in well pairs ITO2/SXD1 and ITO6/ITD4. The average hydraulic gradient in these wells shall be 0.35 foot/foot and 0.145 foot/foot, respectively, with flow inward toward the pumping wells and away from the creeks. These hydraulic gradients shall be calculated by using the difference of the 30-day rolling average water level elevation for the specified well pairs divided by the horizontal distance between them in feet.
3. The groundwater containment/control system shall maintain a groundwater potentiometric surface elevation at the edge of the stream transition zone (as currently defined by wells ITD4, ITD6, and SXD1) that averages 0.25 feet lower than the stream water elevation at the closest point. The elevation difference shall be calculated by determining the value of the 30-day rolling average of the B1 groundwater potentiometric surface elevation at the edge of the stream transition zone and subtracting that value from the 30-day rolling average value for the stream water level

elevation at the closest point. The value of this calculation shall be negative 0.25 feet or greater. (i.e., essentially representing a “losing” stream condition).

B. Long-Term Performance Goals

The long-term performance goal is achievement of the GPS maximum concentration limits as discussed in Corrective Action Condition III.A. of this Permit, and as specified in Table 1. The GPS maximum concentration limits (or ACLs if established via a successful permit modification) must be met at and beyond the Point of Compliance for three consecutive years before a demonstration of final remedy completion may be submitted by the Permittee for Departmental review and approval. Any such demonstration shall be in accordance with Corrective Action Condition XVII. of this Permit.

C. Operating Parameters

1. The groundwater containment/control system operating parameters, such as groundwater and stream water level elevation, pumping flow rates and volumes, local precipitation information and other parameters, as appropriate shall be measured and recorded by a mode and at a frequency specified in the MSAP element of the OM&M Plan required by Corrective Action Condition XVI. of this Permit. The Permittee shall operate the groundwater containment system in accordance with these operating parameters to maintain the intermediate performance standards.
2. All extraction wells shall be operational unless prevented by equipment failures or a catastrophic event. All extraction wells shall be available for service and able to respond to the automated control system; however, the Permittee shall have flexibility in the operation of individual wells. The Permittee may operate one or more wells at any one time at its discretion as long as the intermediate performance standards are maintained.
3. In the event that a strike or an act of God, war, riot or other catastrophe should arise, the Permittee shall use best efforts to avoid adverse impacts on the groundwater containment/control system or the data collected. Examples of events that are not catastrophic events include, but are not limited to, the increased cost or expense of any work to be performed under this Permit or any financial difficulty of the Permittee to perform such work. Operational performance shall not be required during a

catastrophic incident. Data that is collected during periods that the groundwater containment system is adversely impacted shall not be required to be included in the performance standard monitoring calculations. The requirement that the Permittee exercise “best efforts to avoid adverse impacts” includes:

- a. Using best efforts to anticipate any potential catastrophic event; and
- b. Using best efforts to address the effects of any potential catastrophic event as it is occurring and following the potential catastrophic event such that the adverse impact is minimized to the greatest extent practicable.

D. Monitoring, Inspection and Modification

1. The Permittee shall maintain, calibrate, and operate monitoring and data collection network equipment that monitors and records the operating parameters specified in the MSAP element of the OM&M Plan, Corrective Action Condition XVI., and any daily values used to calculate 30-day rolling averages.
2. For purposes of this Permit, the following terms shall have the meanings stated herein:
 - a. A 30-day rolling average (30DRA) shall be defined as the arithmetic mean of the 30 most recent values obtained daily. The 30DRA values and daily values shall be collected and recorded either by the Permittee’s data collection network, by remote data collection devices, or by approved manual means.
 - b. For purposes of compliance with this Permit, a day or a daily period shall refer to the period of time from midnight to midnight.
3. Testing and monitoring in accordance with the Pilot Study Work Plan has been performed and shall be continued after the implementation of the final remedy, in order to establish revised quantitative criteria for groundwater containment, as appropriate. The 2006 Pilot Study Work Plan shall be updated and submitted to the Department within 60 days of the effective date of this Permit for approval, and pilot testing conducted per a schedule established in the approved, updated Pilot Study Work

Plan. Upon completion of the Pilot Study Work Plan activities, the Permittee shall submit a Pilot Study Report within 60 days. The Pilot Study Report shall specify recommended changes to groundwater containment standards and procedures.

- a. The Pilot Study Report shall be reviewed by the Department according to Corrective Action Condition XXIV. of this Permit.
- b. The Permittee shall submit, as a permit modification, any proposed changes to the groundwater containment system performance standards in this Permit as a result of the conclusions of the Pilot Study Report. The Permittee shall submit the permit modification, if required, within 30 calendar days after Department approval of the Pilot Study Report. Proposed changes to the groundwater containment system to reflect the results of the Pilot Study Report may be processed as a Class 1 Permit Modification requiring prior Director approval, provided the change does not significantly affect the overall approach.

VI. Notification Requirements for, and Assessment of, Newly-Identified SWMUs and AOCs

- A. The Permittee shall notify the Department and EPA, in writing, no later than 15 calendar days after discovery or after discovery should have been made, of any new SWMU(s) or AOC(s) identified after the issuance of this Permit.
- B. The Department may require the Permittee to conduct an investigation of any newly-identified SWMU(s) or AOC(s). The Department will notify the Permittee, in writing, of this decision. Within 30 calendar days after receipt of the Department's request to conduct an investigation, the Permittee shall prepare and submit a SWMU/AOC Assessment Work Plan to the Department for approval. The SWMU/AOC Assessment Work Plan shall include, but not be limited to, the following:
 1. A discussion of past hazardous wastes management practices related to the unit(s);
 2. A detailed investigation approach for surface and subsurface soils, surface water, groundwater, and air as necessary to:

- a. Determine if a release of hazardous wastes or hazardous constituents has occurred or is occurring at the unit(s);
 - b. Yield reliable, representative samples and results;
 - c. Determine impacts or potential impacts to human health and the environment; and
 - d. Sufficiently assess all hazardous wastes and hazardous constituents related to the unit(s).
3. A proposed schedule for implementing the SWMU/AOC Assessment Work Plan, which is predicated on the date of Departmental approval of the plan; and
 4. Identification of all data to be collected necessary to provide for a complete SWMU/AOC Assessment Report, as specified below.
- C. The Department shall review the SWMU/AOC Assessment Work Plan according to the procedures described in Corrective Action Condition XXIV. of this Permit. The Permittee shall complete all activities described in the SWMU/AOC Assessment Work Plan according to the schedule contained in the approved plan.
- D. The Permittee shall submit a SWMU/AOC Assessment Report to the Department and EPA according to the schedule specified in the approved SWMU/AOC Assessment Work Plan. The SWMU/AOC Assessment Report shall present and discuss the information obtained under the approved SWMU/AOC Assessment Work Plan. At a minimum, the SWMU/AOC Assessment Report shall provide the following information for each newly-identified SWMU or AOC:
1. The location of the newly-identified SWMU(s) or AOC(s) in relation to other SWMU(s) and AOC(s);
 2. The type and function of the SWMU(s) or AOC(s);
 3. The general dimensions, capacities, and structural description of the SWMU(s) or AOC(s);
 4. The period during which the SWMU(s) or AOC(s) was operated;

5. The physical and chemical properties of all wastes that have been or are being managed at the SWMU(s) or AOC(s), to the extent possible;
 6. The results of any sampling and analysis conducted;
 7. Past and present operating practices;
 8. Previous uses of the area occupied by the SWMU(s) or AOC(s);
 9. Amounts of waste handled;
 10. Drainage areas and/or drainage patterns near the SWMU(s) or AOC(s);
and
 11. A proposal for corrective action, if necessary, at areas affected by contamination resulting from a release at the SWMU(s) or AOC(s).
- E. The Department shall review the SWMU/AOC Assessment Report according to the procedures described in Corrective Action Condition XXIV. of this Permit. Based on the findings of the report and any other available information, the Department will determine the need for additional investigation, including interim/stabilization measures or an RFI, at specific unit(s) identified in the SWMU/AOC Assessment Report.
- F. If the Department determines that additional investigations are needed, the Department may require the Permittee to prepare and submit for approval a work plan for such investigations. The Department shall review this work plan for additional investigations according to the procedures described in Corrective Action Condition XXIV. of this Permit. The Permittee shall complete all activities described in the work plan according to the schedule contained in the approved plan.
- VII. Notification Requirements for, and Assessment of, Newly-Identified Releases from Previously-Identified SWMUs and AOCs
- A. The Permittee shall notify the Department and EPA, in writing, no later than 15 calendar days after discovery or after discovery should have been made, of any newly-identified release(s) of hazardous wastes or hazardous constituents from

previously-identified SWMU(s) or AOC(s), discovered during the course of groundwater monitoring, field investigation, environmental auditing, or other activities undertaken after issuance of this Permit.

- B. The Department may require the Permittee to conduct an investigation of the newly-identified release(s). The Department shall notify the Permittee, in writing, of this decision. Within 30 calendar days after receipt of the Department's request to conduct an investigation, the Permittee shall prepare and submit a Newly-Identified Release Work Plan to the Department for approval. The Newly-Identified Release Work Plan shall include, but not be limited to, the following:
1. A discussion of the hazardous waste/chemical management practices related to the release(s);
 2. A detailed investigation approach for groundwater, land surface and subsurface soils, surface water, and air as necessary to:
 - a. Define the extent of the release area(s);
 - b. Yield reliable, representative samples and results;
 - c. Determine impacts or potential impacts to human health and the environment; and
 - d. Sufficiently assess all hazardous wastes and hazardous constituents related to the release(s).
 3. A proposed schedule for implementing the Newly-Identified Release Work Plan, which is predicated on the date of Departmental approval of the plan; and
 4. Identification of all data to be collected necessary to provide for a complete Newly-Identified Release Report, as specified below.
- C. The Department shall review the Newly-Identified Release Work Plan according to the procedures described in Corrective Action Condition XXIV. of this Permit. The Permittee shall complete all activities described in the Newly-Identified Release Work Plan according to the schedule contained in the approved plan.

- D. The Permittee shall submit a Newly-Identified Release Report to the Department and EPA according to the schedule specified in the approved Newly-Identified Release Work Plan. The Newly-Identified Release Report shall present and discuss the information obtained under the approved Newly-Identified Release Work Plan. At a minimum, the report shall provide the following information for each newly-identified release:
1. The location of the newly-identified release in relation to the SWMU(s) or AOC(s) under investigation and to any other SWMU(s) and AOC(s);
 2. The general dimensions of the release;
 3. The period during which the release is suspected to have occurred;
 4. The physical and chemical properties of all wastes that have been determined to comprise the release;
 5. The results of any sampling and analyses conducted;
 6. Past and present operating practices near and at the location of the release;
 7. Previous uses of the area(s) occupied near and at the location of the release;
 8. Amounts of waste handled near and at the location of the release;
 9. Drainage areas and/or drainage patterns near and at the location of the release; and
 10. A proposal for corrective action, if necessary, at areas affected by contamination resulting from the newly-identified release.
- E. The Department shall review the Newly-Identified Release Report according to the procedures described in Corrective Action Condition XXIV. of this Permit. Based on the findings of the report and any other available information, the Department shall determine the need for additional investigation, including interim/stabilization measures or an RFI and/or a CMS, at specific releases(s) identified in the Newly-Identified Release Report.

