

**MISSOURI HAZARDOUS WASTE MANAGEMENT FACILITY PERMIT
PART I
PERMIT NUMBER: MOD007129406**

PERMITTEE

FACILITY OWNER

Kerr-McGee Chemical
Limited Liability Corporation
Kerr-McGee Center
P.O. Box 25861
Oklahoma City, OK 73125

FACILITY LOCATION

2800 West High Street
Springfield, Missouri
T29N, R22W Greene County
North Latitude - 37°14'17"
West Longitude - 93°20'00"

FACILITY DESCRIPTION

The Kerr-McGee Chemical Limited Liability Corporation, Forest Products Division (KMCLLC-FPD), Springfield, Missouri, facility consists of about 68 acres located in the northwest part of Springfield. The facility is bordered by industrial, residential, and rural areas. None of the facility is within the 100-year floodplain of any local streams.

Pressure treated railroad products have been produced at the facility since 1907, using creosote tar solutions as the only preservative. The city of Springfield has grown around the facility, which was originally in a rural area. In 1965, KMCLLC-FPD purchased the facility from American Creosote Corporation. Currently, KMCLLC-FPD manufactures products for the Burlington Northern Railroad and several regional railroad contractors, and has the capacity to treat up to 900,000 ties per year.

The facility is a large quantity generator and ships all hazardous waste off site in less than 90 days. Past operations and waste management practices have impacted the soil and groundwater. Historically, the facility used three wastewater impoundments and an additional stormwater impoundment to collect and process wastewater and stormwater runoff from the site. The preservative was removed and recycled back to the facility prior to discharging wastewater to the city sanitary sewer. In 1981, the wastewater impoundments were designated as containing hazardous waste. In February 1985, KMCLLC-FPD submitted a closure plan to the Missouri Department of Natural Resources for the impoundments. The certification of closure was submitted on September 27, 1988, and approved on September 7, 1989.

An experimental land farm was established in 1979 to treat sludge that had been generated from closing a wastewater impoundment. The November 1981, Part A Hazardous Waste Permit Application registered the land farm as an interim status hazardous waste treatment unit. Approximately 800 cubic yards of creosote sludge was applied in three yearly applications from 1979 to 1981. A closure plan and revisions were submitted in July 1983, May 1986, and July 1989. KMCLLC-FPD also submitted a Groundwater Quality Assessment and Closure Sampling Plan in February 1987. The soil was sampled each quarter in 1987 and 1988 to determine the degree of biodegradation taking place. Since the creosote did not completely degrade to non-hazardous levels, the unit went through closure in 1990. Closure consisted of plugging lysimeters, creating a berm around the area to control runoff and runoff, and establishing a vegetative cover, with the purpose of further biodegradation of creosote-based contaminants. Analytical results from sampling conducted by the Department, November 29, 2000, indicate that the surface soil contains concentrations of creosote constituents that exceed protective levels for industrial land use.

The facility has four former hazardous waste management units that are under post-closure. These include three former impoundments and the land farm. The impoundments have been closed by removal of all hazardous waste, the removal of visibly contaminated soils, and the back filling with uncontaminated soil, and covering with a clay cap, topsoil, and vegetation. The treatment of wastewater in these impoundments generated a creosote preservative rich sludge, designated as a listed hazardous waste, K001, which is defined as "bottom sediment sludge from the treatment of wastewater from wood preserving processes." Groundwater contamination resulting from the operation of these units is subject to remediation under the post-closure care portion of this Permit. Land farm operation contaminated the soil, but no contamination of the groundwater has been detected. The land farm is subject to a Solid Waste Management Unit (SWMU) Assessment Report under this Permit.

There are four areas designated as SWMUs at the facility. These include the production process area, a pre-Resource Conservation and Recovery Act (RCRA) original cell area (impoundment) that was closed in 1973, the historical black-tie storage area, and the land farm.

The United States Environmental Protection Agency (U.S. EPA) issued a 3008(h) Consent Order in May 1988. On November 17, 1988, KMCLLC-FPD and U.S. EPA finalized the terms and conditions of RCRA 3008(h) Consent Order No. 7-88-H-0019. The RCRA Facility Investigation (RFI) was implemented on January 29, 1990, the Final RFI Report was submitted on July 1, 1992, and approved on August 21, 1992. The Corrective Measure Study (CMS) Work Plan was submitted on November 25, 1992, and was approved on July 19, 1993. A soil assessment of the pre-RCRA cell was conducted in April 1994, with a report submitted November 19, 1994. A revised CMS Work Plan was approved on March 31, 1995, and included plans to excavate source materials from the pre-RCRA cell. This work was done in

September 1995. There are four recovery trenches operating to recover impacted groundwater and any accumulated creosote product. Corrective action was initiated in 1985 with installation of six large diameter sumps installed in trench 1 along the northeast property boundary. Trenches 2, 3, and 4 were installed as additional corrective measures between 1994 and 1996.

PERMITTED ACTIVITY

This Permit requires post-closure care for the four closed hazardous waste management units: Impoundment 1, Impoundment 2, Impoundment 3, and the experimental land farm. It also addresses the continuing implementation of corrective action requirements, including site-wide groundwater monitoring and remediation to address releases from other SWMUs.

EFFECTIVE DATES OF PERMIT: September 25, 2002 to September 25, 2012

September 25, 2002
Date

[Original signed by James D. Werner]
James D. Werner, Director
Air and Land Protection Division

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INTRODUCTION

After the public notice period required by 10 CSR 25-8.010 and 40 CFR Part 124, and review of Kerr-McGee Chemical Limited Liability Corporation's RCRA Part B Application for the Springfield facility, the Missouri Department of Natural Resources (hereafter referred to as the Department) has determined that the application substantially conforms with the provisions of the Missouri Hazardous Waste Management Law (and all standards, rules, and regulations adopted under this act), Section 260.350, et seq., RSMo. Following Section 260.375.13, RSMo, the Department hereby approves the application and issues Permit Number MOD007129406 to the Kerr-McGee Chemical Limited Liability Corporation as the facility owner and operator (hereafter referred to as the Permittee) for the implementation of the final remedy and post-closure care as set forth in the application. This Permit also addresses corrective action requirements for solid waste management units and other requirements of the Hazardous and Solid Waste Amendments (HSWA) of 1984 as administered and enforced by the Department. Applicable regulations are found in 40 CFR Parts 124, 260 through 264, 268, and 270, as specified in this Permit. Part I of this Permit is issued under state authority and Part II is issued under federal authority. Part I shall remain in effect even if Part II is terminated or has expired.

The Permit application submitted by the Permittee and received by the Department on July 1, 1998, along with subsequent submittals and revisions dated September 17, 1998, March 10, 2000, and August 31, 2000, and the information developed on the land farm will hereafter be referred to as the "approved Permit application." The approved Permit application, along with all of the additional documents to be submitted under Schedule of Compliance Item II., are defined as the "consolidated Permit application."

Post-closure operation of this hazardous waste management facility and corrective action shall be in accordance with the provisions of this Permit, the Missouri Hazardous Waste Management Law (Sections 260.350 through 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, the approved Permit application which is incorporated into the conditions of this Permit, and any other conditions, changes, or additions to the engineering plans, specifications and operating procedures as specified in this Permit. The conditions specified in this Permit supersede any conflicting information in the approved Permit application. Where conflicts arise between permit applications, the latest revision shall control.

Any inaccuracies found in information submitted may be grounds for the termination, revocation and reissuance, or modification of this Permit in accordance with 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 a facility's permit. All such changes to the Permit will be in accordance with 10 CSR 25-7.270(2)(D), 10 CSR 25-8, and 40 CFR Part 270 Subpart D, incorporated by reference in 10 CSR 25-7.270(1).

The Permittee is required to comply with all applicable environmental laws and regulations enforced by the Missouri Department of Natural Resources. These environmental laws and regulations are administered by the Air Pollution Control Program, the Hazardous Waste Program, the Land Reclamation Program, the Public Drinking Water Program, the Solid Waste Management Program, and the Water Pollution Control Program. The local Air Quality Unit, Springfield-Greene County Health Department, also administers air compliance measures. Noncompliance 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.

This Permit for post-closure and 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 September 25, 2012. This Permit is subject to review and modification by the Department in accordance with Section 260.395.12, RSMo.

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

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 the instances where state regulations are more stringent, the appropriate state reference is given and shall apply.

Any appeals of the issuance or denial of the permit or specific permit conditions based on state authority shall be filed in accordance with Section 260.395.11, RSMo. The appeal shall be filed with the Missouri Hazardous Waste Management Commission within 30 days from the date of this Permit. The Missouri Supreme Court has ruled that corporations and associations may only proceed in legal matters through attorneys licensed to practice in Missouri. *Reed v. Labor and Industrial Relations Commission*, 789 S.W.2d 19 (Mo banc 1990). The court has determined that pleading filed by a non-attorney on behalf of a corporation or association is considered null

and void, and therefore such pleading will not be accepted by the Hazardous Waste Management Commission. Individuals and partnerships are not required to have an attorney and are allowed to represent themselves in front of the Commission.

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 for all releases of hazardous waste 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 prior to 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/operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. Further, 40 CFR 264.101(c), as incorporated by reference in 10 CSR 25-7.264(1), stipulates that the owner/operator is not relieved of any responsibility to clean up 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, RSMo requires that each permit issued under that section contain terms and conditions as the Department determines necessary to protect human health and the environment.

