

Five Year Review Report

First Five Year Review Report for the South 8th Street Landfill Superfund Site West Memphis, Crittenden County, Arkansas



**U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2722**

June 2004

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First Five Year Review Memorandum

**South 8th Street Landfill Superfund Site
EPA ID# ARD980496723
West Memphis, Crittenden County, Arkansas**

This U.S. Environmental Protection Agency memorandum documents the performance, determinations, and approval of the South 8th Street Landfill Superfund Site Five Year Review, including the attached Five Year Review Report prepared by the EPA.

Summary of Five Year Review Findings

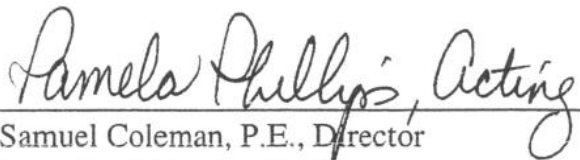
This is the first Five-Year Review of the South 8th Street Landfill Superfund Site (Site) located in West Memphis, Crittenden County, Arkansas. The results of the Five-Year Review indicate the remedy is protective of human health and the environment and the remedial goals have been met for the Site. The remedial actions were completed as set forth in the 1994 Record of Decision (ROD) and the 1998 ROD Amendment. The Site institutional controls have been implemented by the landowner as set forth in the Consent Decree entered by the U.S. District Court for the Eastern District of Arkansas on December 12, 2000.

Actions Needed

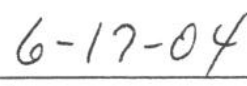
No deficiencies were noted that impact the protectiveness of the remedy, and there are no other routine operation and maintenance requirements for this site.

Determinations

I have determined that the remedy for the South 8th Street Landfill Superfund Site, West Memphis, Crittenden County, Arkansas, is protective of human health and the environment,



Samuel Coleman, P.E., Director
Superfund Division (6SF)
U.S. Environmental Protection Agency Region 6



Date

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CONCURRENCES

First Five Year Review

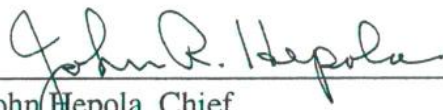
**South 8th Street Landfill Superfund Site
EPA ID# ARD980496723**

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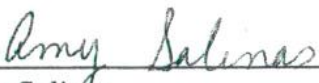
Date: 6-4-2004

By: 
Gustavo T. Chavarria, Chief
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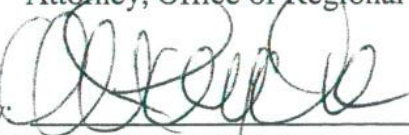
Date: 6-8-04

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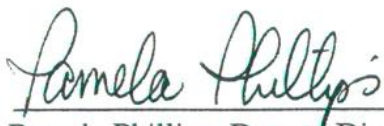
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FIVE YEAR REVIEW REPORT

**FIRST FIVE YEAR REVIEW REPORT
for
SOUTH 8TH STREET LANDFILL SUPERFUND SITE
WEST MEMPHIS, CRITTENDEN COUNTY, ARKANSAS**

JUNE 2004

PREPARED BY:

**REGION 6
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
DALLAS, TEXAS**

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LIST OF ACRONYMS

| | |
|--------|---|
| ADEQ | Arkansas Department of Environmental Quality |
| ARARs | Applicable or Relevant and Appropriate Requirements |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| EPA | United States Environmental Protection Agency |
| MCL | Maximum Contaminant Levels |
| mg/L | milligrams per liter |
| µg/L | micrograms per liter |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NPL | National Priorities List |
| O&M | Operations and Maintenance |
| OSWER | Office of Solid Waste and Emergency Response |
| OU | Operable Unit |
| PAH | Polycyclic Aromatic Hydrocarbons |
| PCB | Polychlorinated biphenyls |
| PRP | Potentially Responsible Party |
| RA | Remedial Action |
| RI/FS | Remedial Investigation/Feasibility Study |
| ROD | Record of Decision |
| USC | Unconfined Compressive Strength |
| USC | United States Code |
| UCL | Upper Confidence Level |
| UAO | Unilateral Administrative Order |

Executive Summary

The first Five-Year Review of the South 8th Street Landfill Superfund Site (Site) in West Memphis, Crittenden County, Arkansas, was initiated in November 2003 and completed in June 2004. The results of the Five-Year Review indicate the remedy is protective of human health and the environment and the remedial goals have been met for the Site. The remedial actions were completed as set forth in the 1994 Record of Decision (ROD) and the 1998 ROD Amendment. No deficiencies were noted that impact the protectiveness of the remedy.

The Site consists of a source control and ground water operable units (OU). The source control OU consists of a 16 acre landfill which contained a 2.5 acre oily sludge pit and ancillary soils. The remedial action for the source control OU was completed in August 2000. The remedial action consisted of in-situ stabilization/solidification of 19,376 cubic yards of oily sludge waste and 20,372 cubic yards of ancillary soil, and the installation of a soil cover over the 4.28 acre area of treated material and an adjacent 2.7 acre area of the landfill in Area 1. Sampling during the remedial action confirmed that the in-situ stabilization/ solidification of the oily sludge pit and ancillary soils achieved the remedial goals and the chemical and physical performance standards specified in the 1998 ROD Amendment.

For the ground water OU, nine monitoring wells were sampled during eight sampling events in 2002 and the analytical results confirmed that the source area treatment and natural attenuation processes in the aquifer have reduced the metal concentrations below the remedial goals specified in the 1998 ROD Amendment. The nine groundwater monitoring wells were plugged and abandoned in June 2003.

There are no scheduled operation and maintenance requirements for this Site other than periodic site inspections to ensure that the institutional controls remain protective of human health. The stabilized/solidified waste in the former oily sludge pit does not require any maintenance and was designed to remain in-situ based on the stringent treatment standards. The soil cover on the landfill and treated oily sludge pit area does not require mowing or other vegetation control since the vegetation helps to reduce potential erosion during flooding events. The protective fence around the Site has been removed and a security gate at the entrance to the Site from South 8th Street was left in place at the request of the property owner to control access to the Site.

Institutional controls were implemented at the site to prevent exposure to ground water and the treated waste and landfill contents. The Consent Decree (Section V.9.a, Section IX.24.b) lodged in the U.S. District Court for the Eastern District of Arkansas in November 1999 and entered in December 2000, specified a property easement, running with the land, that (i) grants a right of access for the purpose of conducting any activity related to the Consent Decree or any

other activity related to implementing the ROD, including but not limited to, monitoring; and (ii) grants the right to enforce the land and water use restrictions listed in the Consent Decree to the United States, the State of Arkansas and its representatives, the other settling defendants, and other appropriate grantees. The land and water use restrictions specified in the property easement included: 1) the prohibition on the installation of water wells in the alluvial aquifer until the remedial goals for the ground water operable unit were achieved; these remedial goals were met for the Site in 2002; 2) the prohibition on the removal of vegetation from the landfill cover if such removal may result in the subsequent erosion or removal of the soil cover over the landfill or treated material; and 3) the prohibition on the excavation or trenching into the treated material, landfill contents, or the associated soil cover with some exceptions. The property easement was executed on March 6, 2001 by the William L. Johnson Co. The prohibition on further excavation into the treated material, landfill contents, or soil cover effectively prohibits further well installation at the site due to the site-wide presence of the landfill and the treated oily sludge pit. Inspection costs are funded through the cash-out payments made by a group of the settling Potentially Responsible Parties under the terms of the Consent Decree.

FIVE YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION

Site Name (from WasteLAN): South 8th Street Landfill

EPA ID (from WasteLAN): ARD980496723

EPA Region: 6

State: AR

City/County: West Memphis, Crittenden County

SITE STATUS

NPL Status: Final Deleted Other (specify) _____

Remediation Status (choose all that apply): Under Construction Operating Complete

Multiple OU: Yes No

Construction Completion Date: 9/30/2000

Has Site Been Put to Reuse: Yes No

REVIEW STATUS

Lead Agency: EPA State Tribe Other Federal Agency _____

Author Name: Vincent Malott

Author Title: Remedial Project Manager

Author Affiliation: U.S. EPA Region 6

Review Period: November 2003 - May 2004

Dates of Site Inspections: January 22, 2004, February 5, 2004, April 29, 2004

Type of Review: Statutory

Policy

Post-SARA Pre-SARA NPL-Removal

Non-NPL Remedial Action Site NPL State/Tribe Lead

Regional Discretion

Review Number: 1 (first) 2 (second) 3 (third) Other (specify) _____

Triggering Action: Actual RA On-Site Construction Actual RA Start at OU#

Construction Completion Previous Five-Year Review Report

Other _____

Triggering Action Date (from WasteLAN): 6/22/1999

Due Date (five years after triggering action date): 6/22/2004

Five Year Review Summary Form (continued)

Issues:

Issues affecting the performance of the completed remedial action at the Site were not identified during the Site inspections. The current redevelopment activities noted during the Site inspection are consistent with the property use restrictions identified for this Site.

Recommendations and Follow-up Actions:

Continue periodic inspections during future site redevelopment to ensure compliance with the Site institutional controls.

Protectiveness Statement:

Because the remedial actions at all OUs are protective, the site is protective of human health and the environment. Sampling data has confirmed that the remedial actions for the source control and ground water operable units have achieved the remedial goals and objectives set forth in the 1994 ROD and 1998 ROD Amendment. An exposure pathway does not exist for the treated waste material in the former oily sludge pit or the landfill contents and the Site risks have been eliminated or reduced below acceptable levels. The Site institutional controls are expected to prevent any future exposure pathway through the prohibition on excavations within the landfill area or treated material.

Other Comments:

No other comments.