VIII. Interim/Stabilization Measures

- A. The Permittee shall notify the Department and EPA within 24 hours after becoming aware or should have become aware of a situation that may require interim/stabilization measures (ISMs) to protect human health or the environment.
- B. If, during the course of any activities initiated under this Permit, the Permittee or the Department determines that a release or potential release of hazardous wastes or hazardous constituents poses a threat to human health or the environment, the Department may require ISMs to slow or stop the further spread of contamination until final corrective action measures can be implemented. The Department shall determine the specific action(s) that shall be taken to implement ISMs, including potential permit modifications, and the schedule for implementing the ISMs. The Department shall notify the Permittee in writing of decisions regarding the action(s). This requirement shall not preclude the Permittee from responding to an emergency situation without direction from the Department.
- C. The Permittee shall notify the Department and and EPA, in writing, no later than ten calendar days after determining or after a determination should have been made, that the ISMs are not effectively limiting or stopping the further spread of contamination. The Department may require the ISMs be revised to make them effective in limiting or stopping the spread of contamination, or that final corrective action measures are required to remediate the contaminated media.
- D. In cases where releases present minimal exposure concerns and/or the remedial solution is straightforward, the Permittee may propose ISMs for review and approval by the Department. These ISMs shall be consistent with and may supplement or satisfy the requirements for a final remedy(s) in specific areas.

IX. RCRA Facility Investigation (RFI) Work Plan

The RFI Work Plan was approved by EPA November 1, 1991. As part of the work plan, an Early Well Completion Report was submitted to the Department and EPA February 8, 1993, to document certain initial RFI work. The RFI Work Plan was subsequently modified based on the Early Well Completion Report and a revised RFI Work Plan was approved by EPA July 12, 1993.

- A. If the Department determines that additional investigations are needed beyond that previously completed by the Permittee, the Department may require the Permittee to conduct a supplemental RFI. The Department shall notify the

Permittee, in writing, of this decision. Within 60 calendar days after receipt of the Department's request to conduct a supplemental RFI, the Permittee shall prepare and submit an RFI Work Plan to the Department and EPA for approval. The RFI Work Plan shall be designed to investigate releases of hazardous wastes and hazardous constituents to all appropriate media of concern including surface and subsurface soils, surface water, groundwater, and air, as necessary. In order to substantiate future corrective action decisions, the RFI Work Plan shall contain provisions that are sufficient to meet the following objectives and a proposed schedule for implementing the RFI Work Plan, which is predicated on the date of Departmental approval of the plan:

1. Full characterization of the nature, vertical and horizontal extent, and rate of migration of releases of hazardous wastes and hazardous constituents from SWMUs and AOCs, or groups of SWMUs and AOCs, or newly-identified release(s) at the facility and the actual or potential receptors of such releases; and
 2. Collection of any other pertinent data that may be utilized to substantiate future corrective action decisions.
- B. The RFI Work Plan shall be appropriate for site-specific conditions and shall be consistent with and address all applicable investigation elements described in the EPA document entitled, RCRA Facility Investigation (RFI) Guidance, EPA 530/SW-89-031, May 1989, or the most recent version. At a minimum, the RFI Work Plan shall detail all proposed activities and procedures to be conducted at the facility including, but not limited to, the following:
1. A description of current conditions;
 2. The schedule for implementing and completing such investigations and for submission of reports (including the RFI Report);
 3. The qualifications of personnel performing or directing the investigations, including contractor personnel; and
 4. The overall management of the RFI activities.
- C. The RFI Work Plan shall include a Quality Assurance Project Plan (QAPP). The QAPP shall present the policies, organization, objectives, functional activities, and specific quality assurance and quality control activities designed to achieve

the data quality goals of the RFI. It shall include, at a minimum, the RFI objectives, sampling procedures, analytical methods, field and laboratory quality control samples, chain-of-custody procedures, and data review, validation, and reporting procedures. The Permittee shall follow the EPA document entitled, EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5, March 2001, (reissued May 2006) or the most recent version in the preparation of the QAPP.

- D. The Permittee shall prepare and maintain a Health and Safety Plan (HASP) during the project that assures the RFI activities are conducted in a manner that is protective of human health and the environment.
- E. Due to the complexity of defining the extent of contamination, the Permittee may be required to use a phased approach that requires the submittal of supplemental RFI Work Plans.
- F. The Department shall review the RFI Work Plan(s) according to the procedures described in Corrective Action Condition XXIV. of this Permit. The Permittee shall complete all activities described in the RFI Work Plan(s) according to the schedules contained in the approved plan(s).

X. RCRA Facility Investigation (RFI) Report

The Permittee submitted a final RFI Report to the Department June 14, 1996. The RFI Report was approved by EPA July 23, 1996.

- A. Should additional investigations become necessary, the Permittee shall submit an RFI Report to the Department and EPA according to the schedule specified in the approved RFI Work Plan described in Corrective Action Condition IX. of this Permit. The RFI Report shall present all information gathered under the approved RFI Work Plan along with a brief facility description and map showing the property boundary and all SWMUs and AOCs. The RFI Report shall contain adequate information to support additional corrective action decisions at the facility. Information contained in the RFI Report shall be presented in a format that is consistent with Section 5 of the EPA document entitled, RCRA Facility Investigation (RFI) Guidance, EPA 530/SW-89-031, May 1989, or the most recent version.
- B. The RFI Report shall provide an interpretation of the RFI information gathered, supported with adequate documentation, to enable the Department to determine whether additional ISMs or a CMS may be necessary. The RFI Report shall

describe the procedures, methods, and results of all investigations of SWMUs and AOCs and associated releases, including, but not limited to, the following, as appropriate:

1. Characterization of the nature, concentration(s), horizontal and vertical extent, and direction/rate of movement of releases from SWMUs and AOCs at the facility;
2. Characterization of the environmental setting of the facility, including:
 - a. Hydrogeological conditions;
 - b. Climatological conditions;
 - c. Soil and bedrock characteristics;
 - d. Surface water and sediment quality; and
 - e. Air quality and meteorological conditions.
3. Characterization of SWMUs and AOCs from which releases have been or may be occurring, including unit and waste characteristics;
4. Descriptions of human and environmental receptors and associated risks to the receptors which are, may have been, or, based on site-specific circumstances, could be exposed to release(s) from SWMUs and AOCs;
5. Assessment of potential risks to the human and environmental receptors exposed to release(s) from SWMUs and AOCs;
6. Extrapolations of future contaminant migration including description of contaminant fate and transport mechanisms, and pathways for human and environmental exposure;
7. Laboratory, bench-scale, pilot-scale and/or appropriate tests or studies to determine the feasibility or effectiveness of treatment technologies or other technologies that may be appropriate in implementing remedies at the facility;
8. Statistical analyses to aid in the interpretation of data;

9. Results of any interim/stabilization measures previously implemented;
 10. A plan for additional groundwater monitoring, as necessary, from the time of RFI approval until such time as this Permit is modified to implement a supplemental final remedy. This plan shall specify the wells to be monitored, the frequency of monitoring, and the analytical parameters. Groundwater monitoring shall be conducted in accordance with Corrective Action Condition III. of this Permit; and
 11. Evaluation of data quality that may affect the nature and scope of a CMS, as well as the evaluation of corrective measures alternatives thereunder (e.g., identification of any potential bias in the RFI data and documentation of its precision, accuracy, representativeness, completeness, comparability, validation, etc.).
- C. The Department shall review the RFI Report according to the procedures described in Corrective Action Condition XXIV. of this Permit. After review of the RFI Report, if the Department determines that the objectives of the RFI have not been met, the Department may require additional investigation. Upon approval of the RFI Report, the Department shall notify the Permittee of the next step in the corrective action process, which may include the submittal of a CMS Work Plan described in Corrective Action Condition XI. of this Permit.

XI. Corrective Measures Study (CMS) Work Plan

- A. If the Department determines that there has been a release of hazardous waste or hazardous constituents from newly- or previously-identified SWMUs or AOCs that may pose a threat to human health or the environment, the Department may require the Permittee to conduct a CMS. The Department shall notify the Permittee, in writing, of this decision. The notice will identify the hazardous constituent(s) of concern and may specify remedial alternatives to be evaluated by the Permittee during the CMS.
- B. As part of the CMS, the Department may require the Permittee to evaluate one or more specific potential remedies for removal, containment, and treatment of hazardous wastes and hazardous constituents in contaminated media based on the objectives established for the corrective action. These remedies may include a

specific technology or combination of technologies that, in the Department's judgment, may be capable of achieving standards for protecting human health and the environment.

- C. Within 45 calendar days after receipt of the Department's request to conduct a CMS, the Permittee shall prepare and submit a CMS Work Plan to the Department and EPA for approval. The CMS Work Plan shall be consistent with the EPA document entitled, RCRA Corrective Action Plan (Final), OSWER Directive 9902.3-2A, May 1994. At a minimum, the CMS Work Plan shall provide the following information, as appropriate, and a proposed schedule for implementing the CMS Work Plan, which is predicated on the date of Departmental approval of the plan:
1. A description of the general approach to investigating and evaluating potential remedies;
 2. A definition of the specific objectives of the study;
 3. A description of the remedies which will be studied;
 4. A description of those potential remedies that were preliminarily considered, but were dropped from further consideration including the rationale for elimination;
 5. The specific plans for evaluating remedies to ensure compliance with remedy standards;
 6. The schedules for conducting the study and submitting a CMS Report;
 7. The proposed format for the presentation of information; and
 8. Laboratory, bench-scale, pilot-scale and/or appropriate tests or studies to determine the feasibility or effectiveness of treatment technologies, or other technologies that may be appropriate in implementing remedies at the facility.
- D. The Department shall review the CMS Work Plan according to the procedures described in Corrective Action Condition XXIV. of this Permit. The Permittee shall complete all activities described in the CMS Work Plan according to the schedules contained in the approved plan.

XII. Corrective Measures Study (CMS) Report

A final CMS Report was submitted to the Department and EPA January 9, 2002, and was jointly approved by the Department and EPA March 28, 2005.

- A. The Permittee shall submit any supplemental CMS Report to the Department and EPA according to the schedule specified in the approved CMS Work Plan described in Corrective Action Condition XI. of this Permit. The CMS Report shall present all information obtained under the approved CMS Work Plan and shall be consistent with guidance contained in the EPA document entitled, RCRA Corrective Action Plan (Final), OSWER Directive 9902.3-2A, May 1994.
- B. The CMS Report shall describe the results of the investigations for each remedy studied and any bench-scale or pilot tests conducted. The CMS Report shall include, but not be limited to, the following information:
1. Evaluation of performance, reliability, ease of implementation, and potential impacts of each remedy studied, including safety impacts, cross media impacts, and control of exposure to any residual contamination;
 2. Assessment of the effectiveness of each remedy in achieving adequate control of sources and clean up of the hazardous waste or hazardous constituents released from the SWMU(s) and AOC(s);
 3. Assessment of the time required to begin and complete each remedy;
 4. Estimation of the costs of implementing each remedy;
 5. Recommendation of a remedy, or combination thereof, and rationale for the selection; and
 6. Assessment of institutional requirements that may be needed (e.g., state or local permits), discussion of other environmental or public health requirements or institutional controls that may substantially affect implementation of the final remedy (e.g., local ordinances), and/or a draft of any site-specific institutional controls that are proposed as part of a final remedy (e.g., an Environmental Covenant prepared under the Missouri Environmental Covenants Act).