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 Part I of this Permit and are under state authority. Authority for other HSWA requirements for which the state is not authorized is retained by EPA under Part II of the Permit.

All permit application information shall be available to the public unless nondisclosure is requested in writing as set forth in Section 260.430, RSMo. The Permit and accompanying

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material will be available for review by the public at the Department's central office in Jefferson City and the Springfield Public Library, Kearney Branch, at 630 W. Kearney, Springfield, Missouri.

DEFINITIONS

For purposes of this Permit, terms used herein shall have the same meaning as those in RCRA and 40 CFR Parts 124, 260, 261, 264, 268, and 270, and Section 260.360, RSMo, unless this Permit specifically provides otherwise. Where terms are not defined in RCRA, the regulations, the 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.

"Area of Concern (AOC)" means any area where an actual or potential release of hazardous waste or hazardous constituents which is not from a solid waste management unit 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).

"Director" means the Director of the Missouri Department of Natural Resources.

"Facility" means:

All contiguous land, and structures, other appurtenances and improvements on the land, used for treating, storing or disposing hazardous waste.

All contiguous property under the control of the owner/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 Special Permit Conditions I. through XXIV. of this Permit.

"Hazardous constituent" means any chemical compound listed in 40 CFR Part 261 Appendix VIII. as incorporated 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 or 10 CSR 25-11, which because of its quantity, concentration, or 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 (including 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 days of the effective date of this Permit, the Permittee shall:
 - A. Submit two copies of the consolidated Permit application, as defined in the Introduction of this Permit, to the Department.
 - B. Submit a certification signed by the Permittee that the Permittee has read this Permit in its entirety and understands all Permit conditions contained herein.
 - C. Submit a check or money order to the Department's Hazardous Waste Program payable to the State of Missouri for any outstanding engineering review costs.
 - D. Submit a check or money order to the Department's Hazardous Waste Program payable to the State of Missouri for \$1,000 for each year the Permit is to be in effect beyond the first year. This Permit is effective for ten years. Since the Permittee has submitted a check dated May 1986, for \$1,000 with the Permit application, and a check dated June 1998, for \$1,000 with the revised Permit application, the remaining balance to be submitted by the Permittee is \$8,000 for this ten-year Permit.
 - E. Submit a copy of the Contingency Plan distribution list verifying the requirements of General Permit Condition III.A.
 - F. Submit two figures or maps illustrating areas of soil and groundwater contamination as required by Special Permit Condition XVI.
 - G. Submit a revised detailed cost estimate for financial assurance for corrective action as required by Special Permit Condition XVIII.
- II. Within 120 days of the effective date of this Permit, the Permittee shall submit a SWMU Assessment Report for the land farm as required by Special Permit Condition V.

- III. Within 150 days of the effective date of this Permit, the Permittee shall:
 - A. Submit a Construction Completion Report as per Special Permit Condition XIII.
 - B. Submit a Long Term Operation, Maintenance, and Monitoring Plan as per Special Permit Condition XIV.
- IV. The Permittee shall comply with the schedule for corrective action activities as specified in this Permit and as summarized in Table III attached hereto.
- V. The Permittee shall comply, as necessary, with the schedule(s) for contingent corrective action activities as specified in the Special Permit Conditions section of this Permit.
- VI. The Permittee shall submit an application for renewal of this Permit no later than 180 days prior to Permit expiration in accordance with 40 CFR 270.10(h).

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 act), Section 260.350, et seq., RSMo, 40 CFR Part 264 Subpart F, 40 CFR Part 264 Subpart H, 40 CFR 270.30, 40 CFR 270.40, 40 CFR 270.42, and 40 CFR 270.51 as incorporated and modified in 10 CSR 25-7 and 10 CSR 25-8.

GENERAL PERMIT CONDITIONS

I. General Requirements

The Permittee shall comply with the requirements set forth in 40 CFR Part 264 Subpart B-General Facility Standards, 40 CFR Part 264 Subpart C-Preparedness and Prevention, 40 CFR Part 264 Subpart D-Contingency Plan and Emergency Procedures, and 40 CFR Part 270 as incorporated in 10 CSR 25-7 and 10 CSR 25-8.

II. Preparedness and Prevention [40 CFR Part 264 Subpart C]

The Permittee shall comply with Attachment III, Spill Prevention, Contribution, Countermeasure, and Hazardous Waste Contingency Plan and Emergency Measures, in order to fulfill the requirements of 40 CFR Part 264 Subpart C. Attachment III is contained in the approved Permit application. Should state or local authorities decline to enter into such arrangements, the Permittee shall document the refusal in the operating record.

III. Contingency Plan and Emergency Procedures [40 CFR Part 264 Subpart D]

The Permittee's Contingency Plan and Emergency Procedures shall comply with Attachment II, Hazardous Waste Contingency Plan and Emergency Procedures and all conditions of this Permit. Attachment II is contained in the approved Permit application.

- A. Copies of the Contingency Plan [40 CFR 264.53]. A copy of the approved Contingency Plan and all revisions of this plan shall be kept with the local site representative and/or at the facility, and the Contingency Plan and all revisions must be submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams or organizations that may be called to provide emergency services.
- B. The facility shall provide a copy of the Contingency Plan and Emergency Procedures within 60 days of the effective date of this Permit to all local police departments, fire departments, hospitals, and state and local emergency response teams or organizations that may be called to provide

emergency services. The facility shall submit a copy of the distribution list to the Department indicating those organizations who received copies of the Contingency Plan within 60 days of the effective date of this Permit.

IV. Notification of an Emergency Situation (Chapter 260.505.4, RSMo)

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

V. Reporting Requirements [40 CFR 270.30 (l) (9)]

A biennial report shall be submitted covering facility activities by March 1 during even numbered calendar years, as required by 40 CFR 264.75.

SPECIAL PERMIT CONDITIONS

I. Post-Closure [40 CFR Part 264 Subpart G]

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 Subparts F, G, and H as incorporated by reference in 10 CSR 25-7.264(1), 10 CSR 25-7.264(2) (F), (G), and (H), and this Permit for the closed surface impoundments, the land farm, all identified SWMUs, and any newly-identified SWMUs/AOCs or releases identified pursuant to the provisions of this Permit.

A. Post-Closure Care [40 CFR 264.117]

Post-closure care of the hazardous waste management units begins after completion of closure and continues for 30 years after that date unless otherwise specified by the Department. The certification of closure for the surface impoundments was accepted on September 7, 1989. The post-closure care period for the surface impoundments shall last until September 7, 2019. The land farm closure report submitted in March 1990, was reviewed and deficiencies noted in a March 6, 1991, comment letter to KMCLLC-FPD. KMCLLC-FPD responded in a March 26, 1991, letter that addressed the comments in the March 6, 1991, letter. The post-closure care period for the land farm shall last until March 26, 2021.

Post-closure care shall be extended, at a minimum, until such time as the groundwater protection standard maximum concentration limits or alternate concentration limits, as applicable, are met for a period of three consecutive years under the groundwater monitoring and corrective action program described in Special Permit Condition II. of this Permit, or as determined to be necessary by the Department. Care during this period shall consist of maintenance, monitoring, and reporting in accordance with 40 CFR Part 264 Subparts F, G, H, and N, as incorporated by reference in 10 CSR 25-7.264.

The Permittee may submit a request to the Department to shorten the post-closure care period. Adequate justification for shortening the post-closure care period must accompany any such request. If the Department finds

that a shorter post-closure care period is sufficient to protect human health and the environment, shortening of the post-closure care period shall be handled in accordance with the applicable Permit modification procedures under 40 CFR Parts 124 and 270.

Post-closure use of the property shall be restricted by the Permittee to prevent disturbance of the integrity of the final cover on the closed surface impoundments, to prevent damage to the monitoring systems, and to provide implementation of institutional controls, deed restrictions, and any additional corrective action as required at the land farm. The Department may approve a use of the property that disturbs the integrity of the final cover of the impoundments 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.

Groundwater monitoring prior and subsequent to closure of the land farm has indicated that the creosote sludge and sand mix that was incorporated into the soil during 1979 through 1981, does not appear to have impacted the groundwater underlying the land farm. The primary concern is contact with the soil of the land farm since it was not capped. The SWMU Assessment Report required by Special Permit Condition V. will provide information on remaining contamination at the land farm.

B. Post-Closure Plan and Amendments [40 CFR 264.118]

Post-closure care shall be in accordance with the plan contained in Section I. of the approved Permit application and all conditions of this Permit. The Post-Closure Care Plan may be amended at any time during the post-closure care period. The Permittee must submit a written request to the Department for a permit modification to authorize a change in the approved Post-Closure Care Plan. 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 must be submitted at least 60 days prior to the proposed change in site operations, or not later than 60 days after an unexpected event which 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 days after a Departmental request for modification of the plan. Any

modifications requested by the Department will be approved, disapproved, or modified in accordance with the procedures in 40 CFR Parts 124 and 270 and 10 CSR 25-8.

C. Future Removal of Hazardous Wastes [40 CFR 264.119(c)]

If the Permittee wishes to remove hazardous wastes, hazardous waste residues, contaminated soils or contaminated sludges from the former hazardous waste management units, the Permittee must request a modification to this Permit in accordance with the applicable requirements in 40 CFR Parts 124 and 270. The request for a modification must 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 must be made indicating that the action will satisfy the criteria of 40 CFR 264.117(c). By removing contaminants, the Permittee may become a generator of hazardous waste and must manage any removed material in accordance with all applicable requirements.