**South 8th Street Landfill Superfund Site
West Memphis, Crittenden County, Arkansas
First Five Year Review Report**

I. Introduction

The purpose of this first Five-Year Review is to determine whether the remedy at the South 8th Street Landfill Superfund Site (Site) in West Memphis, Crittenden County, Arkansas is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in this first Five-Year Review Report. In addition, this report identifies issues found during the review, if any, and recommendations to address them.

The U.S. Environmental Protection Agency (EPA) has conducted this first Five Year Review pursuant to section 121 of the Comprehensive Environmental Response, Compensation & Liability Act (CERCLA), 42 U.S.C. §9621(c), which states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section 9604 or 9606 of this title, the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The agency interpreted this requirement further in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP); 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.

The triggering action for this review is the date for the start of the remedial action construction, as shown in the EPA’s WasteLAN database. Since the remedial action for the source control OU treated hazardous substances through in-situ stabilization/solidification, the treated waste still contains hazardous substances above levels that allow unlimited use and unrestricted exposure after completion of the remedial action. Pursuant to CERCLA Section 121(c) and as provided in the current guidance on Five Year Reviews [OSWER Directive 9355.7-03B-P, *Comprehensive Five-Year Review Guidance* (June 2001)], the EPA must conduct a statutory five-year review.

II. Site Chronology

| Table 1 Site Chronology | |
|------------------------------------|--|
| Date | Action |
| 1957 | Aerial photographs indicate that the Site was used for the disposal of waste material |
| 1960 - 1970 | Gurley Refining Company used the Site for the disposal of waste sludge from its re-refining process |
| 1979 | The Site was first brought to the attention of the United States Government in the Eckhardt Survey conducted by the House Congressional Sub-Committee on Interstate Commerce and Transportation. |
| 1981 - 1988 | EPA conducted a series of soil boring investigations of the oily sludge pit and surrounding landfill areas. |
| 8/1991 | A Hazard Ranking System package was prepared in August 1991. |
| 02/07/1992 | The Site was proposed for listing on the National Priorities List (“NPL”) as the “West Memphis Landfill Site”. |
| 02/07/1992 | EPA issued a General Notice Letter/Information Request to 25 Potentially Responsible Parties (PRPs). |
| 03/18/1992 | EPA issued Special Notice Letters to 26 PRPs on March 18, 1992. |
| 05/23/1992 | EPA issued a Unilateral Administrative Order (UAO) to the PRPs (with the exception of the City of West Memphis). The UAO required the PRPs to construct a fence around the former disposal areas and to investigate the large oily sludge pit. |

| Table 1 Site Chronology | |
|------------------------------------|--|
| Date | Action |
| 07/1992 | PRPs completed construction of the fence around the Site. |
| 08/31/1992 | PRPs initiated the Remedial Investigation of the pit area. |
| 09/1992 | EPA took over the pit investigation and performed the Remedial Investigation/Feasibility Study (RI/FS) for the Site. |
| 10/14/1992 | The Site was listed final on the NPL as the “South 8th Street Landfill Site”. |
| 10/19/1992 - 11/04/1992 | EPA constructed a 1600 linear foot berm around the oily sludge pit under the CERCLA time-critical removal authority to minimize the spread of contamination that could result from flooding of the Site. |
| 06/30/1993 | EPA completes the site-wide RI/FS. |
| 07/27/1993 - 09/24/1993 | Public comment period for the Proposed Plan. |
| 09/29/1994 | EPA signed a ROD dividing the Site into a source control operable unit and a ground water operable unit. A remedy was selected for the source control operable unit and a remedy decision was postponed on the ground water pending further investigation. |
| 07/17/1995 | EPA provided notice of its intent to conduct a pilot Superfund cost allocation project at the Site as part of EPA’s Superfund Administrative Reform Initiative. |
| 03/01/1996 | EPA and a group of generator PRPs known as the South 8th Street Group entered into an Administrative Order on Consent to conduct the remedial design for the source control operable unit remedy selected in the 1994 ROD. |
| 1996 | PRPs conduct field activities in support of the 1994 ROD remedy and an alternative in-situ remedy proposed by the PRPs. |
| 09/30/1997 | EPA completes the RI/FS for the ground water operable unit. |
| 11/07/1997 | PRPs submit the final remedial design plans. |

| Table 1 Site Chronology | |
|------------------------------------|---|
| Date | Action |
| 01/05/1998 - 02/04/1998 | Public comment period for the Proposed Plan amending the source control remedy and proposing a ground water remedy. |
| 07/22/1998 | EPA signed a ROD amending the remedy for the source control operable unit and selecting a remedy for the ground water operable unit. |
| 08/26/1998 | EPA approves final remedial design plans. |
| 11/18/1998 | EPA issued a Unilateral Administrative Order (UAO) to the PRPs for implementation of the remedial action at the oily sludge pit. |
| 06/22/1999 | The PRP's remedial construction contractor began mobilization to the Site. |
| 11/23/1999 | A Consent Decree was lodged with the U.S. District Court for the Eastern District of Arkansas for implementation of the source control operable unit remedy by the settling PRPs. |
| 08/11/2000 | PRPs complete remedy construction activities. |
| 08/22/2000 | EPA and ADEQ conduct final inspection. |
| 09/19/2000 | EPA signs Preliminary Close Out Report. |
| 12/12/2000 | The Consent Decree was entered by the U.S. District Court for the Eastern District of Arkansas. |
| 12/31/2001 | EPA approves Remedial Action Report for the source control and ground water operable units. |
| 01/2002 - 11/2002 | EPA conducts ground water sampling to demonstrate effectiveness of the monitored natural attenuation remedy for the ground water operable unit. |
| 06/09/2003 | EPA signs Final Remedial Action Report documenting the attainment of all cleanup goals. |
| 09/25/2003 | EPA signs Final Close Out Report. |

III. Background

Physical Characteristics

The Site is a 16.3 acre landfill on the flood plain between the Mississippi River and the St. Francis Levee in West Memphis, Crittenden County, Arkansas (Figure 1). The Site is located at the southern end of 8th Street adjacent to the Tom Sawyer RV Park. Two barge terminals are located on the bank of the Mississippi River at the midpoint and south end of the Site (Figure 2). Flooding of the Site is common between the months of November through June to a maximum depth of 15 feet. Aerial photographs indicate that the Site was excavated for gravel deposits resulting in a series of borrow pits that were subsequently used for the disposal of industrial and municipal wastes. The former unpermitted landfill area is subdivided into three separate disposal areas as shown on Figure 2. Area 1 (4.3 acres) consists primarily of a former municipal waste landfill. Area 2 (8.1 acres) is predominately an industrial waste landfill with a large oily sludge pit occupying 2.5 acres of the area. Area 3 (3.9 acres) consists of several smaller municipal and industrial waste disposal areas.

Land and Resource Use

The Site is flanked by bottom land forest along the western boundary and the Tom Sawyer RV park to the north. The central area of the Site, which contained the former oily sludge pit, is now occupied by an elevated, flat-topped mound containing the treated waste material. Property redevelopment efforts are currently centered around this elevated mound area as fill material has been brought in to raise the surrounding ground elevation consistent with the top of the mound. When completed, the central area of the Site is expected to be above the flood level of the Mississippi River and will provide an all-weather surface for barge unloading operations. A security gate restricts access to the Site from South 8th Street. A security fence has been erected around the southern barge terminal to further restrict access. Another security gate restricts access to the elevated roadway connecting the barge terminal located at the mid-point of the Site. There are currently no residential or industrial populations within the Site boundaries.

Land use immediately west of the St. Francis Levee consists of industrial/petroleum storage facilities. Residential areas are located immediately west of the industrial/petroleum facilities, approximately ½ mile northwest of the Site. An estimated 30,000 people live within 4 miles of the Site.

The Site is located on a flood plain clay deposit ranging in thickness from 5 feet to 15 feet at the surface. Below this clay unit, the sediments consist of clayey silts with minor amounts of sand and gravel to an approximate depth of 20 feet to 30 feet below ground surface. The clayey silts grade downward into a fine sand that continues to coarsen with depth into a basal gravel

layer. The Jackson Clay is a local confining unit that underlies the alluvial aquifer and is present at an approximate depth of 120 to 150 feet beneath the ground surface.

Ground water levels, flow direction, and the hydraulic gradient in the unconfined alluvial aquifer fluctuate seasonally with the rise and fall of the adjacent Mississippi River. The ground water table varies between 5 feet and 30 feet below the ground surface. The ground water flows toward the river during the low river stage and the flow direction is reversed during seasonal flooding events at the Site. The ground water aquifer beneath the Site has not been used as a drinking water source. However, the aquifer has been used at the adjacent RV park as a source of water for maintaining the water level in a number of surface ponds and for other non-potable uses.

History of Contamination

Aerial photographs indicate that the Site was used for the disposal of waste material after 1957. Most of the early disposal activities appear to have been conducted on a 2.61 acre parcel of land (Area 2) leased by Mr. W. M. Gurley from the W. L. Johnson Company. Apparently, Gurley Refining Company used the Site (Area 2) between approximately 1960 and 1970 for the disposal of waste sludge from its re-refining process located west of the St. Francis Levee. The sludge waste in the pit has physical and chemical properties similar to material typically identified at oil reclamation facilities.

Initial Response

The Site was first brought to the attention of the United States Government in 1979 in the Eckhardt Survey conducted by the House Congressional Sub-Committee on Interstate Commerce and Transportation. In this survey, the landfill was listed as the West Memphis Landfill Site, South 8th Street.

Between 1981 and 1988, the EPA conducted a series of soil boring investigations of the oily sludge pit and surrounding landfill areas. Polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), benzene, toluene, ethylbenzene, xylene, pesticides, and heavy metals were detected in the samples.

A Hazard Ranking System package was prepared in August 1991. The Site was proposed for listing on the National Priorities List (NPL) as the "West Memphis Landfill Site" on February 7, 1992 (57 Fed. Reg. 4,827). The Site was listed final on the NPL as the "South 8th Street Landfill Site" on October 14, 1992 (57 Fed. Reg. 47,184).