- C. The CMS Report shall contain adequate information to support the Department in the final remedy decision-making process.
- D. The Department shall review the CMS Report according to the procedures described in Corrective Action Condition XXIV. of this Permit. Upon approval of the CMS Report, the Department may approve a final remedy as specified in Corrective Action Condition XIII. of this Permit.
- E. This Permit is based on and incorporates the findings of the final CMS Report approved by the Department and EPA March 28, 2005.

XIII. Final Remedy Selection and Approval

- A. The selected final remedy is being issued concurrently with this Permit. The final remedy decision identifies Alternative 3, with modifications, as contained in the final approved CMS Report and Statement of Basis, as the final remedy. Alternative 3 includes enhanced institutional controls, enhanced cap maintenance, containment/control and remediation of groundwater via pumping and treatment, and enhanced groundwater and stream monitoring.
- B. This Corrective Action Condition may apply to additional activities undertaken in response to newly-identified SWMUs and AOCs, additional activities undertaken in response to newly-identified release(s) from previously-identified SWMUs and AOCs, and additional activities undertaken in response to any increasing trends in levels of contamination identified through long-term monitoring under Corrective Action Condition(s) III. and/or IV. of this Permit.
 - 1. If a supplement to the final remedy is determined to be necessary, following the approval of the supplemental CMS Report or equivalent, the Department shall prepare a Statement of Basis summarizing the remedial alternatives evaluated by the Permittee and the Department's basis of support for the proposed supplement to the final remedy.
 - 2. Following the Department's preparation of the Statement of Basis, a permit modification shall be initiated in accordance with 40 CFR 270.41 or 270.42(c), as applicable, to facilitate public review and comment on the Statement of Basis and proposed supplement to the final remedy, final remedy approval by the Department, and implementation of the approved final remedy by the Permittee. Any approved supplement to the final

remedy may require the Permittee to provide additional corrective action financial assurance in accordance with 40 CFR 264.101(b).

3. Upon completion of the public participation activities associated with the permit modification to implement any proposed supplement to the final remedy, the Department shall approve a final remedy that shall:
 - a. Be protective of human health and the environment;
 - b. Control and/or eliminate the source(s) of contaminants so as to reduce or eliminate, to the maximum extent practicable, further contaminant releases, exposures or migration that may pose a threat to human health and the environment; and
 - c. Meet all applicable federal, state, and local laws and regulations.

XIV. Corrective Measures Implementation (CMI) Work Plan

- A. The Permittee shall submit a CMI Work Plan within 90 calendar days of the effective date of this Permit. The CMI Work Plan shall be based on the final remedy decision and its purpose is to furnish the necessary technical details regarding the implementation of the corrective measure(s) in the approved final remedy. The approved final remedy at the facility includes corrective measures described as Alternative 3 in the final CMS Report and in the Statement of Basis issued concurrently with this Permit. The CMI Work Plan shall include the following:
 1. Revisions to the groundwater pumping system;
 2. Revisions to the existing groundwater monitoring program;
 3. A DNAPL recovery program;
 4. Environmental Covenant requirements as described under Corrective Action Condition XVIII. of this Permit; and
 5. Other information, as necessary, pertaining to the design and implementation of the corrective measure(s) in the approved final remedy.

- B. The CMI Work Plan shall provide detailed plans that shall include applicable CMI elements as specified in the EPA document entitled, RCRA Corrective Action Plan (Final), OSWER Directive 9902.3-2A, May 1994, and shall be consistent with the objectives specified in the approved CMS Report. Those features of the approved final remedy that are approved and operational prior to submittal of the CMI Work Plan should be included in the CMI Work Plan by reference, with additional information provided at the request of the Department. The CMI Work Plan shall contain the following:
1. Detailed technical descriptions of the design, construction, operation, maintenance, monitoring, and quality assurance requirements;
 2. A detailed schedule for design, construction, and monitoring;
 3. Timeframes for submission of the appropriate work plans described in the OSWER Directive referenced above; and
 4. Management procedures for hazardous wastes and hazardous constituents recovered as a result of implementing the corrective measures.
- C. The Department shall review the CMI Work Plan according to the procedures described in Corrective Action Condition XXIV. of this Permit. The Permittee shall complete all activities described in the CMI Work Plan according to the schedules contained in the approved plan.
- D. In the event of new SWMU(s), AOC(s), or release(s) identified as a result of excavation activities, the Permittee shall comply with Corrective Action Conditions VI. and VII., as appropriate. New SWMU(s), AOC(s), or release(s) that are identified shall be reported to the Department and EPA.

XV. Certification of Completion of Construction of Final Remedy

- A. This Permit and the Corrective Action Conditions contained herein are based on the approved, final CMS Report and the final remedy specified in this Permit. If a new final remedy is determined to be necessary by the Department, all Corrective Action Conditions shall continue to be in force, unless and until appropriate permit modifications are reviewed and approved.
- B. Within 60 calendar days of completion of all construction activities associated with implementation of any approved final remedy, the Permittee shall submit a

written certification to the Department and EPA, by certified mail, stating that the final remedy has been constructed according to the approved CMS Report, final remedy decision, and CMI Work Plan. The certification shall be signed by the Permittee and a professional engineer registered in Missouri.

This certification shall be part of a Construction Completion (CC) Report. The CC Report shall contain a summary of all corrective measure construction activities implemented at the facility (including any previously-implemented ISMs), exact locations and design of the new wells, and discussion of any deviations from the approved CMI Work Plan. The CC Report shall also address the information described in Chapter V, Section VI of the EPA document entitled, RCRA Corrective Action Plan (Final), OSWER Directive 9902.3-2A, May 1994.

- C. Final remedy implementation activities shall be summarized in the Quarterly Progress Reports required under Corrective Action Condition XIX. of this Permit. A summary of final remedy implementation progress and data obtained during remedy implementation shall be provided in the Annual Groundwater Corrective Action Reports required in Corrective Action Condition XX. of this Permit. Also, any additional interim measures or corrective action activities not otherwise reported in the Quarterly Progress Reports shall be summarized in the Annual Groundwater Corrective Action Report.

XVI. Site Operation, Maintenance and Monitoring (OM&M) Plan

- A. The Permittee shall submit an OM&M Plan within 120 calendar days of the effective date of this Permit. The OM&M Plan shall specify operation, maintenance, and monitoring procedures for the approved final remedy including, at a minimum, the information described in Chapter V, Section II, of the EPA document entitled, RCRA Corrective Action Plan (Final), OSWER Directive 9902.3-2A, May 1994. The OM&M Plan shall include the following:
1. A MSAP, including a surface water monitoring program;
 2. A HASP;
 3. Institutional Controls;
 4. A Personnel Training Program;
 5. A Site Security Program;

6. SOPs for FSI Inspection and Maintenance, Floodwall Inspection and Maintenance, and a Subsurface Work/Excavated Soil Management Plan;
 7. A commitment to periodically review the state of practice for groundwater treatment and evaluate the potential for use of new groundwater treatment technologies at the Permittee's facility; and
 8. Other information, as necessary, pertaining to the operation, maintenance, and monitoring procedures for the approved final remedy.
- B. The Permittee shall include a MSAP as part of the OM&M Plan. The MSAP shall consist of the current SAP, dated September 30, 1996, with all revisions and additions in accordance with this Permit, including protocols for groundwater, surface water, and groundwater containment performance monitoring. The MSAP shall include an updated QAPP according to the applicable portions of the EPA document entitled, EPA Requirements for Quality Assurance Project Plans, EPA QA/R-5, March 2001, (reissued May 2006) or the most recent version. Corrective Action Conditions III.D., III.E., III.F., IV., and V. of this Permit describe specific revisions/additions that shall be included in the MSAP. The MSAP shall include procedures for monitoring the containment of the plume of contaminated groundwater as described in Corrective Action Condition V. of this Permit. The MSAP shall also contain a protocol for periodic groundwater sampling for hazardous constituents contained in 40 CFR Part 264, Appendix IX and described under Corrective Action Condition III.F. of this Permit. This protocol shall also include criteria and a process to use in evaluating newly detected Appendix IX hazardous constituents for inclusion in the GPS.
- C. The Permittee shall include a HASP as part of the OM&M Plan. The HASP shall specify health and safety procedures at the facility and provisions for all activities performed at the facility, including final remedy construction and long term groundwater, surface water, and performance monitoring. The HASP shall include, at a minimum, the applicable information described in Chapter V, Section VIII, of the EPA document entitled, RCRA Corrective Action Plan (Final), OSWER Directive 9902.3-2A, May 1994.
- D. The Permittee shall include as part of the OM&M plan, a training program for facility workers as described in the final approved CMS Report, the approved permit application, and this Permit. The training program shall include training requirements and written procedures for all workers at the facility, whether from the Permittee's staff or other personnel temporarily on site.

- E. The Permittee shall include as part of the OM&M plan, a site security program as described in the final approved CMS Report, the approved permit application, and this Permit. The site security program shall describe access controls for preventing unplanned and accidental exposures to soil and groundwater contamination using measures including fencing, controlled access to wells, posting warning signs, and designated operating areas for workers and visitors. The site security program shall also identify access controls that are intended to provide long-term protection against unplanned and accidental exposures and integrate these with access controls that are available at the facility as of the effective date of this Permit.

- F. The Permittee shall include as part of the OM&M Plan, new SOPs that comply with the provisions of the approved final remedy presented in the Statement of Basis issued concurrently with this Permit.
 - 1. **Cap Maintenance:** The Permittee shall submit a new SOP to the Department for approval that formalizes maintenance and active upkeep activities of all asphalt and concrete caps over contaminated soil areas, and includes drawings that locate each cap and formal guidance for routine inspection and maintenance procedures for all caps over contaminated soil. Inspection, maintenance, and operation of the FSI shall comply with Corrective Action Condition III.E. of this Permit. This new SOP shall address the maintenance, inspection, and use of buildings that are located over contaminated areas and shall require an assessment of indoor air exposures for any building so located if the building is modified in any way that may impact its air exchange rate or if the building is constructed after the effective date of this Permit. An indoor air assessment for any building shall be reviewed and approved by the Department.

 - 2. **Floodwall Maintenance:** The Permittee shall submit a new SOP to the Department for approval that specifies provisions for the operation and maintenance of the floodwall. The Permittee has submitted information, as required in 40 CFR 270.14(b)(iii), that identifies the facility as being located in the 100-year floodplain. As such, the Permittee shall design, construct, operate, and maintain the facility in such a manner so as to prevent the washout of any hazardous waste by a 100-year flood, as required by 40 CFR 264.18(b). A flood control wall borders different portions of the property, as described in Section A of the approved permit application, provides protection against flood impacts of the magnitude of a 100-year flood event. A facility located in the 100-year floodplain shall design, operate, and maintain the facility in accordance with 40 CFR

270.14(b)(11)(iv) to prevent the possible releases of hazardous waste due to a 100-year flood. The Permittee has demonstrated that the engineering design of the facility is adequate to prevent possible release of hazardous waste due to the forces of a 100-year flood. The Permittee shall operate and maintain the facility as described in the approved permit application to comply with this requirement.