D. Certification of Completion of Post-Closure Care [40 CFR 264.120]

No later than 60 days after completion of the post-closure care period, the Permittee shall submit to the Department, by registered mail, a certificate that the post-closure care period was completed in accordance with the approved Post-Closure Care Plan. For this Permit, certification is due by November 6, 2019, (impoundments) and May 25, 2021, (land farm) unless amended. The certification must be signed by the Permittee and an independent professional engineer registered in the state of Missouri, and documentation supporting the certification must be furnished to the Department prior to the Permittee's release from the financial assurance requirements for post-closure care under 40 CFR 264.145(i).

E. Post-Closure Cost Estimate [40 CFR 264.120]

The Permittee shall maintain a detailed written estimate, in current dollars, of the annual cost of post-closure monitoring and maintenance of the facility. The estimate shall be based on the costs of hiring a third party to conduct these activities. The post-closure cost estimate is calculated by multiplying the annual cost estimate by the number of years of post-closure care remaining. Following preparation of the initial cost estimate

for post-closure care, annual adjustment of the estimate shall be made to account for inflation. During the active life of the facility, the Permittee shall adjust the post-closure cost estimate for inflation 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with 40 CFR 264.145. The Permittee may make such adjustments by recalculating the post-closure cost estimate in current dollars or by multiplying the then current cost estimate by the inflation factor derived from the Implicit Price Deflator. The Permittee's annual cost estimate adjustments shall also take into account any modifications to the permitted post-closure activities. Updated post-closure care cost estimates shall be maintained in the facility operating record.

F. Post-Closure Financial Assurance [40 CFR 264.145]

The Permittee shall demonstrate continuous compliance with 40 CFR 264.145 and 10 CSR 25-7.264(2)(H) and the documentation requirements of 40 CFR 264.151 in at least the amount of the cost estimate required by Special Permit Condition I.E. above. Changes in financial assurance mechanisms shall be approved by the Department pursuant to 40 CFR 264.145 and 10 CSR 25-7.264(2)(H). The Permittee has 60 days after a change in the post-closure estimate to obtain other financial assurance.

G. Incapacity of owners or operators, guarantors, or financial institutions [40 CFR 264.148]

The Permittee shall comply with 40 CFR 264.148.

II. Groundwater Monitoring and Corrective Action Program - Former Impoundments
[40 CFR 264.90 - 264.100]

A. Groundwater Protection Standard, Hazardous Constituents, and Concentration Limits [40 CFR 264.92, 264.93, and 264.94].

The Groundwater Protection Standard (GPS) establishes the maximum concentration limits for hazardous constituents in the groundwater at and beyond the point of compliance during the compliance period. The groundwater monitoring constituents, maximum concentration limits, and maximum analytical detection limits specified in Tables I of this Permit constitute the GPS for the Permittee's closed impoundments, solid waste management units (SWMUs), and areas of concern. The hazardous constituents listed in Table I 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.

1. The maximum concentration limits for the GPS hazardous constituents listed on Table I are based on protection of human health and the environment and were derived from several different sources as explained by the footnotes to Table I.
2. The GPS maximum concentration limit for some hazardous constituents is below the lowest, reasonably achievable detection limit (due to limitations in current analytical technology) for particular hazardous constituents. In these cases, the GPS maximum concentration limit has been set at the corresponding GPS maximum detection limit.
3. The allowable GPS maximum detection limit shall never be 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 provided), the affected sample and associated chemical analyses will be exempted from this requirement. Such an exemption does not, however, in any way relieve the Permittee from complying with the GPS maximum concentration limits.
4. 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 covered by Special Permit Condition II.A.2. which allows for an adequate comparison with appropriate health- or environmental protection-based concentration limit(s).
5. 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 maximum concentration limits contained herein. Any such demonstration shall ensure that any and all ACLs proposed in lieu of the GPS maximum concentration limits are protective of human health and the environment in accordance with the requirements of 40 CFR 264.94(b). In proposing an ACL(s), the Permittee shall consider and formally address the factors listed in 40 CFR 264.94(b)(1) and (2). Any ACLs approved by the Department shall require a Permit modification in accordance with 40 CFR 270.42.

TABLE I - GROUNDWATER PROTECTION STANDARDS

Groundwater Monitoring Constituent	Maximum Concentration Limit (µg/l)	Maximum Detection Limit (µg/l)•
Acenaphthene	1200 (b)	10
Acenaphthylene	10 (d,e)	10
Benzene	5 (a)	5
Benzo(a)anthracene	10 (d)	10
Benzo(b)fluoranthene	10 (d)	10
Benzo(a)pyrene	10 (d)	10
2-Chlorophenol	10 (d)	10
Chrysene	10 (d)	10
Dibenz(a,h)anthracene	10 (d)	10
2,4-Dimethylphenol	540 (b)	10
2,4-Dinitrophenol	70 (b)	25
Ethyl Benzene	700 (b)	5
Fluoranthene	300 (b)	10
Indeno(1,2,3-cd)pyrene	10 (d)	10
Naphthalene	10 (d)	10
Phenol	300 (b)	10
Toluene	1,000 (a)	5
Xylene	10,000 (a,b)	5

•The lower of Practical Quantitation Limits (PQLs) contained in the latest version of the EPA publication entitled: Test Methods for Evaluating Solid Waste - Physical/Chemical Methods (SW-846) or method specific detection limits routinely achieved by the Permittee's laboratory.

- (a) Denotes limits derived from state (10 CSR 60 Chapter 4, dated July 31, 2000) and federal public drinking water regulations.
- (b) Denotes limits derived from Missouri Water Quality Standards (10 CSR20-7.031) for protection of groundwater, dated August 31, 2000.
- (c) Denotes limits derived from risk-based concentration values for tap water as contained in the EPA Region III Risk-Based Concentration Table dated October 5, 2000.
- (d) Health- and/or environmental-based levels are lower than the ability of current analytical technology to routinely attain detection limits at or below such levels. These constituents and their health- and/or environmental-based criteria are listed below.

Groundwater Monitoring Hazardous Constituent	Maximum Concentration Limit (µg/l)	Source
Acenaphthylene	0.0044	(b)
Benzo(a)anthracene	0.0044	(b)
Benzo(b)fluoranthene	0.092	(c)
Benzo(a)pyrene	0.2	(a,b)
Chrysene	0.0044	(b)
Dibenzo(a,h)anthracene	0.0044	(b)
Indeno(1,2,3-cd)pyrene	0.0044	(b)
2-Chlorophenol	0.1	(b)
Naphthalene	6.5	(c)

- (e) Denotes a chemical which is not a hazardous constituent as defined in the Definitions section of this Permit, but is a groundwater monitoring constituent defined in 40 CFR Part 264 Appendix IX. and a chemical compound which is a plume indicator. Maximum concentration limits are defined for these compounds where available.
6. The Permittee shall propose modification of the GPS to include any additional hazardous constituent(s) (40 CFR Part 261, Appendix VIII.) in the groundwater which is/are identified during future sampling and analysis, if such constituents may be attributed to past operation of the regulated unit(s) and/or the degradation of hazardous constituents known to be present in the groundwater. The Appendix IX. (40 CFR Part 264) groundwater sampling and analysis requirements contained in Special Permit Condition II.E.5. shall be used as the basis for determining if the addition of hazardous constituents to the GPS is necessary.
 7. Any addition of hazardous constituents 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 permit modification in accordance with 40 CFR 270.42.

B. Point of Compliance [40 CFR 264.95]

The point of compliance is the location at and beyond which groundwater protection standards must be achieved. The point of compliance is defined as a vertical surface that extends perpendicularly downward at the limit of the waste management area which extends into the uppermost aquifer underlying the regulated units. In the case of multiple regulated units and SWMUs, an imaginary line circumscribing the regulated units may be

used, or a line of wells forming a polygon around them. These wells must be on the facility property when the plume extends off the property as is the case for this site. This definition is based upon the nature of the contaminants managed at the former regulated units and the existing sampling and monitoring results. Wells monitoring the groundwater passing the point of compliance will include well numbers SMW-11B, SMW-13, SMW-14, SMW-15, SMW-16, SMW-17, SMW-18, SMW-22, BMW-1, BMW-2, BMW-4, BMW-9, and PW-20. Groundwater contamination at and beyond the point of compliance, which exceeds the GPS maximum concentration limits, shall be subject to corrective action pursuant to 40 CFR 264.100. See Figure 1.

C. Compliance Period [40 CFR 264.96]

The compliance period for the closed impoundments shall be equal to the active life of the former waste management area, which is 24 years. The compliance period shall begin on the effective date of this Permit.

If 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 groundwater 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 264.97]

The Permittee shall comply with that portion of 40 CFR 264.97 applicable to monitoring programs conducted in accordance with 40 CFR 264.100 and the following additional requirements.

1. The Permittee's groundwater monitoring systems shall be designed, installed, operated, and maintained during the compliance period in a manner which 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/or 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/or containment.

2. 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, 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 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. The addition of new monitoring wells shall require a Class 2 permit modification in accordance with 40 CFR 270.42. Procedures cited in the Groundwater Sampling and Analysis Plan (SAP) dated August 31, 1993, shall be followed in the sampling and analysis of samples from any new wells required under this Permit.