EPA issued a General Notice Letter/Information Request to 25 Potentially Responsible Parties (PRPs) on February 7, 1992. The EPA evaluated the responses received and subsequently

issued Special Notice Letters to 26 PRPs on March 18, 1992. Additional PRPs were added to the initial list of PRPs based on information received from PRPs who responded to the February 7, 1992, Information Request.

The EPA issued a Unilateral Administrative Order (UAO) to the PRPs (with the exception of the City of West Memphis) on May 23, 1992. The UAO required the PRPs to construct a fence around the former disposal areas and to investigate the large oily sludge pit. Construction of the fence was completed in July 1992. Although the PRPs initially undertook the pit investigation on August 31, 1992, the EPA took over the pit investigation in September 1992 and performed the Remedial Investigation/Feasibility Study (RI/FS) for the Site.

The EPA constructed a 1600 linear foot berm around the oily sludge pit under the CERCLA time-critical removal authority to minimize the spread of contamination that could result from flooding of the Site. Construction of the berm was completed between October 19, 1992 and November 4, 1992. In May 1993, the EPA determined that the most efficient manner to address the oily sludge pit was to include the action as part of the remedial action for the entire Site.

Basis for Taking Action

The source control operable unit contained the 2.5 acre oily sludge pit, which was identified as a principal threat, and the surrounding landfill, which was identified as a low-level threat. The most significant threat to human health from the pit area was attributed to the low pH of the sludges which were corrosive and could have caused severe burns through accidental exposure. The oily sludge wastes also contained high concentrations of lead, PCBs, and PAHs. The surrounding landfill contained principally industrial debris and household trash. The landfill area was determined to be a low-level threat that will not require active remediation in order to be protective if there was no direct contact or ingestion.

Analyses of samples collected from the ground water monitoring well network (Figure 3) identified inorganic contamination, principally lead, arsenic, and manganese, during the 1993 sampling and the four RI sampling events in 1995 and 1996. Ground water sample analyses did not detect volatile organic contaminants, pesticides, or PCBs above detection limits. Semi-volatile organic contaminants detected during the sampling were considered attributable to laboratory contamination or were reported below the analytical method detection limit. Subsequent ground water samples collected in May and August of 1997 verified that only inorganic contaminants were present in the ground water.

IV. Remedial Actions

Remedy Selection

The EPA issued a Proposed Plan for the Site on July 27, 1993, and the public comment period closed on September 24, 1993. The EPA signed a Record of Decision (ROD) on September 29, 1994, for the source control operable unit. The remedial action objectives for the oily sludge pit are:

- Prevent current and future direct contact with the highly corrosive wastes;
- Prevent current and future direct contact, ingestion, and inhalation of contaminants in the pit waste and ancillary contaminated soil and debris;
- Prevent the future migration of contaminants from the sludge pit area to other areas both on and off the site; and,
- Prevent the potential for future migration of contaminants to the ground water at concentrations above appropriate action levels.

The remedial goals for the oily sludge pit were established to meet the above remedial action objectives and are based on a recreational risk scenario developed in the baseline risk assessment (Table 2).

| Contaminant | Remedial Goal |
|--|----------------------|
| Total PAHs as measured by benzo(a)pyrene equivalents | 3 mg/kg |
| PCBs (total) | 10 mg/kg |
| Lead | 500 mg/kg |

The remedial action objectives for the landfill area are:

- Prevent direct contact with and ingestion of the landfill contents; and,
- Ensure that contaminants present in the landfill areas that may migrate into the ground water will not constitute a threat to public health and the environment.

Remedial goals were not developed for the landfill area of the Site because the risk assessment indicated the landfill areas to be a low-level threat that will not require active remediation in order to meet the remedial action objectives.

In the 1993 Proposed Plan, the EPA identified seven remedial alternatives for the oily sludge pit and three remedial alternatives for the landfill area. The remedy selected in the 1994 ROD to address the oily sludge pit was different than the preferred remedy of organic treatment, stabilization, and off-site disposal identified in the Proposed Plan. The major remedy components in the 1994 ROD included:

- Excavation, stabilization, and off-site disposal of an estimated 22,000 cubic yards of contaminated sludge, soil, and debris exceeding the remedial action goals of 500 mg/kg lead, 10 mg/kg PCBs, and 3 mg/kg PAHs (as benzo(a) pyrene equivalents);
- The placement of a 2-foot thick soil cover over the remaining 16 acre landfill area;
- Placement of deed notifications or other institutional controls to ensure that any future landowners will be notified that the land was a former Superfund site and has been cleaned up in accordance with CERCLA; and
- Long-term operation and maintenance and ground water monitoring.

The 1994 ROD also divided the Site into a source control operable unit and a ground water operable unit and deferred the ground water remedy selection until additional site data had been collected.

On March 1, 1996, the EPA and a group of the generator PRPs known as the South 8th Street Group entered into an Administrative Order on Consent to conduct the remedial design for the remedy selected in the 1994 ROD. The PRP Group conducted field activities in 1996 and submitted the remedial design reports in 1997. Based on additional data collected during the remedial design, the PRPs proposed an alternative in-situ treatment method that would also meet the remedial goals and objectives for the Site at a lower cost. Upon evaluation of this additional data, the EPA proposed an amended remedy in a January 1998 Proposed Plan. In this Proposed Plan, the EPA also identified three alternatives for the ground water contamination based on the results of the 1996 RI and 1997 FS completed by the EPA.

The EPA signed a ROD Amendment for the Site on July 22, 1998, amending the remedy for the source control operable unit and selecting a remedy for the ground water operable unit. The major components of the amended remedy for the source control operable unit included:

- C In-situ stabilization/solidification of an estimated 23,500 cubic yards of contaminated sludge, soil, and debris exceeding the remedial action goals of 500 mg/kg lead, 10 mg/kg PCBs, and 3 mg/kg PAHs (as benzo(a) pyrene equivalents) and capable of meeting the more stringent performance standards for in-place management of the treated material and protection of the Site ground water;
- Installation of a 2-foot thick natural soil cover over part of Area 1 of the landfill and the treated oily sludge pit area in Area 2 of the landfill; and,

- C Placement of deed notifications or other institutional controls to ensure that any future landowners will be notified that the land was a former Superfund site and waste has been treated and is being managed at the site.

The specific performance standards for the treated waste were established to ensure that the oily sludge pit wastes and ancillary soil and debris could be treated and managed on-Site without further degrading the ground water quality at the Site (Table 3).

| Table 3 Performance Standards for Solidification/Stabilization of Waste Material | | |
|--|----------------------|---|
| Test | Method | Design Criteria |
| Toxicity | SW 846 1312 | SPLP Performance Criteria |
| pH | SW 846 9045 | 7.0 < pH < 11.5 |
| Unconfined Compressive Strength | ASTM D2166 | 50 psi @ 28 days Average of all samples |
| | | 40 psi @ 28 days Minimum of any sample |
| | | 25 psi @ 3 days Average of all samples |
| Hydraulic Conductivity | SW 846 9100 | 1 x 10 ⁻⁶ cm/sec @ 28 days Average of all samples |
| | | 1 x 10 ⁻⁵ cm/sec @ 28 days Maximum of any sample |
| Wet/Dry Durability* | ASTM D4843 | <30% loss of mass after 12 cycles |
| Volumetric Expansion | On-Site Measurements | <65% volumetric expansion |
| * During the first month of the stabilization in the ancillary soil area, the requirement for wet/dry durability testing was eliminated from the quality control testing since it was determined not to be relevant for the Site conditions. | | |

An allowance was made for contaminant concentrations in a leachate extracted from a treated waste sample (following a 28 day curing period) using the Synthetic Precipitation Leaching Procedure (SPLP), SW-846 Method 1312, to exceed the corresponding ground water maximum contaminant levels (MCLs) or background ground water concentrations, whichever was higher. The SPLP leachate from 20 percent of the samples collected from the treated oily sludge material could exceed the SPLP performance standards by a factor of two times, and 10 percent of the leachate samples could exceed the SPLP standards by a factor of five times.

The remedial action objectives for the ground water operable unit at the Site are the following:

- Prevent exposure to Site contaminated ground water, above acceptable risk levels for potential receptors; and
- Restore the Site ground water to human health-based standards following remediation of the oily sludge pit.

For the ground water operable unit, monitored natural attenuation was the selected remedy for the hazardous substances in the ground water and institutional controls to prevent exposure to the ground water prior to achieving the remedial action goals (Table 4).

| Contaminant | Remedial Goal (Fg/l) |
|--------------------|-----------------------------|
| Arsenic | 50 |
| Barium | 2000 |
| Beryllium | 4 |
| Lead | 15 |
| Manganese | 4,088 |

Remedy Implementation

The EPA issued a UAO on November 18, 1998, to the PRPs for implementation of the remedial action at the oily sludge pit. After further negotiations, the EPA and the settling PRPs signed a Consent Decree for implementation of the source control operable unit remedy. The Consent Decree was lodged with the U.S. District Court for the Eastern District of Arkansas on November 23, 1999, and entered by the Court on December 12, 2000. Since the Consent Decree had not been entered by the District Court prior to completing remediation of the oily sludge pit area, the remedial action was completed under the terms of the UAO.

The PRP's remedial construction contractor mobilized to the Site in June 1999 and initiated the first round of pilot tests in July 1999 to select a final reagent mix design for the in-situ stabilization/solidification. While pilot tests on the ancillary soils were completed in August 1999, final testing on the oily sludge wastes was not completed until November 1999. Pilot tests on the oily sludge wastes demonstrated that pretreatment with agricultural lime was necessary to

neutralize the low pH waste prior to reagent mixing in order to achieve the performance standards.