3. **Subsurface Work/Excavated Soil Management Plan:** The Permittee shall submit a new SOP to the Department for approval that formalizes current practices while addressing human health and environment considerations for all subsurface activities, including construction, subsurface maintenance, or excavation activities. In addition, the SOP shall provide for project planning and formal approval before intrusive construction, excavation, or maintenance activities can be performed. The SOP shall also specify health and safety requirements for certain types of work, securing written authorization for planned work prior to commencing activities, providing employee and management training concerning the nature of chemicals in soil and groundwater for areas, and procedures for determining the need for health and safety monitoring during the subsurface activities appropriate for protection of human health and the environment. This new SOP shall also provide for characterization and management of excavated soil from contaminated areas.

- G. The Department shall review the OM&M Plan according to the procedures described in Corrective Action Condition XXIV. of this Permit. The Permittee shall complete all activities described in the OM&M Plan according to the schedule(s) contained in the approved plan.

XVII. Certification of Completion of Corrective Measures

- A. The Permittee shall submit a Corrective Measures Completion (CMC) Report to the Department and EPA within 60 calendar days of completion of all corrective measures, including corrective action activities at the FSI (i.e., all media protection/clean-up standards are met and all related corrective action activities are complete).

1. The CMC Report shall contain a summary of corrective measures activities done at the facility, including any long-term operation, maintenance, and monitoring program associated with the corrective measures.
 2. The completion of any short-term corrective action activities shall be summarized in the CMC Report and shall also be reported in the Quarterly Progress Reports required by Corrective Action Condition XIX. of this Permit or in the Annual Groundwater Monitoring Reports required by Corrective Action Condition XX. of this Permit, if not otherwise reported in the Quarterly Progress Reports.
- B. The Permittee's groundwater corrective action program shall continue until the Permittee demonstrates that the GPS maximum concentration limits have not been exceeded at and beyond the Point of Compliance for a period of three consecutive years, based on the requirements of 40 CFR 264.96, as incorporated by reference in 10 CSR 25-7.264(1), unless otherwise specified by the Department. The Permittee's groundwater corrective action program may cease upon written notification from the Department that the protection levels have been met. The CMC Report shall include this demonstration to verify completion of corrective measures at the facility. The Permittee may request discontinuation of groundwater corrective action in specific areas of the facility if it can be demonstrated that the protection levels have been met in those specific areas. Any request for partial discontinuation of groundwater corrective action or monitoring shall require a permit modification, in accordance with 40 CFR 270.42. This will include, as appropriate, modification and resubmission of the OM&M Plan to the Department for review and approval in accordance with Corrective Action Condition XXIV. of this Permit.
- C. The Department shall review the CMC Report according to the procedures described in Corrective Action Condition XXIV. of this Permit.
- D. Within 60 calendar days of receipt of the Department's approval of the CMC Report documenting completion of facility-wide corrective action, the Permittee shall submit to the Department and EPA, by registered mail, a written certification stating that the approved final remedy has been completed according to the approved CMS Report, CMI Work Plan and/or other plans or specifications approved by the Department. The certification shall be signed by the Permittee and a professional engineer registered in Missouri.

XVIII. Activity and Use Limitations (AULs)

The Permittee shall notify the Department at least 30 calendar days before any planned construction, excavation, or maintenance and repair activities that would disturb existing contamination at any SWMUs or other areas subject to AULs. Based on the potential hazards associated with the construction activities, the Department may require specific protective or remedial actions before allowing such construction activities to occur. This requirement will help ensure that necessary precautions are taken when disturbing or exposing any contaminated environmental media at the facility. In situations where advance notice is not feasible (i.e., utility service or repair) notice shall occur as soon as practical.

The Permittee shall include in the OM&M Plan Subsurface Work/Excavated Soil Management Plan SOP, Corrective Action Condition XVI.F.3. of this Permit, contingent provisions for Excavated Soil Management to expedite future subsurface utility and construction activities in potentially contaminated subsurface areas at the facility.

Future construction, excavation activities, or land use changes may necessitate further evaluation of site conditions at SWMUs with residual levels of contamination above applicable regulatory thresholds at that time.

Before conveyance of any property at the facility, or transfer of custody or control of any real property, that is currently under control of this Permit, the Permittee shall submit a permit modification, in accordance with 40 CFR 270.40, and incorporate such other requirements as necessary to continue the AULs, engineering and institutional controls, as well as ongoing remediation and corrective action.

A. Existing Deed Notices

The Permittee filed a deed notice associated with the FSI October 24, 1990. Details on the deed notice can be found at the Office of the Recorder of Deeds of Greene County, Missouri, as discussed in Section B of the approved permit application.

B. Environmental Covenant Provisions

1. Within 90 calendar days after the effective date of this Permit, the Permittee shall prepare and submit to the Department for approval, a draft Environmental Covenant, as part of the CMI Work Plan, that complies

with the Missouri Environmental Covenants Act, § 260.1000 through 260.1039, RSMo., to be filed in the property chain-of-title. The Permittee shall assure that use, occupancy, and activities at the facility are restricted as follows:

- a. Residual levels of contamination in the soils at the facility may pose a threat to human health and the environment if conditions change. The Permittee will prohibit excavation or other disturbance to areas of the site that are known or suspected to be contaminated above risk-based levels. Such excavation or other disturbance is prohibited to occur without the Department's prior written approval, including but not limited to the following SWMUs:
 - (1) FCSL (including the Pilot Plant and Laboratory Sewers);
 - (2) FSI;
 - (3) Wastewater Treatment System (the brick-lined settling pit); and
 - (4) Contaminated sewer pipes of building S-14 in the SRA.

- b. Residual levels of contamination in the groundwater at the facility may pose a threat to human health and the environment. The Permittee shall prohibit the use of and exposure to contaminated groundwater and prohibit any artificial penetration of the groundwater-bearing unit(s) containing contaminants, which could result in cross-contamination of clean groundwater bearing units. Such penetrations are allowable if necessary for corrective action purposes and approved, in writing, by the Department in advance. The Permittee shall also prohibit the installation of any groundwater wells on the facility property, except those used for investigation, monitoring, or remediation purposes. Groundwater beneath the permitted site in zones that are known to be contaminated shall not be used as a water supply for any purpose. Drilling groundwater wells on the facility property is also restricted as Greene County is classified as a sensitive area according to the Missouri Well Construction Code, 10 CSR 23-3.100(3).

- c. The engineered controls implemented as part of the final remedy at the facility shall not be disturbed and shall be properly maintained to prevent human exposure to soils and groundwater contaminated with hazardous wastes or hazardous constituents in concentrations exceeding the levels established in the approved CMS Report. The physical or engineering controls shall remain in place and be effective until such time as the controls are altered, modified or eliminated by a permit modification, in accordance with 40 CFR 270.42.
2. The draft Environmental Covenant required by Corrective Action Condition XVIII.B.1. of this Permit shall include the following:
 - a. A record of the type, location, and concentrations of hazardous wastes and hazardous constituents remaining in the subsurface soils and/or groundwater exceeding applicable regulatory risk-based thresholds/standards;
 - b. Two figures illustrating the approximate boundaries of each SWMU for which the levels of contamination in the subsurface soils and/or groundwater exceed the applicable regulatory risk-based thresholds/standards. One figure shall illustrate soil contamination in relation to individual SWMUs or groups of SWMUs. The second figure shall illustrate groundwater contamination in relation to individual SWMUs or groups of SWMUs. The figures shall be to scale and indicate the location and dimensions of each SWMU with respect to key landmarks, such as major buildings, the facility property line, etc. These figures shall also illustrate the location of any engineered controls implemented as part of the final remedy, which are to be restricted from disturbance;
 - c. Soil disturbance and groundwater use restrictions based on current land use; and
 - d. A provision to provide for proper operation and maintenance of any engineering controls implemented as part of the final remedy to prevent human exposure to soils and groundwater contaminated with hazardous wastes or hazardous constituents in concentrations exceeding applicable regulatory risk-based thresholds/standards at

the time of corrective action completion. The engineering controls shall not be disturbed and shall remain in place and be effective until the Department provides written approval to alter, modify, eliminate, or otherwise cease operation/maintenance of such controls.

- e. For the south portion of the FSI that was closed during or about 1975, the Permittee shall include pertinent information in the Environmental Covenant and a drawing or drawings prepared in compliance with this Corrective Action Condition.
3. The Department shall review and approve the draft Environmental Covenant according to the procedures described in Corrective Action Condition XXIV. of this Permit.
4. Within 15 calendar days after execution (signature by all parties) of the approved Environmental Covenant required by Corrective Action Condition XVIII.B.3. of this Permit, the Permittee shall record at the Greene County Recorder's Office, according to state law, the approved Environmental Covenant in the chain-of-title for the facility property, or on some other instrument which is normally examined during title search, that will in perpetuity notify any potential purchaser of the environmental conditions of the property.
5. Within 30 calendar days after recording the approved Environmental Covenant, the Permittee shall provide a notarized statement to the Department, certifying that the approved Environmental Covenant required by Corrective Action Condition XVIII.B.4. of this Permit has been recorded, including a copy of the Environmental Covenant showing the book and page number of recordation.
6. Before conveyance of any property at the facility, or transfer of custody or control of any real property, that is currently under control of the Permittee, the Department may require modification or revocation and reissuance of this Permit to change the name of the Permittee and/or incorporate such other requirements as necessary to continue the applicable engineering and institutional controls, as well as any ongoing remediation or corrective action activities.
7. The Environmental Covenant conditions required by Corrective Action Condition XVIII.B.1. of this Permit shall run with the land and shall be binding upon any future owners, operators, heirs, successors, lessees, or

assigns and their authorized agents, employees, or persons acting under their direction or control. In the event of permit termination, the Permittee and/or facility owner shall cause any lease, grant, or other transfer of any interest in the facility property to include a provision expressly requiring the lessee or transferee to comply with the Environmental Covenant conditions filed in the chain-of-title for the facility property according to Corrective Action Condition XVIII.C. of this Permit.

8. In the event that future additional remediation at the property, before or after permit termination, reduces contaminant levels to below applicable risk-based threshold/standards based on use of the property, the Environmental Covenant, or portions thereof, may be rescinded by written approval of the Department. Rescission of the Environmental Covenant may be accomplished by placement of an additional document in the property chain-of-title indicating that the Environmental Covenant, or portions thereof, has been rescinded.