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 SAP. The Department will notify the Permittee in writing when it makes the determination. Within 30 days of this notification, the Permittee shall submit appropriate SAP revisions to the Department's Hazardous Waste Program.

3. Any new groundwater monitoring well(s) installed by the Permittee to meet the requirements of this Permit shall be designed and constructed in accordance with the requirements of 40 CFR 264.97, 10 CSR 23-Chapter 4, Monitoring Well Construction Code of the Missouri Well Construction Rules and/or well-specific plans and specifications approved by the Department.
 - a. The Permittee shall submit to the Department's Hazardous Waste Program, 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 Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition II.F.
- b. Any change in the number of wells being monitored shall require a Class 2 permit modification in accordance with 40 CFR 270.42. The Permittee may elect to submit an annual modification to incorporate changes in the number of monitoring wells in lieu of a modification for each individual change.
4. 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 plugged pursuant to this Permit. This information shall be reported as part of the Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition II.F.
 - b. At such time as the Permittee's well registration has been accepted by the Department's Geological Survey and Resource Assessment Division (GSRAD), the plugged wells shall be removed from the Permittee's Groundwater SAP. Within 30 days of GSRAD's registration acceptance, the Permittee shall submit appropriate SAP revisions to the Department's Hazardous Waste Program.
 - c. Any change in the number of wells being monitored shall require a Class 2 permit modification in accordance with 40 CFR 270.42. The Permittee may elect to submit an annual modification to incorporate changes in the number of monitoring wells in lieu of a modification for each individual change.
 5. The Permittee shall contact the Department at least five working days prior to conducting any field work associated with the construction or modification of the groundwater monitoring system required by this Permit. The Department will then have the option

of observing any portion 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, maintenance, or modification.

5. The Permittee shall revise and resubmit for the Department's approval the SAP for the facility within 60 days of the effective date of this Permit to reflect the additional requirements contained in this Permit that are not contained in the Permittee's August 1993, SAP. All SAP 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 by reference 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. The SAP will be reviewed in accordance with the procedures set forth in Special Permit Condition XXI., Review and Approval Procedures.
7. A monitoring well inspection and maintenance program shall be implemented for the duration of the compliance period. This program shall be designed to ensure the structural integrity of all monitoring well installations during the compliance period. The Permittee's revised SAP shall address the details of this program in accordance with the following requirements.
 - a. Surface well integrity inspections shall be performed at the time of each sampling event and shall be documented on an inspection log sheet. 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 inspections shall be performed biennially in all wells in accordance with the provisions contained in the Permittee's SAP and shall be documented

on a well inspection log sheet. 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 SAP shall specify performance of a biennial wellborn siltation evaluation to assess downwell siltation and well screen occlusion in all monitoring wells. This requirement shall be designed to ensure the representative nature of the Permittee's groundwater sample analysis and field measurement results through minimization of sampling and measurement interferences (e.g., turbidity, excessive well screen occlusion, etc.). The Permittee's SAP shall specify a well redevelopment trigger criterion based on a percentage of well screen 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 occlusion equal to or in excess of the selected criterion shall be redeveloped prior to the next scheduled sampling event.
- d. Monitoring well repairs shall be undertaken within 30 days of identification of any surface or subsurface well integrity problem. If adverse weather or site conditions preclude the Permittee from gaining access to and/or repairing flood-impacted 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 Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition II.F.

E. Corrective Action Program [40 CFR 264.100]

The above-referenced closed regulated units are subject to the corrective action program requirements of 40 CFR 264.100, as incorporated by reference in 10 CSR 25-7.264(1), and this Permit until such time as these requirements have been satisfied.

1. The Permittee's corrective action program for the closed impoundments shall consist of groundwater and surface water monitoring in accordance with Special Permit Conditions II. and III., and the provisions of the Permittee's 1995 EPS-approved Corrective Measures Study (CMS). The corrective action program shall address any groundwater contamination that has migrated off site. Substantial integration of the corrective action monitoring program for the closed regulated units with the site-wide program is required due to:
 - a. The need for continued operation of the recovery wells and trenches in order to maintain control of the contaminated groundwater plume to prevent any additional off-site migration, to recover any free product, and to further reduce the levels of groundwater contamination.
 - b. The inability to differentiate groundwater contamination related to releases from the closed impoundments versus that potentially related to nearby SWMUs/AOCs which are subject to corrective action in accordance with 40 CFR 264.101.
 - c. The desirability of implementing a holistic, site-wide approach to groundwater investigation, monitoring, and remediation given the foregoing circumstances.
2. The Permittee shall perform groundwater sampling/analysis and field measurement of groundwater-related parameters to monitor releases from the regulated units and SWMUs according to the schedule presented in Table II.
 - a. Sampling and analysis in accordance with this schedule shall begin during the next regularly scheduled sampling event following approval of the revised SAP required by Special Permit Condition II.D.6. Given the potential lag

time between the effective date of this Permit and approval of the revised SAP required by Special Permit Condition II.D.6., the Permittee shall continue sampling and analysis in accordance with the latest Department-approved version of the Permittee's SAP until such time as the revised SAP is approved.

- b. Sampling and analysis of groundwater from any new wells required by 40 CFR Part 264 Subpart F and this Permit shall be performed no later than the next regularly scheduled sampling event following their installation.
 - c. Installation of additional wells to maintain continued knowledge of the extent of groundwater contamination during the compliance period may be necessary to meet the requirements of 40 CFR Part 264 Subpart F, as incorporated by reference in 10 CSR 25-7.264, and this Permit. If any such wells are installed, they may be subject to the monitoring requirements contained in Table II. Addition of monitoring wells shall be subject to the permit modification procedures outlined in Special Permit Condition II.D.3.b.
 - d. Any future changes to the list of wells established in the Permittee's revised SAP shall be approved in writing by the Department. Within 30 days of receipt of this approval, the Permittee shall submit additional SAP revisions to incorporate the approved changes.
 - e. Installation of new monitoring wells following the issuance of this Permit which are used for 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.
3. Only single sample analyses (as opposed to replicates) are required for the parameters listed in Table II, with the exception of duplicate samples taken for Quality Assurance/Quality Control (QA/QC) purposes.
 4. Field parameter values measured and reported by the Permittee shall be representative of stabilized well conditions.

- a. Downwell measurement of Non-Aqueous Phase Liquid (NAPL) thickness, static water level and total well depth shall be taken prior to well purging.
 - b. Specific conductance, pH and temperature measurements reported to the Department shall be those taken immediately following well purging in accordance with the approved SAP.
 - c. Additional field parameter measurements such as those taken to verify the adequacy of well purging shall be recorded in the field logbook.
5. Every five years as per Table II., the Permittee shall sample and analyze groundwater from three historically contaminated wells for all parameters, excluding metals, pesticides, and dioxins, contained in Appendix IX. of 40 CFR Part 264.
- a. The wells sampled to meet this requirement shall be left to the discretion of the Permittee; however, the choice of wells shall include one well containing low levels of dissolved phase contamination, one well containing moderate levels of dissolved phase contamination, and one well demonstrating the presence of free phase contamination, if applicable. The sample to be analyzed from the free phase contaminated well shall be the groundwater (aqueous phase) obtained from this well, not the non-aqueous phase liquid.
 - b. This sampling and analysis is required to determine if additional hazardous constituents (40 CFR Part 261, Appendix VIII.) and/or contamination indicator parameters are present in the groundwater which may be attributable to a release(s) from the closed impoundments and/or degradation of currently known hazardous constituents.
 - c. If hazardous constituents and/or contamination indicator parameters are identified in the groundwater which are not currently specified in the GPS, the Permittee may resample the groundwater in accordance with 40 CFR 264.99(g). If the Permittee's subsequent groundwater analyses confirm the presence of additional hazardous constituents or

contamination indicator parameters, then the Permittee shall propose a Class 1 Permit modification with prior director approval to add the confirmed hazardous constituents or contamination indicator parameters to the GPS (Table I) and the monitoring program specified in Table II.

TABLE II
 Groundwater Corrective Action Monitoring,
 Sampling, Analysis, and Parameter Measurement Schedule

Parameters	Type*	Maximum Detection Limit (ug/l)	Frequency
Appendix IX. (1)	HC	PQLs per SW-846**	Every 5 years
Semivolatiles (2)	HC	Per Table 1	*** (see note)
Benzene, Ethyl Benzene, Toluene, Xylene (EPA test Method 8021B)	HC	Per Table 1	*** (see note)
NAPL Thickness	FM	Not Applicable	**** (see note)
pH	FM	Not Applicable	*** (see note)
Specific Conductance	FM	Not Applicable	*** (see note)
Static Groundwater Elevation (3)	FM	Not Applicable	**** (see note)
Temperature	FM	Not Applicable	*** (see note)
Total Well Depth	FM	Not Applicable	**** Annually

(1) Appendix IX. (40 CFR Part 264) scan on three historically contaminated wells only.

(2) EPA SW-846 Method 8270 or equivalent. Wells interior to the contaminant plume may be analyzed with Method 8100 during the first semi-annual event of each calendar year, and will be analyzed with EPA Test Method 8270 during the second semi-annual sampling event. All other wells will be analyzed by EPA Test Method 8270 on a semi-annual basis for primary wells and annually for other wells in accordance with Table 5.5 of the approved Permit application and the facility's current approved groundwater SAP.