Stabilization of the oily sludge pit began in December 1999 and was completed in April 2000. A total of 19,376 cubic yards of oily sludge was neutralized and treated in-situ with a crane auger, representing an increase of almost 100% compared with the remedial design. The volume increase resulted from an increased average treatment depth of 16.8 feet down to a native gray clay. Stabilization of the ancillary soils began in September 1999 and was completed in May 2000. A total of 20,372 cubic yards of soil was treated with a combination of excavators and a crane auger. Neutralization of 4,729 cubic yards of soil was required prior to treatment.

A limited number of confirmatory samples from the treated oily sludge and ancillary soils failed the performance standards. Rather than retreat the material and possibly create material with a higher permeability, a geocomposite liner was installed as a precaution between the treated waste and the soil cover to reduce possible infiltration. The liner was installed over an area of 6,233 square yards. Installation of the soil cover on the 4.28 acre area of treated material was completed by June 2000. The PRPs completed installation of the 2.7 acre soil cover on the adjacent landfill area in September 1999.

An additional 2,000 cubic yards of oily sludge waste mixed with soil and debris were discovered in June 2000 during a monitoring well installation adjacent to the treated oily sludge pit. Treatment of the additional waste material was completed in August 2000 and a geocomposite liner and soil cover were installed over the treated area.

The borrow area used for the soil cover was graded and contoured so that repeated flooding by the Mississippi River and accumulation of silts and clay will establish a pond and surrounding wetland at the Site. Since 2000, the 1.58 acre borrow pit has accumulated water and vegetation due to flooding at the site. The water level in the borrow pit rises and falls in response to the water levels in the Mississippi River.

The PRPs conducted an air monitoring program as described in the Health and Safety and Air Monitoring Plan developed during the remedial design. The air monitoring program included both real-time and compound-specific air monitoring during the processes of sludge neutralization, stabilization, and excavation. The air quality on site was monitored within the breathing zone of the workers inside the exclusion zone and at locations inside the perimeter to protect the surrounding community. Specific chemical hazards monitored were hydrogen sulfide, sulfur dioxide, volatile organic compounds, and total suspended particulates.

While the activities associated with the ground water operable unit were not included in the UAO, the PRPs agreed to expand the scope of their work for the EPA and install two

additional monitoring wells adjacent to the treated oily sludge pit area. In addition, the PRPs agreed to plug and abandon seven monitoring wells and six piezometers located elsewhere in the landfill that were not part of the long-term ground water monitoring scheme. Construction details on the two new monitoring wells and the abandonment of the monitoring wells and piezometers are included in the Remedial Action report for the source control operable unit. Construction details for the remaining monitoring wells, previous sample analyses, and ground water elevations are provided in the 1996 ground water RI report and the 1998 ROD Amendment.

The Site achieved construction completion status when the Preliminary Close Out Report was signed by the EPA on September 19, 2000. The Remedial Action report was approved by the EPA on December 31, 2001.

Long-term remedial action for the ground water monitored natural attenuation remedy was implemented through a sampling and analysis program conducted between January and November 2003. The sampling and analysis for the ground water included eight sampling events of the nine monitoring wells surrounding the oily sludge pit (Figure 4). The initial ground water sampling event was conducted in January 2002 and the sampling data was below the remedial goals for all wells. The anticipated sampling program and associated costs to monitor the effectiveness of the natural attenuation remedy were projected over a 30-year period with sampling performed quarterly for the first two years, semi-annually for years 3 - 10, and semi-annually for years 15, 20, 25, and 30. As a result of the January 2002 data, the ground water monitoring program was changed to consecutive monthly sampling between April and November 2002 in an effort to determine if and to what extent the metals might become mobile in the ground water. Since past detections of elevated metals concentrations in the aquifer were influenced by the flood stage of the adjacent Mississippi River, the resulting fluctuating water table, and changing geochemical conditions in the aquifer, a monthly sampling program was more likely to detect elevated metal concentrations than the initial quarterly sampling program.

The ground water monitoring program demonstrated that the combination of source area treatment and natural attenuation processes were effective in achieving the cleanup goals for the ground water operable unit. Lead and arsenic concentrations were below the remedial goal in all wells during each of the eight sampling events. While barium and beryllium were both listed as contaminants of concern in the 1998 ROD Amendment, these two metals have remained below the remedial goals both before and after remediation of the oily sludge pit. Manganese concentrations were also below the remedial goal in all wells during each of the eight sampling events except for well MW-8S during the August sampling event. Monitoring well MW-8S, which is located cross-gradient to the oily sludge pit, had a manganese concentration of 6,320 Fg/l which exceeded the remedial goal of 4,088 Fg/l. The EPA performed three separate statistical analyses of the manganese data from well MW-8S for the upper confidence level (UCL)

of the mean. The calculated UCLs for each evaluation were less than the remedial goal of 4,088 Fg/l

Treatment of the oily sludge pit has effectively reduced or eliminated further leaching of lead into the ground water both prior to and after the 2002 flooding event. The aquifer geochemistry has apparently also been modified following treatment of the acidic wastes preventing further mobilization of manganese and arsenic in the ground water. As a result of the completed remedial action for the oily sludge pit, the treated waste is no longer a source of the metals contamination previously detected in the ground water.

The nine groundwater monitoring wells were plugged and abandoned on June 23 – 24, 2003 (Figure 4). The monitoring well abandonment activities included the following: site clearing, pressure grouting of each monitoring well with cement grout, removal of all bumper posts and above grade protective casings, removal of concrete well pads, placement of a concrete plug with a metal plate at each well location, and off-site disposal of all the well materials.

EPA issued the Final Remedial Action Report on June 9, 2003, following achievement of the remedial goals for the ground water operable unit. The Final Close Out Report was issued on September 25, 2003.

Systems Operations and Maintenance

There are no scheduled operation and maintenance requirements for this Site other than periodic site inspections to ensure that the institutional controls remain protective of human health. The stabilized/solidified waste in the former oily sludge pit does not require any maintenance and was designed to remain in-situ based on the stringent treatment standards. The soil cover on the landfill and treated oily sludge pit area does not require mowing or other vegetation control since the vegetation helps to reduce potential erosion during flooding events. The protective fence around the Site has been removed with the exception of the area within the hardwood wetlands that separates the Site from the St. Francis levee. A security gate at the entrance to the Site from South 8th Street was left in place at the request of the property owner to control access to the Site. Inspection costs are funded through the cash-out payments made by the settling PRPs under the terms of the Consent Decree.

The ground water monitoring program demonstrated that the combination of source area treatment and natural attenuation processes were effective in achieving the cleanup goals for the ground water operable unit. As a result, routine ground water monitoring activities are not a part of the operation and maintenance activities at the Site. Further monitoring activities at the site are no longer necessary since: 1) the metals concentrations are below the remedial goals; 2) the institutional controls effectively prohibit any future well installation and possible exposure

pathway within the landfill area; and, 3) ground water discharge to the adjacent Mississippi River was demonstrated to not have an adverse impact with the pre-remedial contaminant concentrations. Long-term protection of human health and the environment at this Site will not require further ground water monitoring based on the completed remedial actions and the existing site institutional controls.

Institutional controls have been implemented at the site to prevent exposure to ground water and the treated waste and landfill contents (see Appendix F). The Consent Decree (Section V.9.a, Section IX.24.b) lodged in the U.S. District Court for the Eastern District of Arkansas in November 1999 and entered in December 2000, specified a property easement, running with the land, that (i) grants a right of access for the purpose of conducting any activity related to the Consent Decree or any other activity related to implementing the ROD, including but not limited to, monitoring; and (ii) grants to the right to enforce the land and water use restrictions listed in the Consent Decree to the United States, the State of Arkansas and its representatives, the other settling defendants, and other appropriate grantees. The land and water use restrictions specified in the property easement include: 1) the prohibition on the installation of water wells in the alluvial aquifer until the remedial goals for the ground water operable unit have been achieved; 2) the prohibition on the removal of vegetation from the landfill cover if such removal may result in the subsequent erosion or removal of the soil cover over the landfill or treated material; and 3) the prohibition on the excavation or trenching into the treated material, landfill contents, or the associated soil cover with some exceptions. The property easement was executed on March 6, 2001 by the William L. Johnson Co. The prohibition on further excavation into the treated material, landfill contents, or soil cover effectively prohibits further well installation at the site due to the site-wide presence of the landfill and the treated oily sludge pit.

V. Progress Since the Last Five Year Review

This is the first Five Year Review for the site.

VI. Five Year Review Process

Administrative Components

The Five Year Review was conducted by Vincent Malott, EPA Remedial Project Manager for the Site. Technical support for the publication of newspaper notices, printing of community fact sheets and notices, and graphics support for the Five Year Review was conducted by CH2M Hill under Contract No. 68-W6-0036, Work Assignment No. 128-TATA-06H8.

Community Involvement

The community was notified through a public announcement published in the local newspapers, *Memphis Commercial Appeal* and *West Memphis Evening Times*, on February 8 and February 10, 2004, respectively. A copy of the notices are included in Appendix B. A fact sheet on the completion of the remedial action at the Site and the ongoing Five Year Review activity was also printed and mailed to the community at the end of February. A copy of the fact sheet is also included in Appendix B.

Concurrent with the publication of the newspaper notices, the PRPs were notified through a notice mailed on February 10, 2004, which included the legal representatives for a group of the generator PRPs and Mr. William Gurley. A copy of this notice is included in Appendix B.

Document Review

Since the remedial actions have been completed for this Site, the document review consisted of the December 31, 2001, Remedial Action report for the source control operable unit, the June 9, 2003, Remedial Action report for the ground water operable unit, the 1994 ROD, and the 1998 ROD Amendment. These documents and other relevant reports are listed in Appendix B. The remedial goals and objectives are listed in the 1994 ROD and 1998 ROD Amendment.