C. Environmental Covenant Provision Requirements Before Permit Termination

1. If the Permittee wants to rescind all or part of the approved Environmental Covenant, the Permittee shall submit a certification to the Department within 180 calendar days before the effective date of any proposed permit termination. The certification shall be signed by the Permittee and shall evaluate the residual levels of contamination in comparison with then-current risk-based thresholds/standards. The Permittee shall demonstrate that contaminant levels have decreased to less than applicable risk-based thresholds/standards based on use of the property for any SWMUs identified in Corrective Action Condition XVIII.B.1. of this Permit. The demonstration shall include, at a minimum, a summary of analytical data collected during any monitoring and/or confirmation sampling of contaminated media, a summary of all relevant historical data, accompanying narrative discussion, and any other relevant information ensuring that residual contaminant levels are protective of human health and the environment.
2. If the Department determines, based on the demonstration required in Corrective Action Condition XVIII.C.1. of this Permit, that the residual levels of contamination present may still pose an unacceptable threat to human health or the environment based on use of the property, the Department shall notify the Permittee, in writing, that the terms of the existing Environmental Covenant are still appropriate or that the Permittee

shall prepare and submit for approval, a revised draft Environmental Covenant to address the changed conditions at the facility. Within 60 calendar days after receipt of the Department's notification, the Permittee shall prepare and submit a revised draft Environmental Covenant to the Department for approval. The revised Environmental Covenant shall include the following:

- a. A record of the type, location, and concentrations of hazardous wastes and hazardous constituents expected to remain in the subsurface soils and/or groundwater that will exceed the currently applicable regulatory risk-based thresholds/standards at the proposed time of the permit termination;
- b. Two figures illustrating the approximate boundaries of each SWMU for which the levels of contamination in the subsurface soils and/or groundwater exceed the applicable regulatory risk-based thresholds/standards at that time. One figure shall illustrate soil contamination in relation to individual SWMUs or groups of SWMUs at the time of the permit termination. The second figure shall illustrate groundwater contamination in relation to individual SWMUs or groups of SWMUs at the time of the permit termination. The figures shall be to scale and indicate the location and dimensions of each SWMU with respect to key landmarks, such as major buildings, the facility property line, etc. These figures shall also illustrate the location of any engineered controls implemented as part of the final remedy, which are to be restricted from disturbance;
- c. Groundwater use restrictions applicable at the time of permit termination; and
- d. A provision to provide for proper operation and maintenance of any engineering controls implemented as part of the final remedy to prevent human exposure to soils and groundwater contaminated with hazardous wastes or hazardous constituents in concentrations exceeding applicable regulatory risk-based thresholds/standards at the time of permit termination. The engineering controls shall not be disturbed and shall remain in place and be effective until the Department provides written approval to alter, modify, eliminate, or otherwise cease operation/maintenance of such controls.

3. The Department shall review and approve the revised draft Environmental Covenant according to the procedures described in Corrective Action Condition XXIV. of this Permit.
4. The Permittee shall record the approved revised Environmental Covenant as outlined in Corrective Action Condition XVIII.C.3. of this Permit and submit any documentation according to the schedule outlined in Corrective Action Conditions XVIII.B.4. and B.5. of this Permit. The Permittee shall also comply with any additional Environmental Covenant conditions as outlined in Corrective Action Conditions XVIII.B.6. through B.8. of this Permit, as appropriate.

XIX. Quarterly Progress Reports

- A. The Permittee shall prepare and submit Quarterly Progress Reports to the Department and EPA, summarizing all permitted corrective action activities undertaken during the previous calendar quarter.
 1. Quarterly Progress Reports shall be due within 60 calendar days following the last day of each reporting period (i.e., March 1, June 1, September 1, and December 1).
 2. The first Quarterly Progress Report shall be due within 60 calendar days of the end of the calendar quarter in which this Permit becomes effective. The Quarterly Progress Reports shall continue to be submitted until the Permittee's corrective action activities (including any long-term operation, maintenance, and monitoring activities) are complete.
- B. The Quarterly Progress Reports shall include the following information for the time period being reported:
 1. A description of the work completed;
 2. Summaries of all findings, including summaries of laboratory data;
 3. Summaries of all problems or potential problems encountered during the reporting period and actions taken to rectify problems;
 4. Projected work for the next reporting period; and

5. Any instances of noncompliance with the corrective action requirements of this Permit not otherwise required to be reported elsewhere in this Permit.
- C. As part of any additional corrective action activities undertaken pursuant to this Permit, detailed technical information required to be submitted as part of ISMs, RFI and/or CMS work plans and reports, and Annual Groundwater Corrective Action Reports (Corrective Action Condition XX.) need not be reproduced as part of the Permittee's Quarterly Progress Reports.
- D. Copies of other reports (e.g., inspection reports), information, or data shall be made available to the Department and EPA upon request.

XX. Annual Groundwater Corrective Action Reports

- A. The Permittee shall prepare and submit Annual Groundwater Corrective Action Reports to the Department for the previous calendar year (i.e., January through December), including all raw analytical data from the Permittee's groundwater sampling events. The report shall include groundwater and surface water analysis results (the full suite of constituents for each EPA SW-846 method used shall be tested for and reported), field parameter measurement results, copies of field sampling and well evaluation/inspection log sheets/checklists, well repair documentation, QA/QC data and evaluation, statistical analysis of groundwater and surface water data, field investigation results, volume of groundwater extracted, amounts of DNAPL recovered and other relevant groundwater-related information, including results of the periodic Appendix IX groundwater sampling and analysis, as appropriate (see Corrective Action Condition III.F.6. and Table 3 of this Permit). The report shall also discuss any exceedances of the GPS or effluent limits of the Missouri State Operating Permit.
- B. Annual Groundwater Corrective Action Reports shall contain a comprehensive evaluation of the facility-wide groundwater monitoring program for the preceding calendar year (i.e., January through December). The Annual Groundwater Corrective Action Reports shall be submitted to the Department by March 1 of

each calendar year for the preceding calendar year. Each Annual Groundwater Corrective Action Report shall include the following information for the time period being reported:

1. Narratively discuss the nature and evolution of the Permittee's facility-wide groundwater monitoring program, as well as conclusions concerning the overall adequacy of the program as related to its intended purpose, including any interim measures/stabilization actions/remedial action plans. Any conclusions concerning inadequacies in the Permittee's groundwater monitoring program shall be accompanied by a discussion of proposed remedies. The Permittee shall further develop specific details concerning any proposed remedies outside of the scope of these reports or as otherwise specified in this Permit.
2. Comprehensively address all technical requirements of 40 CFR Part 264 Subpart F and this Permit. The Permittee shall summarize relevant groundwater monitoring information and present this information in the form of narrative discussions, groundwater flow calculations, and/or diagrammatic illustrations (e.g., tabular groundwater and statistical data summaries, hydrogeologic and potentiometric contour maps/cross-sections, chemical parameter trend graphs, calculated rate(s) of contaminant migration, contaminant isoconcentration maps/cross-sections, fence/isometric diagrams, groundwater flow nets, etc.), as appropriate.
3. Evaluate the effectiveness of the groundwater corrective action program, including, but not limited to, the following:
 - a. The rate and direction of groundwater movement in underlying aquifers and potential effects on any corrective action measures being designed or implemented at the facility for removal, containment, or control of the groundwater contaminant plume(s);
 - b. The horizontal and vertical extent and concentrations of hazardous constituents (Table 1) in groundwater throughout the contaminant plume(s) as evaluated from the data obtained through the Permittee's groundwater monitoring program;
 - c. Any surface and/or subsurface well integrity problems and their potential or actual influence on the groundwater data or effectiveness of the groundwater corrective action program;

- d. An annual plume stability analysis, which shall demonstrate whether the plume is currently expanding, shrinking, or stable relative to previous years;
- e. The amount of free NAPLs, if present, and groundwater extracted from the subsurface during operation of the groundwater corrective action program, and, if applicable, as part of stabilization activities and/or remedial action plans. This information should be reported both as a total amount and per well or extraction location if possible, and shall be used in conjunction with dissolved phase contaminant concentration information to estimate quantities of contaminants removed;
- f. The conclusions and summary, including statistical evaluation, of analytical results from surface water monitoring conducted during the reporting period;
- g. Information related to extraction of groundwater, installation, and operation of the on-site groundwater pumping system, groundwater treatment plant and discharge of treated groundwater to a publicly-owned treatment works, including the following:
 - (1) Groundwater extraction rates and volumes to determine if plugging of the well screens and/or the surrounding geologic strata is occurring;
 - (2) Concentrations of the groundwater monitoring parameters (Table 1) in the groundwater treatment system influent and treated effluent to determine if substantial removal of contaminants is being achieved by the groundwater treatment system, and whether the levels of treatment meet all applicable federal, state, and local requirements;
 - (3) Results of any inspection and maintenance activities performed, system downtime, and any problems or unusual conditions noted within the system in terms of their potential or actual influence on effluent monitoring and treatment plant efficiency; and

- (4) Pumping well network performance data regarding the maintenance of hydraulic capture sufficient to minimize discharge to Jordan, Fassnight or Wilson Creeks.
4. The statistical analyses should be based on appropriate methods contained in the most recent version of the EPA guidance document entitled, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance and any subsequent addenda, (the current version is dated March 2009) or other methods that are approved in advance by the Department. To choose appropriate methods for the data set being evaluated, the distribution of the data shall be characterized and compared to the requirements for the various methods. The guidance explains this approach.
5. Detailed boring logs for new exploratory borings and/or detailed “as-built” monitoring well diagrams for any new monitoring wells installed during the corresponding reporting period and the monitoring well-related information specified in Corrective Action Conditions III.D.4 and 5. of this Permit.

XXI. Planned and Contingent Activities

- A. The Permittee shall comply with the schedule for planned corrective action activities as specified in this Permit and summarized in Table 4.
- B. The Permittee shall comply, as necessary, with the schedule(s) for contingent corrective action activities as specified in this Permit and summarized in Table 5.

XXII. Supplemental Data

All uninterpreted data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data, and other supporting information gathered or generated during activities undertaken pursuant to this Permit shall be maintained by the Permittee during the term of this Permit, including the term of any reissued permits.

XXIII. Corrective Action Cost Estimates and Financial Assurance

The Permittee shall comply with the requirements described in the Missouri Hazardous Waste Management Law (and all standards, rules, and regulations adopted under this act), Section 260.350, et seq., RSMo, 40 CFR Part 264 Subpart H, 40 CFR §§270.30, 270.40, 270.42, and 270.51, as incorporated and modified in 10 CSR 25-7 and 10 CSR 25-8.

A. Cost Estimates

1. Corrective Action Cost Estimate

Within 120 calendar days of the effective date of this Permit, the Permittee shall submit an updated, detailed, written cost estimate, in current dollars, of the cost of hiring a third party to perform the corrective action activities required by this Permit, including costs associated with the FSI.

- a. The cost estimate shall account for the total costs of the work activities including any necessary long-term costs, such as operation, maintenance, and monitoring costs.
- b. The cost estimate shall be certified by a registered professional engineer licensed in Missouri and developed using appropriate cost estimating software.
- c. A third party is a party who:
 - (1) Is neither a parent nor a subsidiary of the Permittee; and
 - (2) Does not share a common parent or subsidiary with the Permittee.
- d. The cost estimates shall not include any salvage value that may be realized from the sale of wastes, facility structures or equipment, land, or other assets associated with the facility.
- e. Discounting is not allowed.