(3) Potentiometric measurements shall be obtained at the time of each regularly scheduled sampling event from all monitoring wells at the facility, including those which are not being sampled regularly.

- * HC = Hazardous Constituent, FM = Field Measurement
- ** The EPA approved SW-846 version at the time of sampling.
- *** Semi-annual for primary (effectiveness) wells as per Section 5.8, which are highlighted in Table 5.5 Volume 3 of the approved Permit application, and annual for all other established wells. New wells shall be sampled quarterly as per Special Permit Condition II.E.2.e.
- **** NAPL detection and thickness measurements shall be made at the time of sampling (prior to well purging) and prior to manual removal of NAPL from any well. Static groundwater elevations and total well depth measurements shall be made prior to well purging.

F. Groundwater-Related Reporting Requirements.

The Permittee shall submit to the Department, on a semi-annual basis for the preceding calendar half-year (i.e., January through June and July through December), Semi-Annual Groundwater Corrective Action Reports, including all raw analytical data from the Permittee's semi-annual groundwater sampling events. The reports shall include groundwater analysis results, field parameter measurement results, copies of field sampling and well inspection log sheets, well repair documentation, QA/QC data, statistical analysis of groundwater data, field investigation results, volume of groundwater extracted, and other relevant groundwater-related information. The Semi-Annual Reports shall also discuss any exceedances of the Groundwater Protection Standards noted in Table 1 and the State Operating Permit referenced in Special Permit Condition III.A.2. The Permittee's Semi-Annual Groundwater Corrective Action Reports shall be submitted to the Department by March 1, and September 1, of each calendar year for the preceding calendar half-year. Each September 1 Semi-Annual Report shall be raw data with comments on exceedances. Each March 1 Semi-Annual Report will include a comprehensive evaluation as follows and be called the Annual Groundwater Corrective Action Report.

The Permittee shall prepare and submit, on an annual basis, a comprehensive evaluation of the facility-wide groundwater monitoring program for the preceding calendar year (i.e., January through December).

The Permittee's Annual Groundwater Corrective Action Reports shall be submitted to the Department by March 1 of each calendar year for the preceding calendar year.

1. These reports shall contain a narrative discussion of 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. Any conclusions concerning inadequacies in the Permittee's groundwater monitoring program shall be accompanied by a discussion of proposed remedies. Specific details concerning any proposed remedies should be further developed outside of the scope of these reports and/or as otherwise specified in this Permit.
2. The Permittee's Annual Groundwater Corrective Action Reports shall comprehensively address all of the technical requirements of 40 CFR Part 264 Subpart F and this Permit. The Permittee shall summarize relevant groundwater monitoring information and shall 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. The Permittee's Annual Groundwater Corrective Action Reports shall 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 I) 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 efficiency of the groundwater corrective action program;
- d. The quantity of free NAPLs if present and groundwater extracted from the subsurface during either stabilization activities or as part of the groundwater corrective action program. This information should be reported as a total amount and/or per well or extraction location, and shall be used in conjunction with dissolved phase contaminant concentration information to estimate quantities of contaminants removed;
- e. The conclusions and summary, including statistical evaluation, of analytical results from surface water monitoring conducted during the reporting period; and
- f. Information related to extraction of groundwater, installation, and operation of the on-site groundwater treatment system and discharge of treated or untreated groundwater to surface water or a publicly-owned treatment works, including the following:
 - (1) Groundwater extraction rates, volumes and pressures to determine if plugging of the well screens and/or the surrounding geologic strata is occurring;
 - (2) Concentrations of the groundwater monitoring parameters (Table I) 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; and
 - (3) Any groundwater treatment system operation and maintenance problems in terms of their potential or actual influence on effluent monitoring and contaminant removal efficiency.

4. The Permittee shall submit to the Department, in the Annual Groundwater Corrective Action Reports, 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 Special Permit Conditions II.D.3. and 4.

III. Surface Water Monitoring Program [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) throughout the post-closure care period or until such time as the Permittee makes a successful demonstration for exemption from these requirements.
 1. The Permittee's surface water monitoring program shall be incorporated directly into and be submitted as part of the revised SAP required by Special Permit Condition II.D.6.
 2. The Permittee's surface water sampling and analysis methods for chemical indicator parameters and hazardous constituents shall be consistent with those specified in the Permittee's State Operating Permit # MO 0117331.
 3. After Department approval of the revised SAP incorporating the surface water monitoring program, the Permittee shall initiate the surface water sampling concurrently with the first groundwater sampling event performed under the approved revised SAP and this Permit.
 4. Reporting and analysis 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 Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition II.F. Analysis of the data/information shall be done as part of the comprehensive evaluation that is required in the Annual Groundwater Corrective Action Report.
- B. The Permittee may, at any time during the post-closure care period, make a demonstration to the Department for a surface water monitoring exemption. This demonstration shall be certified by an independent geologist or professional engineer registered in the state of Missouri, as

described in 10 CSR 25-7.264(2)(F)4. A successful demonstration for such an exemption would, at a minimum, have to adequately address the elements of 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.

IV. Identification of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs)

- A. On October 18, 1987, the U.S. EPA and KMCLLC-FPD finalized a RCRA 3008(a) Consent Order that required a Groundwater Assessment Plan (GAP). The GAP was approved by U.S. EPA on October 4, 1988. Subsequent to finalizing the work prescribed in the RCRA 3008(a) Consent Order, U.S. EPA issued a 3008(h) Consent Order in May 1988. The RCRA 3008(h) Consent Order No. 7-88-H-0019 was finalized between U.S. EPA and KMCLLC-FPD on November 17, 1988. The Consent Order required that KMCLLC-FPD undertake a program to design, construct and operate applicable corrective action technologies to remediate any and all groundwater impacts originating from the facility. The program consisted of two phases: the performance of a RFI, and the performance of a CMS. The types of contaminants found previously at the facility include wastewater and wastewater sludges containing K001 constituents, as well as creosote, gasoline, and diesel fuel.
- B. Historical contamination source areas present at the facility include the production process area, the pre-RCRA original cell, the historic black-tie storage area, and the former land farm. The general location of the SWMUs is illustrated on Figure 2. For the purpose of environmental monitoring and remediation, they are grouped as follows:

SWMU I - The production process area including:

1. Production process oil/water separator,
2. Fuel storage area,
3. Creosote storage tanks and tailwater sump,
4. Drip track,
5. Process tank contained in a concrete vault.

SWMU II – The Pre-RCRA original cell. This was operated prior to KMCLLC-FPD ownership of the facility, and was closed in 1973 when new Impoundment 1 was constructed.

SWMU III - The historical black-tie storage area.

SWMU IV- The former land farm. In 1979, KMCLLC-FPD established an experimental land treatment unit (land farm) to treat waste during the closure of a wastewater impoundment. Creosote sludge was applied to the land farm from 1979 to 1981. The closed land farm is a former interim status hazardous waste management unit that closed with waste in place. No clay cap was used, with the purpose of further biodegradation of the creosote-based contaminants. Analytical results for land farm samples collected by the Department November 29, 2000, indicate that the surface soil has concentrations of creosote constituents that exceed current protective levels for industrial land use.

- C. The Permittee shall notify the Department prior to any future construction or excavation activities which disturb existing contamination at any SWMUs or other areas subject to institutional controls. This requirement will 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 necessitate further evaluation of site conditions at SWMUs with residual levels of contamination above corresponding regulatory thresholds at that time.

In the event any new information becomes available indicating that human health or the environment may be adversely impacted, the Permittee may be required to reevaluate any report previously approved by the U.S. EPA to determine the need for further corrective action for the aforementioned SWMUs/AOCs and any newly-identified SWMUs/AOCs and/or any release(s) from previously-identified SWMUs/AOCs, including off-site release(s), as specified in Special Permit Conditions V. and VI.

- V. Notification Requirements for and Assessment of Newly-Identified SWMU(s) and Areas of Concern (AOCs)

- A. The Permittee shall notify the Department and U.S. EPA in writing of any SWMU(s) or AOC(s), identified subsequent to the issuance of this Permit no later than fifteen (15) calendar days after discovery, or after discovery should have been made.

- B. The Department may require a SWMU/AOC Assessment Work Plan for conducting an investigation of the newly-identified SWMU(s) or AOC(s). Within thirty (30) calendar days after receipt of the Department's request for a SWMU/AOC Assessment Work Plan, the Permittee shall submit a SWMU/AOC Assessment Work Plan which shall include a discussion of past waste management practices at the unit, as well as a sampling and analysis program for groundwater, land, surface and subsurface strata, surface water and/or air, as necessary to determine whether a release of hazardous waste, including hazardous constituents from such unit(s) has occurred, or is occurring. The sampling and analysis program shall be capable of yielding representative samples and shall include monitoring parameters sufficient to assess the release of hazardous waste and/or hazardous constituents from the newly-identified SWMU(s)/AOC(s) to the environment. The SWMU/AOC Assessment Work Plan shall specify any data to be collected to provide for a complete SWMU/AOC Assessment Report, as specified below. The SWMU/AOC Assessment Work Plan shall contain a schedule for conducting the work specified therein.

- C. The SWMU/AOC Assessment Work Plan will be reviewed in accordance with the procedures set forth in Special Permit Condition XIX., Review and Approval Procedures. The Permittee shall implement the plan according to the schedule contained therein, after it is approved by the Department.