Data Review

Since all remedial actions at the Site have been completed, and there are no required operation and maintenance activities that generate data, all relevant data concerning the completion of the remedial actions are contained in the 2001 and 2003 Remedial Action reports. Data on the nature and extent of contamination at the site is contained in the 1997 and 1993 Remedial Investigation Reports and the 1997 Remedial Design Reports.

A separate international collaborative project was initiated to verify the long-term effectiveness of cement-based stabilization/solidification treatment of contaminated sites. The Performance Assessment of Stabilized/Solidified Waste Forms project involves universities, government agencies, and non-government organizations from the United States, the United Kingdom, and France. The research effort is being coordinated through the EPA's Office of Research and Development in Cincinnati, Ohio. The aim of this collaboration is to improve the understanding of the performance of stabilization/solidification waste by sampling and examining the treated material of different ages and with different contaminants from existing treated sites. Sampling of stabilization/solidification sites in the U.S. will focus primarily on Superfund sites. Some samples from this effort were provided to the University of New Hampshire for use in this

international effort. Sampling is performed by contractor personnel and equipment under technical oversight of U.S. EPA personnel.

Core samples were collected at the South 8th Street Landfill from the treated oily sludge mound area, specifically the area treated through the in-situ auger method. Approximately four feet of core from three locations on the mound area were collected from the site using a roto-sonic drilling method. Visual observation of the cores noted the material was dry and competent. The physical condition of the cored material is consistent with the physical performance standards for the in-situ stabilization/solidification process. A separate report will be prepared on the results of the research study on the treated waste at the South 8th Street site and other sites with stabilized/solidified material. The core holes were grouted with a cement mortar mix approved by the EPA oversight personnel. The available sample analyses are included in Appendix G. In summary, the testing confirmed the cored material still retained a minimum permeability of 6.1×10^{-6} cm/sec and an unconfined compressive strength (UCS) of 12 psi - 30 psi. While the UCS data was less than the 40 psi minimum for any one sample, the permeability data was less than the maximum of 1×10^{-5} cm/sec for any one sample. As a result, the sample analyses confirms that the cement-based stabilization/solidification treated monolith remains protective through retention of the low-permeability performance standard.

Site Inspection

The Site inspection was conducted by the EPA Remedial Project Manager for the Site on January 22, 2004. The Site inspection form is included in Appendix D and photographs from the inspection are included as Appendix E. The purpose of the inspection was to assess the protectiveness of the remedy, including the condition of the soil cover and the effectiveness of the property easement in restricting Site activities.

The institutional controls implemented at the Site prevent exposure to the treated waste and landfill contents. The land use restrictions include: 1) the prohibition on the removal of vegetation from the landfill cover if such removal may result in the subsequent erosion or removal of the soil cover over the landfill or treated material; and 2) the prohibition on the excavation or trenching into the treated material, landfill contents, or the associated soil cover with some exceptions. The prohibition on further excavation into the treated material, landfill contents, or soil cover also effectively prohibits further water well installation at the Site due to the site-wide presence of the landfill and the treated oily sludge pit.

The condition of the soil cover on the landfill or the treated oily sludge mound has not been an issue at any time since completion of the remedial action in August 2000. Examination of the soil cover over the treated oily sludge mound during the ground water sampling events in 2002 noted the presence of small-scale erosional rivulets that had formed along the flanks of the

mound area. These erosional rivulets did not impact the protectiveness of the remedy since the treated material was not exposed at the surface. The erosional rivulets have since been completely covered with additional soil during the property redevelopment activity that began after June 2003.

There were no activities observed during the Site inspection that violated the institutional controls for the Site. Property redevelopment activities are proceeding in the area of the treated oily sludge mound (Area 2). The redevelopment activities consist of adding fill material to the flanks of the treated mound area and grading the fill to a gentle slope back to the bank of the Mississippi River. The addition of fill material has covered the flanks of the mound area and has prevented any further erosional rivulets in the soil cover. In addition to the fill material along the flanks of the mound area, an elevated gravel road has been added along the northern flank of the mound area that connects South 8th Street directly with the barge terminal located on the Mississippi River at the mid-point of the Site. The road has been gated to restrict access to the barge terminal operation. An additional gravel road (non-elevated) has been added in Area 1 of the Site that connects South 8th Street with the barge terminal located at the southern end of the Site. The road through Area 1 has been fenced and gated to restrict access to the barge terminal operation.

A second site inspection was conducted on February 5, 2004, as part of a sample collection effort to verify the long-term performance of cement-based stabilization/solidification of treated waste. The results of the sampling effort were previously noted under the Data Review section.

A third site inspection was conducted on April 29, 2004, to inspect the ongoing redevelopment efforts. The inspection noted the presence of additional fill material in Area 2 of the former landfill area.

Interviews

Interviews were conducted with various parties connected to the Site. Abbott Widicombe, owner of the adjacent Tom Sawyer RV park and the current landowner for Areas 1 and 3 of the Site was interviewed on January 23, 2004. Area 2 of the Site was purchased by Razorback Concrete and Kent Ingram, President of the company, was interviewed on January 30, 2004. The city attorney for West Memphis, David Peeples, was interviewed on February 25, 2004. No significant problems regarding the Site were identified during the interviews. Mr. Widicombe noted that there was still some illegal dumping around the Site. The interview responses are included in Appendix C.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

This Site meets all the site completion requirements as specified in OSWER Directive 9320-09-A-P, *Close Out Procedures for National Priorities List Sites*. For the source control operable unit, confirmatory sampling verified that the in-situ stabilization/solidification of the oily sludge pit wastes and ancillary soils achieved the chemical and physical performance standards specified in the 1998 ROD Amendment. The treated sludge pit and surrounding landfill areas are covered with 2 feet of clean soil to provide further assurance that there is no longer an exposure pathway. For the ground water operable unit, sampling of the monitoring wells has confirmed that treatment of the oily sludge pit and ancillary soils has prevented or substantially reduced further leaching of contaminants into the ground water. The ground water sampling has also confirmed that natural attenuation processes in the aquifer have reduced the metal concentrations below the remedial goals specified in the 1998 ROD Amendment. The Site institutional controls were implemented by the property owner through the filing of a property easement with the County Clerk. The property easement restricts any intrusive activity such as digging or trenching in the landfill or treated areas of the Site or the installation of any wells. The Site no longer poses a threat to human health or the environment.

There are no scheduled operation and maintenance requirements for this Site other than periodic site inspections to ensure that the institutional controls remain protective of human health. The stabilized/solidified waste in the former oily sludge pit does not require any maintenance and was designed to remain in-situ based on the stringent treatment standards. The soil cover on the landfill and treated oily sludge pit area does not require mowing or other vegetation control since the vegetation helps to reduce potential erosion during flooding events. The protective fence around the Site has been removed with the exception of the area within the hardwood wetlands that separates the Site from the St. Francis levee. A security gate at the entrance to the Site from South 8th Street was left in place at the request of the property owner to control access to the Site.

The ground water monitoring program demonstrated that the combination of source area treatment and natural attenuation processes were effective in achieving the cleanup goals for the ground water operable unit. As a result, routine ground water monitoring activities are not a part of the operation and maintenance activities at the Site. Further monitoring activities at the site are no longer necessary since: 1) the metals concentrations are below the remedial goals; 2) the institutional controls effectively prohibit any future well installation and possible exposure pathway within the landfill area; and, 3) ground water discharge to the adjacent Mississippi River was demonstrated to not have an adverse impact with the pre-remedial contaminant concentrations. Long-term protection of human health and the environment at this Site will not

require further ground water monitoring based on the completed remedial actions and the existing site institutional controls.

Institutional controls have been implemented at the site to prevent exposure to ground water and the treated waste and landfill contents. The Consent Decree (Section V.9.a, Section IX.24.b) lodged in the U.S. District Court for the Eastern District of Arkansas in November 1999 and entered in December 2000, specified a property easement, running with the land, that (i) grants a right of access for the purpose of conducting any activity related to the Consent Decree or any other activity related to implementing the ROD, including but not limited to, monitoring; and (ii) grants to the right to enforce the land and water use restrictions listed in the Consent Decree to the United States, the State of Arkansas and its representatives, the other settling defendants, and other appropriate grantees. The land and water use restrictions specified in the property easement include: 1) the prohibition on the installation of water wells in the alluvial aquifer until the remedial goals for the ground water operable unit have been achieved; 2) the prohibition on the removal of vegetation from the landfill cover if such removal may result in the subsequent erosion or removal of the soil cover over the landfill or treated material; and 3) the prohibition on the excavation or trenching into the treated material, landfill contents, or the associated soil cover with some exceptions. The property easement was executed on March 6, 2001 by the William L. Johnson Co. The prohibition on further excavation into the treated material, landfill contents, or soil cover effectively prohibits further well installation at the site due to the site-wide presence of the landfill and the treated oily sludge pit.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

There have been no changes in the exposure assumptions or physical conditions of the site that would affect the protectiveness of the remedy.

Changes in Standards and “To Be Considereds”

The remedial goals for the ground water operable unit are based on maximum contaminant levels (MCLs) developed under the Safe Drinking Water Act. The MCL for arsenic was changed from 50 Fg/L to 10 Fg/L. A review of the data from the eight separate ground water sampling events in 2003 shows that all data except for one data point from well MW-3I and two data points for well MW-8S were below the new arsenic standard. Well 3I had an arsenic concentration of 16 Fg/L in June 2002 while the other seven sampling events in 2002, and five sampling events between 1995 and 1997, were below the new 10 Fg/L standard. Well 8S had an arsenic concentration of 15.6 Fg/L and 21.9 Fg/L in October and November 2002 while the other six sampling events in 2002 were all below the new 10 Fg/L standard. The average arsenic concentration based on the eight sampling events in 2002 did not exceed the 10 Fg/L standard.