The Permittee shall submit each corrective action cost estimate for review and approval by the Department. The Department shall review each cost estimate and notify the Permittee, in writing, of the Department's approval, rejection, or modification of the cost estimate according to Corrective Action Condition XXIV. of this Permit. If the Department does not approve the cost estimate, the

Department shall notify the Permittee, in writing, of the estimate's deficiencies and specify a due date for submittal of a revised cost estimate.

2. Revisions to the Corrective Action Cost Estimate

a. Annual Adjustment for Inflation

The Permittee shall annually adjust the corrective action cost estimate for inflation until all corrective action activities required by this Permit are complete. The inflation adjustment shall be determined by using the procedures described in 40 CFR 264.142(b) except that the inflation factor should be derived from the most recent annual Implicit Price Deflator for the Gross Domestic Product instead of the Gross National Product. The cost estimate is due within 60 calendar days before the anniversary date of the establishment of the financial assurance instrument used to comply with this section. If the Permittee uses a financial test or corporate guarantee to demonstrate financial assurance, the cost estimate is due within 30 calendar days of the end of the provider's fiscal year.

b. Additional Corrective Action Activities

The Permittee shall increase the corrective action cost estimate if:

- (1) The Permittee or the Department determines that any additional corrective action activities are required; or
- (2) Any other conditions increase the estimated cost of the corrective action activities to be performed under this Permit.

If the Department determines that a new cost estimate is required, the Department will notify the Permittee of this requirement.

The Permittee shall submit each revised corrective action cost estimate for review and approval by the Department within 60 calendar days of Department notification that a new cost estimate is required. The Department shall review each revised

cost estimate and notify the Permittee, in writing, of the Department's approval, rejection, or modification of the cost estimate according to Corrective Action Condition XXIV. of this Permit. If the Department does not approve the revised cost estimate, the Department shall notify the Permittee, in writing, of the estimate's deficiencies and specify a due date for submittal of a new revised cost estimate.

B. Financial Assurance

In order to provide for the full and final completion of the corrective action activities required by this Permit, the Permittee shall establish and maintain financial assurance for the benefit of the Department in the amount at least equal to the most recent Department-approved corrective action cost estimate. The Permittee may use one or more of the financial assurance forms generally described in Corrective Action Condition XXIII.B.11. of this Permit. All financial assurance instruments provided pursuant to this Permit shall be satisfactory in form and substance as determined by the Department. The Department reserves the right to limit the choices of the Permittee to one or more of the instruments described in Corrective Action Condition XXIII.B.11. of this Permit, on a case-by-case basis, in order to ensure the full and final completion of the corrective action activities required by this Permit.

1. Timeframes for Financial Assurance Instruments (other than Financial Test or Corporate Guarantee)
 - a. Within 30 calendar days after Department's approval of the Permittee's corrective action cost estimate(s) pursuant to this Permit, the Permittee shall submit draft financial assurance instruments and related documents to the Department for review and approval. This applies to all financial assurance instruments except the financial test or corporate guarantee. See Corrective Action Condition XXIII.B.2. of this Permit for timeframes for financial tests and corporate guarantees.
 - b. Within ten calendar days after Department approval of the draft financial assurance instrument(s), the Permittee shall execute or otherwise finalize all instruments or other documents required in order to make the selected financial assurance legally binding. The

instruments or other documents shall be in a form identical to the financial assurance documents reviewed and approved by the Department.

- c. Within 30 calendar days after receiving Department approval of the draft financial assurance instrument(s), the Permittee shall submit all original executed and/or otherwise finalized instruments or other documents to the Department. Facsimiles or photocopies are not acceptable.

2. Timeframes for Financial Tests and Corporate Guarantees

- a. Within 30 calendar days after the Department's approval of the Permittee's corrective action cost estimate(s) pursuant to this Permit, the Permittee shall submit to the Department all documentation necessary to demonstrate that the Permittee satisfies the financial test criteria pursuant to Corrective Action Condition XXIII.B.11.e. of this Permit.
- b. The Permittee's financial assurance shall be effective immediately upon the Department's approval of the Permittee's corrective action cost estimate or the Permittee's demonstration that the Permittee satisfies the financial test criteria under Corrective Action Condition XXII.B.11.e. of this Permit, whichever date is later.
- c. The Permittee agrees that if the Permittee provides financial assurance by means of a corporate guarantee or financial test, the Department may request additional information (including financial statements and accountant's reports) from the Permittee or corporate guarantor at any time. The Permittee shall promptly provide the requested information to the Department.

3. Certified Mail

The Permittee shall submit all financial assurance instruments and related required documents by certified mail to the Department.

4. Multiple Instruments

The Permittee may combine more than one mechanism to demonstrate financial assurance for the corrective action activities required by this Permit. However, mechanisms guaranteeing performance rather than payment may not be combined with other instruments.

5. Inadequate Financial Assurance Instrument

a. If at any time the Department determines that a financial assurance instrument provided pursuant to this Permit is inadequate, or no longer satisfies the requirements, the Department shall notify the Permittee in writing. This applies whether there is an increase in the estimated cost of the corrective action activities required by this Permit or for any other reason.

(1) Within 30 calendar days of receipt of such notice, the Permittee shall submit draft financial assurance instruments and related documents to the Department for review and approval. The draft financial assurance instruments and related documents shall address the inadequacies outlined in the Department's notice.

(2) Within ten calendar days after Department approval of the draft financial assurance instrument(s), the Permittee shall execute or otherwise finalize all instruments or other documents required in order to make the selected financial assurance legally binding. The instruments or other documents shall be in a form identical to the financial assurance documents reviewed and approved by the Department.

(3) Within 30 calendar days after receiving Department approval of the draft financial assurance instrument(s), the Permittee shall submit all original executed and/or otherwise finalized instruments or other documents to the Department. Facsimiles or photocopies are not acceptable.

b. Within ten calendar days, the Permittee shall notify the Department, in writing, if at any time the Permittee becomes aware

of information indicating that any financial assurance instrument provided pursuant to this Permit is inadequate or no longer satisfies the requirements described or incorporated by reference herein. This applies whether due to an increase in the estimated cost of the corrective action activities required by this Permit or for any other reason. The Permittee shall follow the procedures in Corrective Action Condition XXIII.B.5.a. of this Permit to replace the financial assurance instrument.

6. Obligation to Complete Corrective Action Activities

The Permittee's inability or failure to establish or maintain financial assurance for completion of the corrective action activities required by this Permit in no way excuse performance of any other requirements of this Permit, including, without limitation, the obligation of the Permittee to complete all necessary corrective action activities in strict accordance with the terms of this Permit.

7. Automatic Renewal

All financial assurance instruments shall automatically renew at the time of their expiration unless the financial assurance provider notifies both the Permittee and the Department by certified mail of a decision to cancel, terminate, or not renew a financial assurance instrument. The Permittee and the Department shall receive such notification at least 120 calendar days before expiration, cancellation, or termination of the instrument. Under the terms of the financial assurance instrument, the 120 calendar days shall begin on the date of receipt of the notice by certified mail by both the Permittee and the Department.

Within 90 calendar days following receipt of such notice by both the Permittee and the Department, the Permittee shall provide alternate financial assurance and obtain written approval for such alternate financial assurance.

If the Permittee fails to provide alternate financial assurance within 90 calendar days, the Department shall notify the financial assurance provider, in writing, before the expiration of the instrument. The notification to the financial assurance provider shall instruct the financial

assurance provider to immediately deposit the remaining funds obligated under the financial assurance into the standby trust fund or a newly created trust fund approved by the Department.

8. Modification of Amount and/or Form of Financial Assurance

a. Reduction of Amount of Financial Assurance

If the Permittee believes that the estimated cost to complete the corrective action activities required by this Permit has diminished below the amount covered by the existing financial assurance provided under this Permit, the Permittee may submit a written proposal to the Department to reduce the amount of the financial assurance provided under this Permit. The amount of the financial assurance proposed shall be at least equal to the estimated cost of the remaining corrective action activities required by this Permit. The written proposal shall specify, at a minimum, the cost of the remaining corrective action activities to be performed and the basis upon which such cost was calculated. In seeking approval of a revised financial assurance amount, the Permittee shall follow the procedures described in Corrective Action Condition XXIII.B.8.b.(2) of this Permit. The Department shall notify the Permittee of its approval in writing. The Permittee may reduce the amount of the financial assurance after receiving the Department's written approval, but only according to and to the extent permitted by such written approval. No change to the form or terms of any financial assurance provided under this Section, other than a reduction in amount, is authorized except as provided in Corrective Action Condition XXIII.B.8.b. of this Permit.

b. Change of Form of Financial Assurance

(1) If the Permittee wishes to change the form or terms of financial assurance, the Permittee may submit a written proposal to the Department to change the form of financial assurance. The submission of such a proposal shall be as provided in Corrective Action Condition XXIII.B.8.b.(2) of this Permit. The approval of a proposal submitted under this Corrective Action Condition XXIII.B.8. of this Permit shall be made at the Department's sole discretion.

- (2) A written proposal for a revised or alternative form of financial assurance shall specify, at a minimum,:
 - (a) The cost of the remaining corrective action activities to be performed;
 - (b) The basis upon which such cost was calculated; and
 - (c) The proposed revised form of financial assurance, including all proposed instruments or other documents required in order to make the proposed financial assurance legally binding.

The proposed revised or alternative form of financial assurance shall satisfy all requirements described or incorporated by reference in this Permit. The Department shall notify the Permittee, in writing, of its decision to accept or reject a revised or alternative form of financial assurance submitted pursuant to this paragraph.

Within ten calendar days after receiving written approval of the proposed revised or alternative financial assurance, the Permittee shall execute and/or otherwise finalize all instruments or other documents required in order to make the selected financial assurance legally binding and effective in a form identical to the documents submitted to the Department.

Within 30 calendar days of receiving written approval of the proposed revised or alternative financial assurance, the Permittee shall submit to the Department all original executed and/or otherwise finalized instruments or other documents required in order to make the selected financial assurance legally binding.

The Department shall release, cancel, or terminate the prior existing financial assurance instruments only after the Permittee has submitted all executed and/or otherwise finalized new financial assurance instruments or other required documents to the Department.

9. Performance Failure

a. In the event that the Department determines that the Permittee:

- (1) Has ceased implementation of any of the corrective action activities required by this Permit;
- (2) Is significantly or repeatedly deficient or late in its performance of the corrective action activities required by this Permit; or
- (3) Is implementing the corrective action activities required by this Permit in a manner that may cause an endangerment to human health or the environment;

The Department may issue a written notice (“Performance Failure Notice”) of the Permittee’s failure to perform to both the Permittee and the financial assurance provider. The notice shall specify the grounds upon which it was issued and shall provide the Permittee a period of ten calendar days to remedy the circumstances.

b. If the Permittee fails to remedy the relevant Performance Failure to the Department’s satisfaction before the expiration of the ten calendar day notice period specified in Corrective Action Condition XXIII.B.9.a. of this Permit, the Department shall have immediate access to and benefit of the financial assurance provided. The Department may, at any time thereafter, direct the financial assurance provider to immediately:

- (1) Deposit into the standby trust fund, or a newly created trust fund approved by the Department, the remaining funds obligated under the financial assurance instrument; or
- (2) Arrange for performance of the corrective action activities required by this Permit.