- D. The Permittee shall submit a newly-identified SWMU/AOC Assessment Report to the Department and U.S. 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 from implementation of 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/AOC:
 - 1. The location of the newly-identified SWMU/AOC in relation to other SWMU(s)/AOC(s);

 - 2. The type and function of the unit;

3. The general dimensions, capacities, and structural description of the unit;
 4. The period during which the unit was operated;
 5. The physical and chemical properties of all wastes that have been or are being managed at the SWMU/AOC, to the extent available;
 6. The results of any sampling and analysis conducted;
 7. Past and present operating practices;
 8. Previous uses of area occupied by the SWMU/AOC;
 9. Amounts of waste handled; and
 10. Drainage areas and/or drainage patterns near the SWMU(s)/AOC(s).
- E. The Permittee shall prepare and submit a SWMU Assessment Report on the land farm within 120 days of the effective date of this Permit. It shall be prepared in accordance with Special Permit Conditions V.D.
- F. The SWMU/AOC Assessment Report will be reviewed in accordance with the procedures set forth in Special Permit Condition XXI., Review and Approval Procedures. Based on the findings of this report, the Department will determine the need for further investigations, including stabilization, a RFI and/or a CMS, at specific unit(s) identified in the SWMU/AOC Assessment Report.
- G. If the Department determines that additional investigations are needed, the Department may require the Permittee to prepare and submit for approval work plan for such investigations. This work plan for additional investigations shall contain a schedule for conducting the work specified therein and will be reviewed and approved in accordance with the procedures set forth in the Review and Approval Procedures, Special Permit Condition. The Permittee shall implement the approved plan in accordance with the schedule contained in the plan.

VI. Notification Requirements for and Assessment of Newly-Identified Releases from Previously-Identified SWMUs and AOCs

- A. The Permittee shall notify the Department and U.S. EPA, in writing, of any newly-identified release(s) of hazardous waste, including hazardous constituents, from previously-identified SWMUs and AOCs discovered during the course of groundwater monitoring, field investigation, environmental auditing, or other activities undertaken after issuance of this Permit, no later than 15 days after discovery, or after discovery should have been made.
- B. The Department may require a Newly-Identified Release Work Plan for conducting an investigation of the newly-identified release(s). Within 30 days after receipt of notice that the Department requires a Newly-Identified Release Work Plan, the Permittee shall submit a Newly-Identified Release Work Plan which shall include a discussion of the waste/chemical management practices related to the release; a sampling and analysis program for groundwater, land surface and subsurface strata, surface water or air, as necessary to determine whether the release poses a threat to human health or the environment. The sampling and analysis program shall be capable of yielding representative samples and shall include monitoring parameters sufficient to assess the release of hazardous waste and/or hazardous constituents to the environment. The Newly-Identified Release Work Plan shall contain a schedule for conducting the work contained therein and shall specify any data to be collected to provide for a complete Newly-Identified Release Report, as specified below.
- C. The Newly-Identified Release Work Plan will be reviewed and approved in accordance with the procedures set forth in the Review and Approval Procedures, Special Permit Condition XXI. Upon approval thereof by the Department, the Permittee shall implement the approved plan in accordance with the schedule contained in the plan.
- D. The Permittee shall submit a Newly-Identified Release Report to the Department and U.S. 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 during implementation of 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 any other SWMU(s)/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 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; and
 9. Drainage areas and/or discharge patterns near and at the location of the release.
- E. The Newly-Identified Release Report will be reviewed in accordance with the procedures set forth in Special Permit Condition XXI., Review and Approval Procedures. Based on the findings of the report and any other available information, the Department will determine the need for further investigation, including stabilization, an RFI, and/or a CMS.

VII. Interim/Stabilization Measures

- A. If the Permittee becomes aware of a situation that may require interim/stabilization measures (ISMs) to protect human health and the environment, the Permittee shall notify the Department and U.S. EPA within 24 hours of the time the Permittee becomes aware, or should have become aware of the situation.
- 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 waste, including 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 will determine the specific action(s) that shall be taken to implement ISMs, including potential permit modifications, and the schedule for implementing the stabilization requirements and will inform the Permittee of decisions regarding the action(s) in writing. This requirement shall not preclude the Permittee from responding to an emergency situation without direction of the Department.

- C. If, at any time, the Permittee determines or should have known that the stabilization program is not effectively limiting or stopping the further spread of contamination, the Permittee shall notify the Department and U.S. EPA in writing no later than ten (10) days after such a determination is made. The Department may require that the stabilization program be revised to make it 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 or potential releases present minimal human health and environmental exposure concerns and/or the proposed remedial solution is relatively uncomplicated, the Permittee may propose ISMs for review and approval by the Department according to the procedures set forth in the Review and Approval Procedures, Special Permit Condition XXI. These ISMs shall be consistent with and may supplement and/or satisfy the requirements for a final remedy(s) in specific areas. Proposed ISMs which are determined by the Department to be significant (e.g., those which are anticipated to comprise a substantial portion of the final remedy) may be subject to public review and comment prior to final approval by the Department.

VIII. RCRA Facility Investigation (RFI) Work Plan

- A. Pursuant to the requirements of the Consent Order, KMCLLC-FPD submitted an RFI Work Plan. U.S. EPA approved the RFI Work Plan on December 5, 1989. The RFI objectives were to supplement and verify existing information, characterize the contaminant sources, and identify any potential receptors to facility releases. Implementation of the approved RFI Work Plan began on January 29, 1990.
- B. If the Department determines that further investigations are needed for newly-identified SWMUs/AOCs and/or new releases from previously-

identified SWMUs/AOCs pursuant to Special Permit Conditions IV. and V., the Permittee shall be notified of this determination in writing. The Department may require the Permittee to prepare and submit an RFI Work Plan for such investigations. If an RFI Work Plan is required, the Permittee shall submit it within 60 days of receipt of the notice. The RFI Work Plan shall contain provisions which are designed to meet the following objectives:

1. Full characterization of the nature, vertical and horizontal extent, and rate of migration of releases of hazardous waste and/or hazardous constituents from a newly-identified SWMU/AOC or groups of SWMUs/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 which may be utilized to substantiate future corrective action decisions.
- C. The content of 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 most recent version of the RCRA Facility Investigation Guidance; EPA 530/ SW-89-031. At a minimum, the RFI Work Plan shall detail all proposed activities and procedures to be conducted at the facility, a description of current conditions, the schedule for implementing and completing such investigations, and for submission of reports (including the final RFI Report), the qualifications of personnel performing or directing the investigations, including contractor personnel, and the overall management of the RFI.
- D. 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 the RFI objectives, sampling procedures, analytical methods, field and laboratory quality control samples, chain-of-custody procedures and data review, validation and reporting procedures.
- E. The Permittee shall prepare and maintain a health and safety plan during the project that assures the RFI activities are conducted in a manner that is protective of human health and the environment.
- F. Due to the complexity of defining the extent of contamination, the Permittee may be required to use a phased approach which requires the submittal of supplemental RFI Work Plans.

- G. The RFI Work Plan(s) will be reviewed in accordance with the procedures set forth in the Review and Approval Procedures, Special Permit Condition XXI. The Permittee shall initiate implementation of the plan(s) within 60 days of departmental approval and shall complete implementation in accordance with the schedules contained in the plan(s).

IX. RCRA Facility Investigation (RFI) Report

- A. The RFI Final Report prepared pursuant to the requirements of the 3008(h) Consent Order was submitted July 1, 1992, and approved by EPA on August 21, 1992. The Permittee shall submit any additional RFI Report required by this Permit to the Department and U.S. EPA in accordance with the schedule contained in the corresponding approved RFI Work Plan. 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/AOCs. The information presented in the RFI Report shall be presented in a form that is consistent with Section 5 of the most recent version of the U.S. EPA publication entitled, RCRA Facility Investigation Guidance; EPA 530/SW-89-031.
- 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 stabilization and/or corrective measures may be necessary. The RFI Report shall describe the procedures, methods, and results of all investigations of SWMUs/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/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/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/AOCs;
 5. Assessment of potential risks to the human and environmental receptors (e.g., Baseline Risk Assessment) exposed to release(s) from SWMUs/AOCs.;
 6. Extrapolations of future contaminant movement 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 stabilization measures previously implemented;
 10. A plan for groundwater monitoring from the time of RFI approval until such time as this Permit is modified to implement a 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 Special Permit Condition II.E.; and
 11. Evaluation of data quality which may affect the nature and scope of a Corrective Measures Study Work Plan as well as the evaluation of corrective measure alternatives thereunder (e.g., identification of any potential bias in the RFI data, and documentation of its precision, accuracy, presentativeness, completeness, comparability, validation, etc.)

- C. The RFI Report will be reviewed in accordance with the procedures set forth in Review and Approval Procedures, Special Permit Condition XXI. 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 by the Department, the Department shall advise the Permittee as to the next step in the corrective action process which may include submittal of a CMS Work Plan pursuant to Special Permit Condition X.