The arsenic concentration ranged from 27 Fg/L to 227 Fg/L between 1995 and 1997 in well 8S before the treatment of the oily sludge pit. Since there is no current usage of the Site ground water and the Site institutional controls effectively prohibit well installations within the landfill area, there is no projected usage of the ground water. The new arsenic standard does not call into question the protectiveness of the completed remedial action for the ground water operable unit.

Since the remedial action for the source control operable unit is complete, the Applicable or Relevant and Appropriate Requirements (ARARs) in the ROD cited for the landfill and oily sludge pit have been met and there are no new standards which call into question the protectiveness of the completed remedial action.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The risk assessments conducted for the Site did not use either a residential or industrial exposure scenario because of the flooding pattern at the site precludes the use of such typical scenarios (other than barge transfer operations). The remedial goals for the source control operable unit were developed for a recreational worker exposure scenario based on past considerations of the Site as a State park and the presence of the adjacent RV park. The remedial goals for the ground water operable unit are based on the corresponding MCLs or risk-based concentrations under the recreational user exposure scenario. The completed remedial actions for the two operable units have removed the potential exposure pathway through treatment of the oily sludge pit, completing the two-foot soil cover over the surrounding landfill and the treated oily sludge pit, and the reduction of metal concentrations below the remedial goals in the ground water.

The current landowner of Area 2 (treated oily sludge mound) is proceeding with redevelopment of the property as a barge transfer operation. While such land use was not considered in the original risk assessment, the potential exposure pathways for site industrial workers would not be completed due to the presence of the soil cover over the surrounding landfill. Since the site institutional controls specifically prohibit excavation into the treated material and landfill contents, there is no expected exposure pathway at the Site. In addition, based on an interview with the current landowner, additional material is expected to be placed on top of the landfill cover to raise the elevation of the land surface and reduce the chance of flooding and disruption of the barge transfer operation.

Changes in Toxicity and Other Contaminant Characteristics

There have been no changes in the toxicity factors for the contaminants of concern that would change the remedial goals for the source control operable unit or the ground water operable unit with the exception of the arsenic standard as previously noted.

Changes in Risk Assessment Methods

There has not been a change in the risk assessment methodology that could affect the protectiveness of the completed remedial actions.

Expected Progress Towards Meeting RAOs

The remedial actions have been completed for the source control and ground water operable units and have achieved the remedial action objectives and goals for this Site.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The remedial action completed for this site remains protective of human health and the environment. The potential actions that could impact the remedy protectiveness would be from erosion due to site flooding or rainfall events, or actions taken during property redevelopment that would violate the site institutional controls. While flooding of the site occurred in May 2002, there were no significant erosional impacts observed on the soil cover. Small-scale erosional rivulets had formed in the soil cover along the flanks of the former oily sludge pit mound due to rainfall events but the rivulets did not compromise the integrity of the soil cover. Since additional soil has been added to the flanks of the mound area as part of the property redevelopment in Area 2, any further erosion will be prevented in the mound area. Current property redevelopment activities have not violated the institutional controls at the site regarding excavations within the landfill.

VIII. Issues

Issues affecting the performance of the completed remedial action at the Site were not identified during the Site inspections. The current redevelopment activities noted during the Site inspection are consistent with the property use restrictions identified for this Site.

IX. Recommendations and Follow-Up Actions

Periodic inspections may be needed during future site redevelopment to ensure compliance with the Site institutional controls.

X. Protectiveness Statement

Because the remedial actions at all operable units are protective, the site is protective of human health and the environment. Sampling data has confirmed that the remedial actions for the source control and ground water operable units have achieved the remedial goals and objectives set forth in the 1994 ROD and 1998 ROD Amendment. An exposure pathway does not exist for the treated waste material in the former oily sludge pit or the landfill contents and the Site risks have been eliminated or reduced below acceptable levels. The site institutional controls are expected to prevent any future exposure pathway based on the prohibition on excavations within the landfill area.

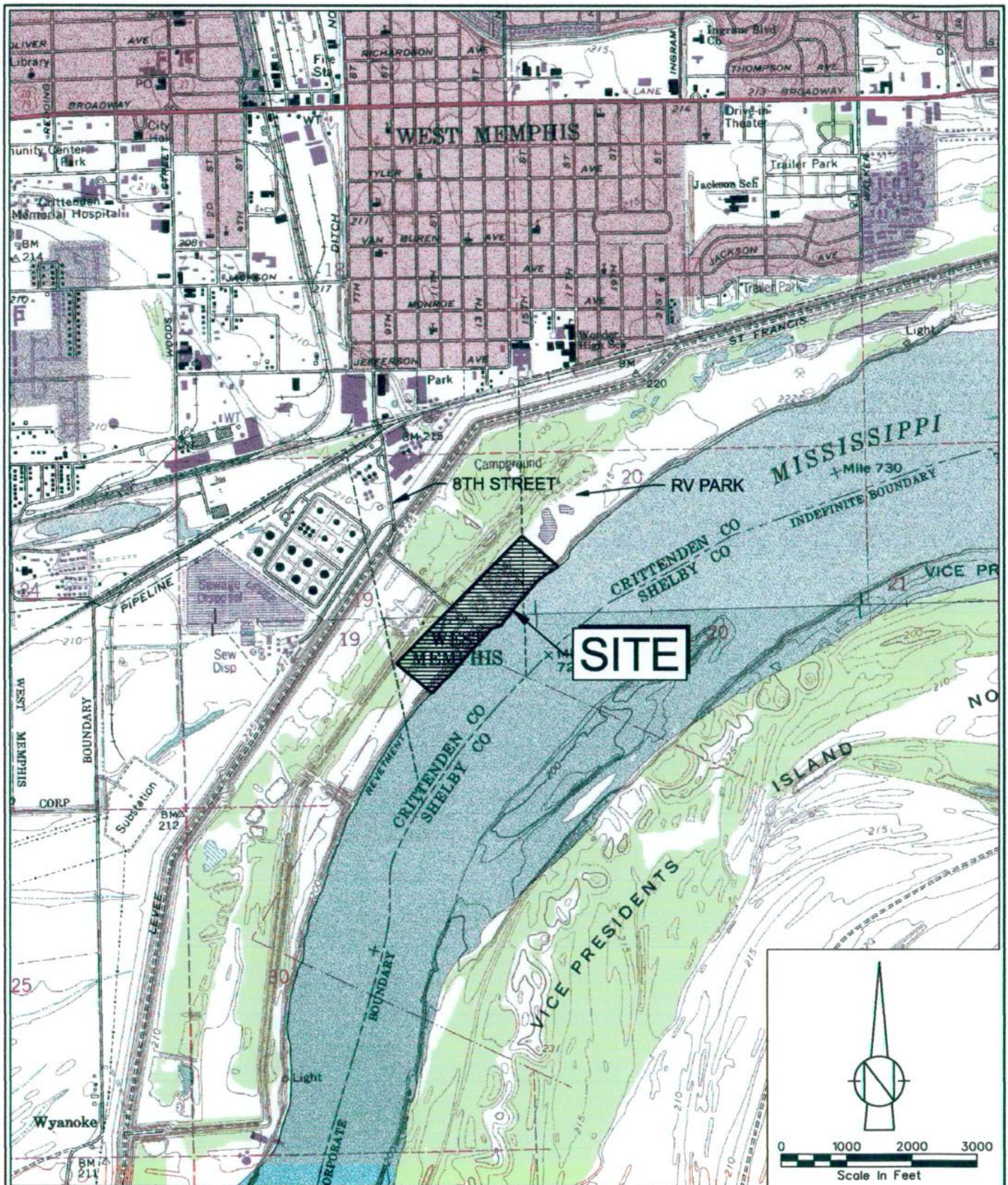
XI. Next Review

The Second Five Year Review for the South 8th Street Landfill Site is required by June 2009, five years from the date of this review.

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FIGURES

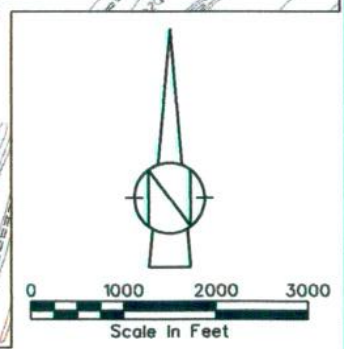
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SOURCE: USGS QUADRANGLE MAPS;
 FLETCHER LAKE AND WEST MEMPHIS, ARKANSAS