- c. The Department shall give the Permittee written notice if:
 - (1) The Department determines that any of the circumstances described in Corrective Action Condition XXIII.B.9.a.(1), (2), or (3) of this Permit have occurred; and
 - (2) The Department is nevertheless unable, after reasonable efforts, to secure the payment of funds or performance of the corrective action activities required by this Permit from the financial assurance provider.
- d. Within ten calendar days of receiving such written notice, the Permittee shall provide cash to fund the standby trust fund, or a newly created trust fund approved by the Department. The funds shall at least equal the cost of the remaining corrective action activities required by this Permit. The deposit shall be made in immediately available funds and without setoff, counterclaim, or condition of any kind.

10. Release of Financial Assurance

The Permittee may submit a written request to the Department to release the Permittee from the requirement to maintain financial assurance after the Department and the Permittee have mutually agreed that all corrective action activities required by this Permit are complete. The Department shall notify both the Permittee and the provider(s) of the financial assurance if and when the Permittee is released from all financial assurance obligations under this Permit. The Permittee shall not release, cancel, or terminate any financial assurance provided pursuant to this Permit except as provided in this paragraph or Corrective Action Condition XXIII.B.8.b. of this Permit.

11. Financial Assurance Instruments

To the extent possible, the wording of the financial assurance documents shall meet the requirements of 40 CFR 264.143 and 40 CFR 264.151, as incorporated and modified in 10 CSR 25-7. All financial assurance instruments provided pursuant to this Permit shall be satisfactory in form and substance as determined by the Department.

a. Trust Fund

The trust fund shall be:

- (1) Established for the benefit of the Department;
- (2) Administered by a trustee who has the authority to act as a trustee under federal or state law and whose trust operations are regulated and examined by a federal or state agency; and
- (3) Acceptable in all respects to the Department.

The trust agreement shall provide that the trustee shall make payments from the fund as the Department shall direct in writing:

- (4) To reimburse the Permittee for expenditures made by the Permittee for corrective action activities performed according to this Permit; or
- (5) To pay any other person whom the Department determines has performed or will perform the corrective action activities required by this Permit.

The trust agreement shall further state that the trustee shall not refund to the grantor any amounts from the fund until the Department has advised the trustee, in writing, that the corrective action activities performed according to this Permit have been completed to the satisfaction of the Department.

b. Surety Bond

A surety bond shall unconditionally guarantee either:

- (1) Payment at the direction of the Department into a standby trust fund that meets the requirements of the trust fund in Corrective Action Condition XXIII.B.11.a. of this Permit;
or

- (2) Performance of the corrective action activities required by this Permit. The Surety Company issuing the bond shall, at a minimum, be among those listed as acceptable sureties on Federal Bonds as described in Circular 570 of U.S. Department of the Treasury.

If the Permittee seeks to establish financial assurance by using a surety bond, the Permittee shall, at the same time, establish and maintain a standby trust fund. The standby trust fund shall meet the requirements of Corrective Action Condition XXIII.B.11.a. of this Permit. Funds from the surety bond shall be deposited into the standby trust fund if the Department directs the financial assurance provider to do so, pursuant to Corrective Action Condition XXIII.B.9. of this Permit.

c. Irrevocable Letter of Credit

An irrevocable letter of credit shall be payable at the direction of the Department into a standby trust fund that meets the requirements of Corrective Action Condition XXIII.B.11.a. of this Permit. The letter of credit shall be issued by a financial institution:

- (1) That has the authority to issue letters of credit; and
- (2) Whose letter-of-credit operations are regulated and examined by a federal or state agency.

If the Permittee seeks to establish financial assurance by using a letter of credit, the Permittee shall, at the same time, establish and maintain a standby trust fund. The standby trust fund shall meet the requirements of Corrective Action Condition XXIII.B.11.a. of this Permit. Funds from the letter of credit shall be deposited into the standby trust fund if the Department directs the financial assurance provider to do so, pursuant to Corrective Action Condition XXIII.B.9. of this Permit.

d. Policy of Insurance

A policy of insurance shall:

- (1) Provide the Department with rights as a beneficiary which are acceptable to the Department; and
- (2) Be issued by an insurance carrier that:
 - (a) Has the authority to issue insurance policies in Missouri; and
 - (b) Whose insurance operations are regulated and examined by a federal or state agency.
- (3) The insurance policy shall be issued for a face amount at least equal to the current approved corrective action cost estimate for the corrective action activities to be performed under this Permit, except where costs not covered by the insurance policy but are covered by another financial assurance instrument, as permitted in Corrective Action Condition XXIII.B.4. of this Permit.
- (4) The insurance policy shall state that the insurer shall make payments up to an amount equal to the face amount of the policy as directed by the Department in writing:
 - (a) To reimburse the Permittee for expenditures made by the Permittee for corrective action activities performed according to this Permit; or
 - (b) To pay any other person whom the Department determines has performed or will perform the corrective action activities required by this Permit.
- (5) The insurance policy shall also state that it may not be canceled, terminated or non-renewed and the policy shall remain in full force and effect in the event that:

- (a) The Permittee is named as a debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or
- (b) The Department notifies the insurer of the Permittee's failure to perform, under Corrective Action Condition XXIII.B.9. of this Permit.

e. Financial Test

A Permittee may provide financial assurance through a demonstration by the Permittee that the Permittee meets the financial test criteria of 40 CFR.264.143(f), provided that all other requirements of 40 CFR 264.143(f), as incorporated and modified in 10 CSR 25-7, are satisfied. See Corrective Action Condition XXIII.B.11.g. of this Permit for further requirements.

A commercial facility may not satisfy financial assurance requirements for corrective action by use of a financial test.

f. Corporate Guarantee

A direct or indirect parent company of a Permittee may provide a corporate guarantee executed in favor of the Department. Such guarantee shall state that the company providing the guarantee shall perform the corrective action activities required by this Permit or that the company shall establish a trust fund as permitted by Corrective Action Condition XXIII.B.11.a. of this Permit. Any company providing such a guarantee shall demonstrate, to the satisfaction of the Department, that it meets the financial test requirements of 40 CFR 264.143(f), as incorporated and modified in 10 CSR 25-7. See Corrective Action Condition XXIII.B.11.g. of this Permit for further requirements.

g. Additional Requirements for Financial Test/Corporate Guarantee

If at any time during the term of this Permit the Permittee demonstrates financial assurance for the corrective action activities required by this Permit by providing a financial test or corporate guarantee pursuant to Corrective Action Conditions XXIII.B.11.e.

or XXIII.B.11.f. of this Permit, the Permittee shall also comply with the other relevant requirements of 40 CFR 264.143(f), 40 CFR 264.151(f), and 40 CFR 264.151(h)(1), as incorporated and modified in 10 CSR 25-7, relating to these methods, unless otherwise provided in this Permit. This includes, but is not limited to:

- (1) Initial submission of required financial reports and statements from the guarantors' chief financial officer and independent certified public accountant;
- (2) Annual re-submission of such reports and statements within 90 calendar days after the close of each of the guarantor's fiscal year; and
- (3) Notification to the Department by certified mail within 90 calendar days after the close of any of the guarantor's fiscal year in which any such guarantor no longer satisfies the financial test requirements described at 40 CFR Part 264.143(f)(1), as incorporated and modified in 10 CSR 25-7.

If the Permittee provides financial assurance by means of a financial test or corporate guarantee, the Department may request additional information (including financial statements and accountant's reports) from the Permittee or corporate guarantor at any time. The Permittee shall promptly provide the requested information to the Department.

For purposes of the financial test or corporate guarantee described in Corrective Action Conditions XXIII.B.11.e. and XXIII.B.11.f. of this Permit, references in 40 CFR 264.143(f), as incorporated and modified in 10 CSR 25-7, to "the sum of current closure and post closure costs and the current plugging and abandonment cost estimates" and references in 40 CFR 264.101(c), as incorporated and modified in 10 CSR 25-7, to "Assurances of financial responsibility for such corrective action shall be provided shall mean "the sum of all environmental remediation obligations" guaranteed by such company or for which such company is otherwise financially obligated, in addition to the cost of the

corrective action activities required by this Permit. This includes obligations under the Comprehensive Environmental Response, Compensation, and Liability Act, RCRA, Underground Injection Control Program, Toxic Substances Control Act, and any other state or tribal environmental obligation.

XXIV. Review and Approval Procedures

- A. Following submission of any plan or report pertaining to corrective action activities (excluding Quarterly Progress Reports and Annual Reports, unless proposed actions to address inadequacies are contained therein), the Department shall review and either approve or provide written comments on the plan or report. If the Department does not approve the plan or report, the Department shall notify the Permittee, in writing, of the plan or report's deficiencies and specify a due date for submittal of a revised plan or report.
- B. If the Department does not approve the revised plan or report, the Department may modify the plan or report and notify the Permittee of the modifications. The plan or report, as modified by the Department, shall be the approved plan or report.
- C. If the Permittee disagrees with any Department-initiated plan or report modifications, and a mutually acceptable resolution of such modifications cannot be informally reached, the Permittee may file any appeal of the Department-initiated modifications according to 10 CSR 25-2.020, and Sections 260.395.11 and 621.250, RSMo.
- D. Should the Permittee require additional time to submit a scheduled document or perform other activities required by this Permit, the Permittee shall submit a written extension request to the Department. The Department shall receive the extension request at least 15 calendar days before the scheduled due date of the document or activity. The Permittee's extension request shall specify the amount of additional time needed and shall be accompanied by the Permittee's justification for the extension. The Department shall review the extension request according to the procedures described in this permit condition.