X. Corrective Measures Study (CMS) Work Plan

- A. The Permittee prepared and submitted a CMS Work Plan to U. S. EPA on November 25, 1992, which was approved by U.S. EPA on March 26, 1993. On November 8, 1993, the U. S. EPA provided comments on a CMS Report which was submitted July 19, 1993, and requested revisions and additional soil assessment in the Pre-RCRA impoundment. KMCLLC-FPD submitted a written response to U.S. EPA's comments and a work plan to address the additional data collection. The soil assessment was conducted in April 1994, and the resulting report, "Soil Characterization and Source Potential of the Pre-RCRA Cell," was submitted November 10, 1994.
- B. If the Department determines that a release(s) of hazardous waste and/or hazardous constituents from newly- and/or previously-identified SWMUs/AOCs pursuant to Special Permit Conditions V. and VI., may present a threat to human health or the environment, the Department may require the Permittee to prepare and submit a CMS Work Plan and will notify the Permittee in writing of this decision. This notice will identify the hazardous constituent(s) of concern and may specify remedial alternatives to be evaluated by the Permittee during the CMS.
- C. The Department may require the Permittee to identify and evaluate, as part of the CMS, one or more specific potential remedies for removal, containment, and treatment of hazardous waste, including 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 protection of human health and the environment.

- D. The Permittee shall submit a CMS Work Plan to the Department and U.S. EPA within 45 days of notification of the requirement to conduct a CMS. The CMS Work Plan shall be consistent with guidance contained in the U.S. EPA document entitled: RCRA Corrective Action Plan (Final), May 1994, OSWER Directive 9902.3-2A. At a minimum, any CMS Work Plan required by this Permit shall include an implementation schedule and shall provide the following information, as appropriate:
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 which 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.
- E. The Department will review and approve any CMS Work Plan required by this Permit in accordance with the procedures set forth in Review and Approval Procedures, Special Permit Condition XXI. The Permittee shall implement the approved plan in accordance with the schedule contained in the plan.

XI. Corrective Measures Study (CMS) Report

- A. The Permittee prepared and submitted a draft CMS Report on July 19, 1993, to U.S. EPA and the Department. The U.S. EPA provided

comments on November 8, 1993, and requested revisions including additional soil assessment in the Pre-RCRA impoundment. The soil evaluation of the Pre-RCRA impoundment was conducted in April 1994, and the results were reported in "Soil Characterization and Source Potential of the Pre-RCRA Cell," submitted November 19, 1994. A revised CMS Report was submitted to U.S. EPA on January 4, 1995, and was approved on March 31, 1995. The land farm identified for further assessment in Special Permit Condition V. was not addressed in the approved revised CMS Report.

- B. If the Department determines that a CMS Report is necessary to address a release(s) of hazardous waste and/or hazardous constituents from newly- and/or previously-identified SWMUs/AOCs pursuant to Special Permit Conditions V.E. and VI.E., or the performance of any long-term final remedy established pursuant to Special Permit Condition XII., the Permittee shall submit a CMS Report to the Department and the U.S. EPA according to the schedule contained in the approved CMS Work Plan. The CMS Report shall present all information gathered under the approved CMS Work Plan and shall be consistent with guidance contained in the U.S. EPA document entitled, RCRA Corrective Action Plan (Final), May 1994, OSWER Directive 9902.3-2A. The CMS Report shall summarize the results of the investigations for each remedy studied and of 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 cleanup of the hazardous waste or hazardous constituents released from the SWMU(s)/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 remedy and rationale for selection; and

6. Assessment of institutional requirements, such as state or local permit requirements, or other environmental or public health requirements which may substantially affect implementation of the remedy.
- C. The CMS Report shall contain adequate information to support the Department in the remedy approval decision-making process.
 - D. The CMS Report will be reviewed in accordance with the procedures set forth in Review and Approval Procedures, Special Permit Condition XXI. Upon approval thereof by the Department, the Department will approve a final remedy as specified in Special Permit Condition XII.

XII. Final Remedy Approval

Following the approval of the CMS Report or equivalent, the Department will prepare a Statement of Basis (SB) summarizing the corrective measures alternatives that were evaluated by the Permittee, including justification for the proposed final remedy identified by the Permittee in the CMS Report.

Following preparation of the SB by the Department, a permit modification will be initiated pursuant to 40 CFR 270.41 or 270.42(c), as applicable, to implement the proposed final remedy.

Upon completion of the public participation activities associated with the permit modification to implement the proposed final remedy, the Department will approve a final remedy that will: (1) be protective of human health and the environment; (2) 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 might pose a threat to human health and the environment; and (3) meet all applicable federal, state, and local laws and regulations.

The final remedy at the facility consists of the following:

Impacted soils were removed from the three impoundments that were operated as hazardous waste management units, and from the Pre-RCRA impoundment (cell), and replaced with clean fill and a clay cap with vegetated cover during closure.

Four groundwater interceptor trenches, and additional recovery wells were installed between 1985 and 1996 as corrective measures. This system removes contaminated groundwater and provides control of the plume to prevent any additional off-site migration.

A wastewater treatment system that reclaims creosote from the recovery trenches and wells, in addition to recycling production process wastewater. The process includes primary oil/water separation and secondary oil/water separation with the addition of chemical flocculent to break down emulsified oil/water mixtures. Five recovery wells and a trench were installed in 1985 along the northeast property boundary to prevent contaminated groundwater from the former impoundments from migrating off site. The first source abatement well (RW-14) was installed in July 1991, with additional recovery wells added in August 1995. The system recovered over 6.7 million gallons of contaminated groundwater in 1999.

Engineering and institutional controls including deed and groundwater restrictions. Restricted use applies to the surveyed areas recorded on the deed including the area where the impoundments are capped and the SWMUs/AOCs.

Maintaining facility security, including fencing, on-site supervision, and continued groundwater recovery and monitoring.

XIII. Construction Completion Report

Within 150 calendar days of the effective date of this Permit, the Permittee shall submit a Construction Completion Report to the Department and U.S. EPA to document construction of corrective measures at the facility. The Department will not formally approve the report, but will acknowledge receipt and provide comments as needed. This report shall be a summary of the as-built plans for all interim measures/corrective measures that comprise the final remedy. This includes details on trenches, extraction wells, associated piping, any treatment process to recover contaminants or product, containment devices, sumps, and any other measures that are part of the final remedy.

XIV. Long Term Operation, Maintenance, and Monitoring Plan

Within 150 calendar days of the effective date of this Permit, the Permittee shall submit a Long Term Operation, Maintenance, and Monitoring Plan to the

Department and U.S. EPA for approval as per Special Permit Condition XXI. The Long Term Operation, Maintenance, and Monitoring Plan shall address the following:

- A. Engineering and institutional controls that will provide that any real property identified as a source area at the facility shall not be used in any manner that would interfere with or adversely affect the integrity or protectiveness of the final remedy that has been implemented. These controls shall include, but not be limited to, the following restrictions:
1. Public access to all closed impoundments and SWMUs/AOCs shall be prevented by appropriate means such as fences and other security measures.
 2. Any future construction or maintenance activities involving excavation of any contaminated soil shall include internal Permittee controls consistent with Occupational Safety and Health Administration (OSHA) requirements regarding appropriate worker exposure protection and shall provide for the management of the soil according to federal, state, and local regulations.
 3. Buildings, caps, structures, and pavement that currently cover contaminated soil shall not be removed or altered unless the Permittee has provided for alternative corrective measures to protect human health and the environment, and has the prior approval of the Department.
 4. Groundwater beneath the facility property shall not be used as a water supply for any purpose.
 5. Unless previously approved by the Department, the areas with institutional controls may not be used for any purpose other than of adult workers in industrial, construction, and maintenance activities consistent with the exposure assumptions in the approved CMS.
- B. Provisions to provide for the continuation of appropriate engineering and institutional controls in the event of a permit transfer, a transfer of custody or control between KMCLLC-FPD, and/or the conveyance of any interest in real property that is currently part of the facility, including but not limited to, fee interests, leasehold interests, and mortgage interests. After the Long Term Operation, Maintenance, and Monitoring Plan is approved

by the Department, these provisions shall be recorded in the Recorder's Office of Greene County, State of Missouri, and proof of the recording provided to the Department within 30 days of such recording.

- C. The Permittee shall evaluate, every five years, the availability and viability of innovative treatment technologies and their potential application to areas of high contaminant concentrations in groundwater with the objective of meeting the GPS. These evaluations shall be reported every fifth year as part of the March 1 Annual Groundwater Corrective Action Report, required by Special Permit Condition II.F.
- D. The operation and maintenance procedures for all elements/components of the final remedy, including the replacement schedule for equipment and installed components. All monitoring to be performed to determine effectiveness of the final remedy in meeting the GPS in Table I. Periodic soil sampling and analysis to evaluate attenuation/biodegradation of soil contamination in excess of industrial levels in any areas that are not covered with a protective engineered cap.

The Long Term Operation, Maintenance, and Monitoring Plan shall be reviewed and approved in accordance with Special Permit Condition XXI. Any future changes, updates, revisions made to the approved Long Term Operation, Maintenance, and Monitoring Plan shall be submitted to the Department for approval as per Special Permit Condition XXI.

XV. Certification of Completion of Corrective Measures

- A. At such time as the Permittee believes that all the corrective measures (i.e., cleanup) have been completed, the Permittee shall submit a Corrective Measures Completion (CMC) Report to the Department and U.S. EPA. The CMC Report shall contain a summary of corrective measures activities conducted at the facility and a detailed description of any long-term operation and maintenance and/or monitoring program associated with the corrective measures.