FIGURE 1
SITE LOCATION
 SOUTH 8TH STREET LANDFILL SITE
 WEST MEMPHIS, ARKANSAS



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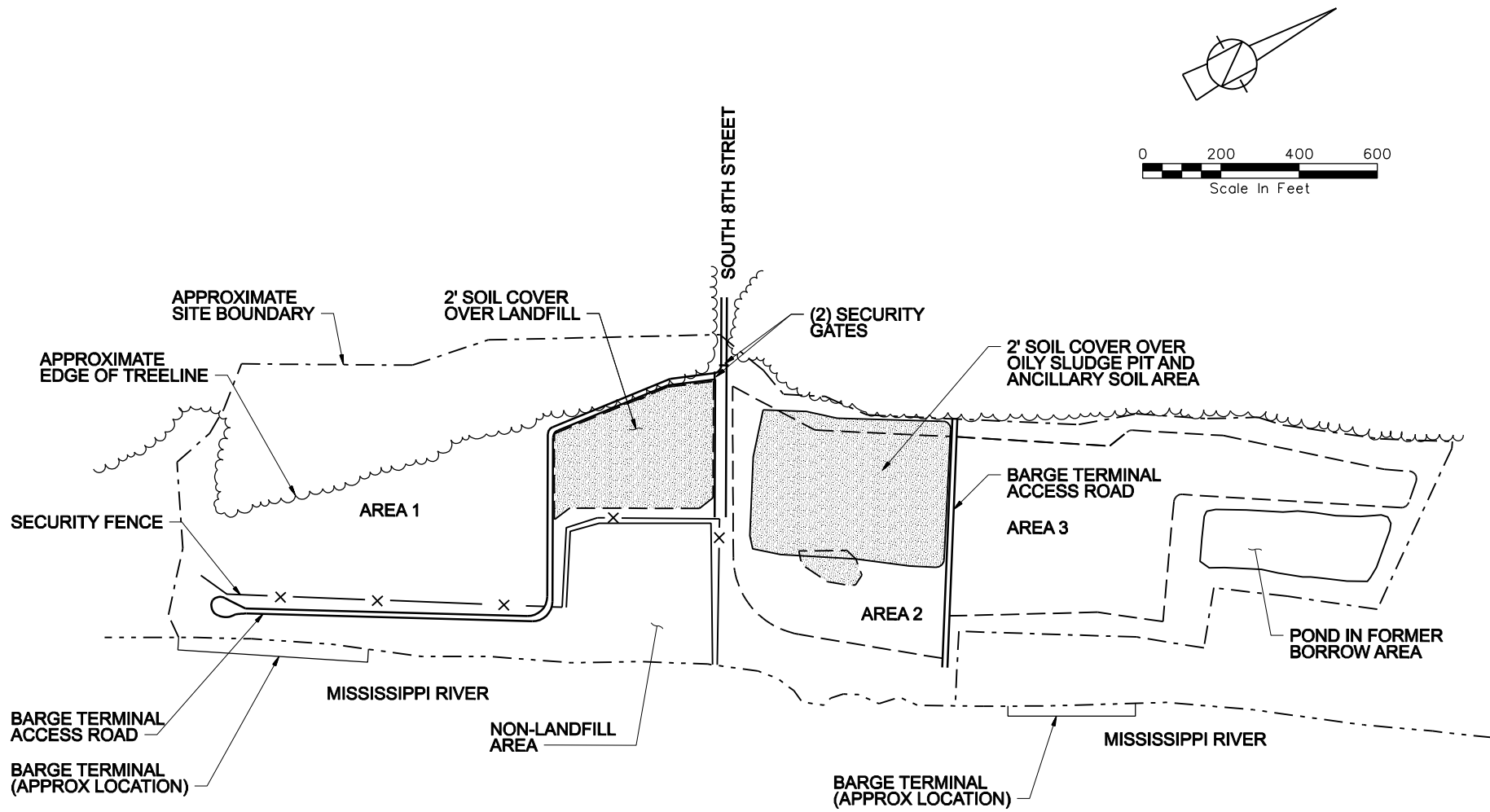
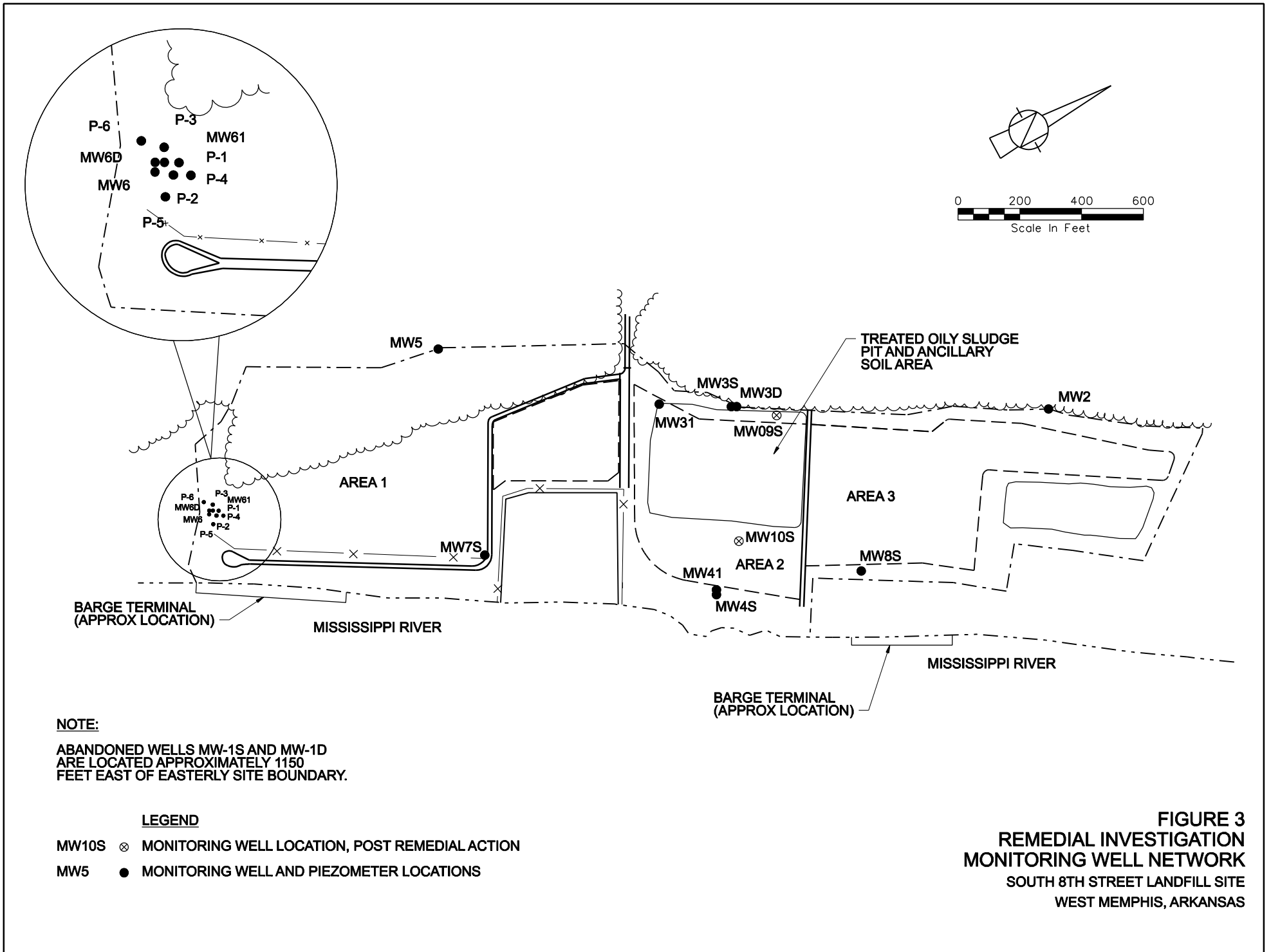
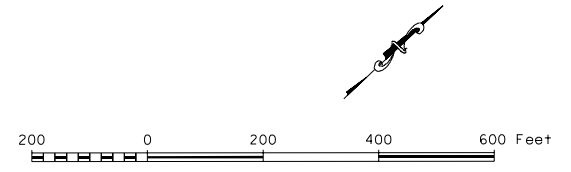


FIGURE 2
SITE FEATURES
 SOUTH 8TH STREET LANDFILL SITE
 WEST MEMPHIS, ARKANSAS

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LEGEND:

⊕ MW8S MONITOR WELL LOCATION

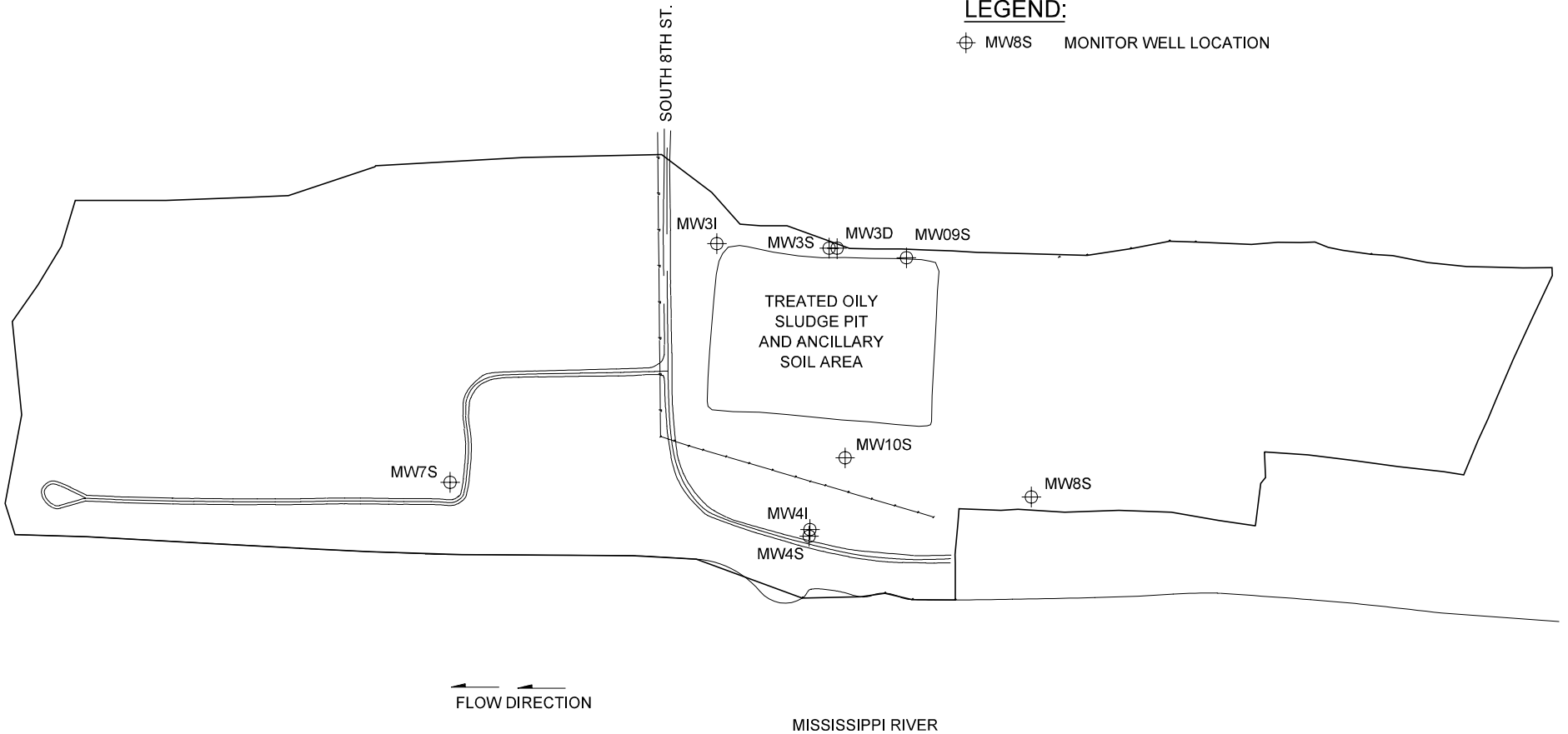


FIGURE 4
REMEDIAL ACTION
MONITORING WELL NETWORK
SOUTH 8TH STREET LANDFILL SUPERFUND SITE
WEST MEMPHIS, ARKANSAS

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APPENDIX A

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Appendix A
List of Principal Documents Reviewed

List of principal documents reviewed for the South 8th Street Landfill Site.