FACILITY SUBMISSION SUMMARY

Table 4 - Summary of Planned Submittal Requirements Pursuant to this Permit and Schedule of Compliance

| Item No. | Submittal Requirements | Due Date | Permit Condition |
|--|---|---|------------------------------------|
| Submittals Due Within 60 days of the Effective Date of this Permit | | | |
| 1. | Two copies of the consolidated permit application. | Within 60 calendar days of the effective date of this Permit. | Schedule of Compliance Item I.A. |
| 2. | Certification that Permittee has read and understands this Permit. | Within 60 calendar days of the effective date of this Permit. | Schedule of Compliance Item I.B. |
| 3. | Check or money order for any outstanding engineering costs. | Within 60 calendar days of the effective date of this Permit. | Schedule of Compliance Item I.C. |
| 4. | Check or money order for each year this Permit is to be in effect beyond the first year (\$9000). | Within 60 calendar days of the effective date of this Permit. | Schedule of Compliance Item I.D. |
| 5. | Pilot Study Work Plan. | Within 60 calendar days of the effective date of this Permit. | Schedule of Compliance Item I.E. |
| Submittals Due Within 90 days of the Effective Date of this Permit | | | |
| 6. | Corrective Measures Implementation (CMI) Work Plan. | Within 90 calendar days of the effective date of this Permit. | Schedule of Compliance Item II.A. |
| 7. | Draft Environmental Covenant for Department approval as part of the CMI Work Plan. | Within 90 calendar days of the effective date of this Permit. | Schedule of Compliance Item II.B. |
| Submittals Due Within 120 days of the Effective date of this Permit | | | |
| 8. | Site Operation, Maintenance and Monitoring (OM&M) Plan. | Within 120 calendar days of the completion of all construction activities associated with implementation of the final remedy. | Schedule of Compliance Item III.A. |

| Item No. | Submittal Requirements | Due Date | Permit Condition |
|---|--|---|------------------------------------|
| 9. | Updated Corrective Action Cost Estimate. | Within 120 calendar days of the effective date of this Permit. | Schedule of Compliance Item III.B. |
| 10. | Monitoring, Sampling, and Analysis Plan (MSAP) to incorporate all Sampling and Analysis Plan (SAP) modifications outlined in this Permit as part of the OM&M Plan. | Within 120 calendar days of the effective date of this Permit. | Schedule of Compliance Item III.C. |
| 11. | Health and Safety Plan (HASP) as part of the OM&M Plan. | Within 120 calendar days of the effective date of this Permit. | Schedule of Compliance Item III.D. |
| 12. | Various Standard Operating Procedures (SOPs) as part of the OM&M Plan. | Within 120 calendar days of the effective date of this Permit. | Schedule of Compliance Item III.E. |
| Submittal Due Date is Contingent | | | |
| 13. | Record the draft Environmental Covenant according to state law. | Within 15 calendar days after execution (signature by all parties) of the approved Environmental Covenant. | Schedule of Compliance Item IV. |
| 14. | Notarized statement certifying that the approved Environmental Covenant has been recorded including a copy of the Environmental Covenant. | Within 30 calendar days of recording the approved Environmental Covenant. | Schedule of Compliance Item V. |
| 15. | Updated draft financial assurance instrument. | Within 30 days of Departmental approval of the Permittee's corrective action cost estimate pursuant to this Permit. | Schedule of Compliance Item VI. |

| Item No. | Submittal Requirements | Due Date | Permit Condition |
|-----------------------------|---|--|--|
| 16. | Pilot Study Report. | Within 60 calendar days of completion of Pilot Study Work Plan activities. | Schedule of Compliance Item VII. |
| 17. | Construction Completion (CC) Report. | Within 60 calendar days of completion of construction activities associated with implementation of the final remedy. | Corrective Action Condition XV.B. |
| Quarterly Submittals | | | |
| 18. | Quarterly Progress Reports | Within 60 calendar days of the end of each reporting period (i.e., March 1, June 1, September 1, and December 1). | Corrective Action Condition XIX. |
| Annual Submittals | | | |
| 19. | Annual Groundwater Corrective Action Reports. | By March 1 of each calendar year for the preceding calendar year. | Corrective Action Condition XX. |
| 20. | Update Corrective Action Cost Estimate for Inflation | Annually, at least 60 calendar days prior to anniversary date of the establishment of the initial financial assurance instrument(s). Or Within 30 calendar days of the end of the provider's fiscal year if a financial test or corporate guarantee is used. | Corrective Action Condition XXIII.A.2. |
| 21. | Adjust Financial Assurance Instrument Coverage to Reflect Approved Inflation Updates to Corrective Action Cost Estimate | Within 30 calendar days of Departmental approval of inflation updates to the Corrective Action cost estimate(s). | Corrective Action Condition XXIII.B. |

| Biennial Submittals | | | |
|----------------------------|---|--|---------------------------|
| 22. | Biennial Report with information required by 40 CFR 264.75. | March 1 of each even numbered calendar year. | General Permit Conditions |

**Table 5 - Contingent Corrective Action Submittal Requirements
 Pursuant to the Corrective Action Conditions of this Permit**

| Item No. | Submittal Requirements | Due Date | Corrective Action Condition |
|----------|---|---|-----------------------------|
| 1. | Written Notification of Newly-Identified SWMU(s) and AOC(s). | No later than 15 calendar days after discovery. | VI.A. |
| 2. | SWMU/AOC Assessment Work Plan. | Within 30 calendar days of notice by the Department that a work plan is required. | VI.B. |
| 3. | SWMU/AOC Assessment Report. | According to the schedule in the approved SWMU/AOC Assessment Work Plan. | VI.D. |
| 4. | Written Notification of Newly-Identified Releases from Previously-Identified SWMU(s) and AOC(s). | No later than 15 calendar days after discovery. | VII.A. |
| 5. | Newly-Identified Release Work Plan for Previously-Identified SWMU(s) and AOC(s). | Within 30 calendar days of notice by the Department that a work plan is required. | VII.B. |
| 6. | Newly-Identified Release Report from Previously-Identified SWMU(s) and AOC(s). | According to the schedule in the approved Newly-Identified Release Work Plan. | VII.D. |
| 7. | Written Notification of Interim/Stabilization Measures. | Within 24 hours of discovery of need for stabilization measures. | VIII.A. |
| 8. | Written Notification of Interim/Stabilization Measures Not Effective. | Within ten calendar days of determination by Permittee. | VIII.C. |
| 9. | RCRA Facility Investigation (RFI) Work Plan for newly-identified releases from newly and/or previously-identified SWMUs/AOCs. | Within 60 calendar days of notice by the Department that a RFI work plan is required. | IX.A. |

| Item No. | Submittal Requirements | Due Date | Corrective Action Condition |
|----------|--|--|-----------------------------|
| 10. | RCRA Facility Investigation (RFI) Report for newly-identified releases from newly and/or previously-identified SWMUs/AOCs. | According to the schedule in the approved RFI Work Plan. | X.A. |
| 11. | Corrective Measures Study (CMS) Work Plan. | Within 45 calendar days of notice by the Department that a work plan is required. | XI.C. |
| 12. | Corrective Measures Study (CMS) Report. | According to the schedule in the approved CMS Work Plan. | XII.A. |
| 13. | Final Remedy Approval. | According to the schedule in the implementation Permit modification. | XIII.B. |
| 14. | Construction Completion (CC) Report. | Within 60 calendar days of completion of construction activities associated with implementation of the final remedy. | XV.B. |
| 15. | Corrective Measures Completion (CMC) Report. | Within 60 calendar days of completion of all corrective measures. | XVII.A. |
| 16. | Written Certification of Completion of Corrective Measures. | Within 60 calendar days of Department approval of remedy completion (CMC Report). | XVII.D. |
| 17. | Environmental Covenant Disturbance Notification for any SWMUs or AOCs. | At least 30 calendar days prior to any planned construction, excavation, or maintenance and repair activities at identified SWMUs. | XVIII. |
| 18. | Corrective Action Cost Estimate. | Within 60 calendar days after final remedy Permit modification. | XXIII.A.2.b. |

| Item No. | Submittal Requirements | Due Date | Corrective Action Condition |
|-----------------|--|---|------------------------------------|
| 19. | Draft Financial Assurance Instrument. | Within 30 calendar days of approval of corrective action cost estimate(s). | XXIII.B.1.a. |
| 20. | Execution of Final Financial Assurance Instrument. | Within 10 calendar days of approval of draft financial assurance instrument(s). | XXIII.B.1.b. |
| 21. | Original Executed Financial Assurance Instrument. | Within 30 calendar days of approval of draft financial assurance instrument(s). | XXIII.B.1.c. |

FIGURES

Figure 1 - Location of the Archimica, Incorporated Facility

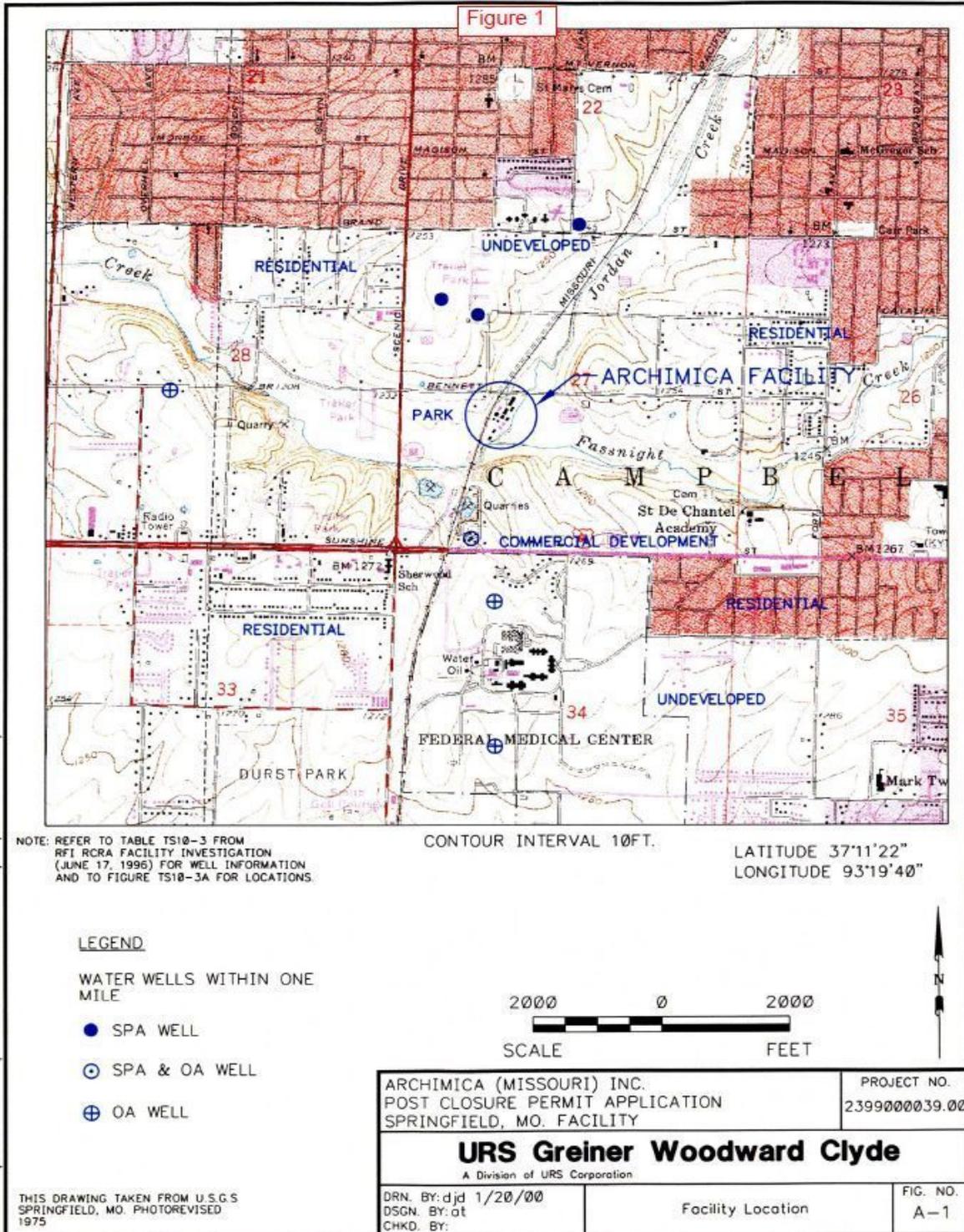


Figure 2 - Location of SWMUs and AOCs

Figure 2