To verify completion of corrective measures for groundwater, the Permittee shall demonstrate in the CMC Report that groundwater contaminant levels have not exceeded the GPS maximum concentration limits specified on Table I in Special Permit Condition II.A. for a period of three consecutive years at and beyond the point of compliance.

The CMC Report will be reviewed and approved in accordance with the procedures set forth in Special Permit Condition XXI., Review and Approval Procedures.

- B. Elements of the final remedy may require extended time periods to complete. The Permittee shall summarize remedy implementation progress and provide data obtained during remedy implementation in the Annual Groundwater Corrective Action Reports required by Special Permit Condition II.F. Any short-term completion of corrective action activities (interim measures) shall also be summarized in the Annual Groundwater Corrective Action Reports.
- C. The certification of completion of corrective measures shall always be tied to Department approval of the final CMC Report. Within 60 calendar days of Departmental approval of the CMC Report documenting completion of all corrective action pursuant to Special Permit Condition XV., the Permittee shall submit to the Department and U.S. EPA, by registered mail, a written certification stating that the final remedy has been completed as approved by the Department. The certification shall be signed by the Permittee and an independent professional engineer registered in the state of Missouri.

XVI. Deed Notation and/or Deed Restriction Requirements

- A. Within 60 calendar days of the effective date of this Permit, the Permittee shall submit to the Department for approval, a draft notice that will be filed with the Recorder of Deeds for Greene County, Missouri, that contains two figures or maps drawn to scale, illustrating the approximate boundaries of each SWMU/AOC for which levels of contamination in soil and groundwater at the facility exceed background concentrations and/or other regulatory cleanup guidance criteria/standards. One figure shall illustrate the soil contamination, and the other shall illustrate the groundwater contamination. The type, location, and concentrations of hazardous waste and/or hazardous constituents shall be noted on the figures. Both figures shall indicate the approximate location and dimensions of each SWMU/AOC with respect to identifiable landmarks and permanently surveyed benchmarks. The Department will review and approve the draft notice in accordance with Special Permit Condition XXI.
- B. Within 60 calendar days of the Department's approval of the draft notice described in Special Permit Condition XVI.A. above, the Permittee shall:

1. Record, in accordance with state law, the approved notice 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 on the property.
 2. Provide to the Department proof that the approved notice has been recorded with the local zoning authority, or the authority with jurisdiction over local land use.
- C. Within 120 calendar days of the Department approval of the draft notice (within 60 days of recording the notice), the Permittee shall provide a notarized statement certifying that the approved notice specified in paragraph A of this section has been recorded, including a copy of the document in which the notation has been placed, to the Department.

XVII. Transfers

Prior to 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 incorporate such other requirements as necessary to continue the engineering and institutional controls, as well as ongoing remediation and corrective action. The Permittee shall provide to the Department and the potential new owner/lease holder at least 30 days prior to the property transfer, an updated version of the two figures required by Special Permit Condition XVI.A. illustrating the remaining levels of soil and groundwater contamination. The revised figures shall be based on the most recent sampling data for soil and groundwater, and shall in no case be over six months old. If the site cleanup goals have been achieved prior to the transfer, the confirmation data that supports this shall also be submitted.

XVIII. Financial Assurance for Corrective Action

- A. Within 60 days of the effective date of this Permit, the Permittee shall submit a revised corrective action cost estimate to the Department for approval as per Special Permit Condition XXI. This estimate shall be itemized, giving the number of wells being sampled, the cost of operating the groundwater treatment system, laboratory analysis, and other associated costs.

- B. Within 60 days after the Department approval of the corrective action cost estimate, the Permittee shall submit the updated financial assurance.
- C. Within 90 days after this Permit has been modified to include any new or additional remedies, the Permittee shall provide an update in financial assurance to demonstrate an increase of funds sufficient to support all corrective action activities required under this Permit. The updated financial assurance shall be based on ongoing remedies at the facility, and on the cost estimates contained in the CMS Reports for the additional remedies.

XIX. Semi-Annual Progress Reports

- A. The Permittee shall submit to the Department and U.S. EPA signed semi-annual progress reports summarizing all permitted corrective action activities undertaken during each preceding calendar half-year (i.e., January through June and July through December). Each semi-annual progress report shall be due within 60 days following the last day of each reporting period (i.e., March 1, and September 1). Those progress reports may be combined with the Annual/Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition II.F.

The first semi-annual progress report shall be due within 60 days of the end of the six-month period in which this Permit becomes effective. The semi-annual progress reports shall continue to be submitted until such time as the Permittee's corrective action activities are complete. The semi-annual 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 required to be reported elsewhere in this Permit.

- B. Detailed technical information shall be submitted as part of the Annual/Semi-Annual Groundwater Corrective Action Reports required by Special Permit Condition II.F. and/or other reports (i.e., IM, RFI, CMS, etc.) required by this Permit. This detailed information need not be reproduced as part of the Permittee's semi-annual progress reports.
- C. Copies of other reports (e.g., inspection reports), information or data shall be made available to the Department and U.S. EPA upon request.

XX. Supplemental Data

All raw 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.

XXI. Review and Approval Procedures

- A. Following submission of any plan or report pertaining to corrective action activities (excluding the Annual/Semi-Annual Groundwater Corrective Action Report, semi-annual progress reports, and Corrective Measures Construction Completion Report), the Department will review and either approve or disapprove the plan or report in writing. If the Department does not approve the plan or report, the Department will notify the Permittee in writing of the plan's 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. The Permittee disagrees with any Department-initiated plan or report modifications, and a mutually acceptable resolution of such modifications cannot be informally reached, any appeal of the Department-initiated modifications shall be filed in accordance with Section 260.400, RSMo, and 10 CSR 25-8.
- D. Requests for extensions to the compliance dates associated with this Permit will be considered, and may be granted, on a case-by-case basis. Any extension request(s) must specify the proposed new compliance date

and must be accompanied by an explanation of the reason for the extension. The Department must receive extension requests at least 15 days prior to the originally scheduled compliance date.

XXII. Planned Activities

The Permittee shall comply with the schedule for planned groundwater monitoring, surface water monitoring, and corrective action activities as specified in this Permit and as summarized on Table III attached hereto.

XXIII. Contingent Activities

- A. The Permittee shall comply, as necessary, with the schedule(s) for contingent activities as specified in the Standard and General Permit Conditions of this Permit.
- B. The Permittee shall comply, as necessary, with the schedule(s) for contingent corrective action activities as specified in the Special Permit Conditions of this Permit and as summarized in Table IV attached hereto.

XXIV. Submittal of Required Information

- A. The Permittee shall submit three copies of all reports, documents, or plans/specifications 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

- B. The Permittee shall submit two copies of all reports, documents, or plans/specifications required under the terms of this Permit to:

Chief, RCRA Corrective Action & Permits Branch
U.S. Environmental Protection Agency Region VII
Air, RCRA and Toxics Division
901 N. 5th Street
Kansas City, KS 66101

FACILITY SUBMISSION SUMMARY

Table III Summary of the required groundwater monitoring, surface water monitoring, and corrective action submittal requirements pursuant to the special conditions of this Permit.

SUBMITTAL REQUIREMENTS	DUE DATE	SPECIAL PERMIT CONDITION
Revise and resubmit the Groundwater SAP.	Within 60 calendar days of the effective date of this Permit.	II.D.6.
Annual/Semi-Annual Groundwater Corrective Action Reports	By March 1 and September 1 of each calendar year.	II.F.
Surface Water Monitoring Program incorporated into revised Groundwater SAP.	Within 60 calendar days of the effective date of this Permit.	III.
SWMU Assessment Report for the land farm.	Within 120 calendar days of the effective date of this Permit.	V.
Construction Completion Report	Within 150 calendar days of the effective date of this Permit.	XIII.
Long Term Operation, Maintenance, and Monitoring Plan	Within 150 calendar days of the effective date of this Permit.	XIV.
Certification of Completion of Corrective Measures	At such time as the Permittee believes that all corrective measures have been completed.	XV.

SUBMITTAL REQUIREMENTS	DUE DATE	SPECIAL PERMIT CONDITION
Deed Notation and/or Deed Restriction Requirements	Submit draft notices within 60 calendar days of the effective date of this Permit; record notices and/or restrictions within 60 days of Department approval; and provide notarized certification within 60 days of recording.	XVI.
Revised cost estimate for corrective action	Within 60 calendar days of the effective date of this Permit.	XVIII.A.
Updated financial assurance for corrective action	Within 60 days after Department approval of the revised cost estimate.	XVIII.B.

Table IV Summary of the contingent corrective action submittal requirements pursuant to the special conditions of this Permit.

SUBMITTAL REQUIREMENTS	DUE DATE	SPECIAL PERMIT CONDITION
RFI Work Plan	Within 60 calendar days of notice by the Department that an RFI Work Plan is required.	VIII.
RFI Report	According to the schedule in the approved RFI Work Plan.	IX.
CMS Work Plan	Within 45 calendar days of notice by the Department that a CMS is required.	X.
CMS Report	According to the schedule in the approved CMS Work Plan.	XI.
Transfers	Submit revised figures showing current soil and groundwater contamination at least 30 days prior to transfer.	XVII.
Funding Documentation for New or Additional Remedies	Within 90 calendar days of a permit modification for any new or additional remedies.	XVIII.C.

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FIGURE 1. Point of Compliance Wells

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FIGURE 2. Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs)

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Please see hard copy.**