- RI/FS:** Final Remedial Investigation Report, Fluor Daniel, Inc., 06/30/1993.
Feasibility Study, Fluor Daniel, Inc., 06/30/1993.
Remedial Investigation Report, Ground Water Operable Unit, Fluor Daniel, Inc.,
09/30/1996.
Feasibility Study Report, Ground Water Operable Unit, Fluor Daniel, Inc.,
07/30/1996.
- ROD:** Record of Decision, South 8th Street Landfill, 09/29/1994.
Record of Decision Amendment, South 8th Street Landfill, 07/22/1998.
- Remedial Design:** Final Design Documents, Source Control Operable Unit, Conestoga-
Rovers & Assoc., 11/06/1997.
- PCOR:** Preliminary Close-Out Report, U.S. EPA, 9/18/2000.
- RA Reports:** Remedial Action Report, Source Control Operable Unit, Conestoga-Rovers &
Assoc., 12/31/2001.
Remedial Action Report, Ground Water Operable Unit, U.S. EPA, 06/09/2003.
Groundwater Monitoring Well Abandonment, U.S. EPA, 07/24/2003.
- FCOR:** Final Close Out Report, 6/22/2003.

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APPENDIX B

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SOUTH 8th STREET LANDFILL SUPERFUND SITE U.S. EPA Region 6 Begins Five-Year Review of Site Remedy



The U.S. Environmental Protection Agency (EPA) Region 6 is conducting the First Five-Year Review at the South 8th Street Landfill Superfund Site. This review is required by section 121(c) of the Comprehensive Environmental Response, Compensation and Liability Act, also known as "CERCLA" or "Superfund," 42 U.S.C. §9621(c). The purpose of this review is to assure that human health and the environment are being protected by remedial actions taken at the South 8th Street Landfill Site.

The South 8th Street Landfill Site is located in West Memphis, Arkansas, on the flood plain between the Mississippi River and the St. Francis levee. The Site is a former 16 acre landfill which contained a 2.5 acre oily sludge pit containing polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and heavy metals such as lead. The oily sludge pit wastes were treated and left in place through a stabilization/solidification process that began in 1999 and was

completed in 2000. A total of 19,376 cubic yards of oily sludge waste was treated to an average depth of 16.8 feet along with 22,372 cubic yards of the surrounding soil. Ground water samples collected during 2002 demonstrated that the cleanup goals for metals had been attained in the Site ground water.

The EPA will publish a second notice when the review is completed and the results are available for review at the following information repository:

**West Memphis Public Library
213 North Avalon
West Memphis, Arkansas 72301
870-732-7590**

Information about the South 8th Street Landfill Site, along with the Five Year Review when completed, is available on the Internet at www.epa.gov/earth1r6/6sf. Questions or concerns about the Site should be directed to Vincent Malott/Remedial Project Manager at (214) 665-8313 or 1-800-533-3508 toll-free.

West Memphis Evening Times

Publication Date: Tuesday, February 10, 2004

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SOUTH 8th STREET LANDFILL SUPERFUND SITE
U.S. EPA Region 6 Begins Five-Year Review of Site Remedy



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The EPA will publish a second notice when the five-year review is completed. Information about the South 8th Street Landfill Site, along with the Five Year Review when completed, is available on the Internet at www.epa.gov/earth1r6/6sf. Questions or concerns about the Site should be directed to Vincent Malott/Remedial Project Manager at (214) 665-8313 or 1-800-533-3508 toll-free.

Memphis Commercial Appeal Legal Display
Publication Date: Monday, February 9, 2004

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SOUTH 8th STREET LANDFILL SUPERFUND SITE

U.S. EPA Region 6 Begins Five-Year Review of Site Remedy



The U.S. Environmental Protection Agency (EPA) Region 6 is conducting the First Five-Year Review at the South 8th Street Landfill Superfund Site. This review is required by section 121(c) of the Comprehensive Environmental Response, Compensation and Liability Act, also known as "CERCLA" or "Superfund," 42 U.S.C. §9621(c). The purpose of this review is to assure that human health and the environment are being protected by remedial actions taken at the South 8th Street Landfill Site.

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213 North Avalon
West Memphis, Arkansas 72301
870-732-7590

Information about the South 8th Street Landfill Site, along with the Five Year Review when completed, is available on the Internet at www.epa.gov/earth1r6/6sf. Questions or concerns about the Site should be directed to Vincent Malott/Remedial Project Manager at (214) 665-8313 or 1-800-533-3508 toll-free.



U.S. Environmental Protection Agency Region 6
1445 Ross Avenue (6SF-PO)
Dallas, TX 75202

Postcard (8.5 inches by 5.5 inches) sent to
90 Potentially Responsible Parties on February 3, 2004.

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United States
Environmental Protection
Agency

U.S. EPA Region 6 Completes Clean Up of Superfund Site

South 8th Street Landfill Superfund Site
West Memphis, Arkansas

February 2004

This fact sheet will tell you about...

- Completion of the remedial action at the site
- What happens next?
- Site history and background
- How to find out more information about the site.

Site cleanup

The U.S. Environmental Protection Agency (EPA), working with the Arkansas Department of Environmental Quality and a group of the Potentially Responsible Parties (PRPs), has completed the cleanup of the former oily sludge pit and ground water at the South 8th Street Landfill Superfund Site.

The South 8th Street Landfill Site (Site) is located in West Memphis, Arkansas, on the flood plain between the Mississippi River and the St. Francis levee. The Site is a former 16-acre landfill which contained a 2.5-acre oily sludge pit containing polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and heavy metals such as lead.

The EPA issued a Unilateral Administrative Order on November 18, 1998, to a group of the PRPs for cleanup of the oily sludge pit. The PRP's remedial construction contractor mobilized to the Site in June 1999 and began the first round of pilot tests in July 1999 to select the additives for treating the waste material. The wastes were treated through a process of in-situ stabilization/solidification that immobilized the wastes and prevented further leaching of hazardous chemicals and metals. The PRPs completed treatment of approximately 19,376 cubic yards of oily sludge and 20,372 cubic yards of contaminated soil with an average treatment depth of 16.8 feet.

Treatment of an additional 2000 cubic yards of oily sludge waste mixed with soil and debris was completed in August 2000.

The approximately four-acre area of treated material was covered with soil and a portion of the area was also covered with a geocomposite liner. The PRPs also installed a soil cover over 2.7 acres on the adjacent landfill.

The EPA performed eight separate ground water sampling events at the Site between January and November 2002 to determine whether contaminant concentrations were decreasing following cleanup of the oily sludge pit. The sampling results confirmed that the previously detected metals in the ground water, such as lead and arsenic, had decreased in concentrations below the cleanup goals for the Site. The ground water monitoring program demonstrated that the combination of source area treatment and natural attenuation processes were effective in achieving the cleanup goals for the ground water. The nine ground water monitoring wells used in the monitoring program were plugged and abandoned in June 2003.

What happens next?

Five-Year Review

The EPA is currently conducting the First Five-Year Review of the completed cleanup action to determine if the remedy remains protective of human health and the environment. The Five-Year Review report is scheduled for completion in May 2004.

Site Deletion

The Site can be delisted from the Superfund National Priorities List now that the cleanup is finished and the final reports have been completed. The property is also available for reuse and redevelopment by the property owner. To delist the Site from the National

Priorities List, the EPA will write a Direct Final Notice of Deletion which will be made available for public comments. If there are no adverse or critical comments to the deletion, then the deletion will be final 60 days after publication in the *Federal Register*. Delisting a Site from the National Priorities List does not stop the five-year reviews of the remedy from being completed in 2009 and beyond.

Here's history and background about the site

Background

The Site was excavated for gravel deposits resulting in a series of borrow pits that were subsequently used for the disposal of industrial and municipal wastes after 1957. The Gurley Refining Company disposed of waste sludge from its oil re-refining process within a 2.5-acre area of the landfill between approximately 1960 and 1970. The Site was listed on the National Priorities List as the "South 8th Street Landfill Site" on October 14, 1992.

Remedial Investigation/Feasibility Study

The EPA issued a Unilateral Administrative Order (UAO) to the PRPs in May 1992 to perform the Site investigation. Although the PRPs initially undertook the oily sludge pit investigation in August 1992, the EPA took over the pit investigation in September 1992 and completed the Remedial Investigation and Feasibility Study (RI/FS) for the Site in 1993. The 2.5-acre oily sludge pit and surrounding soil was identified as the principal threat and the remaining 16-acre landfill was identified as a low-level threat. Exploratory trenching and borings were used to investigate the oily sludge pit and landfill. Within the pit area, the acidic oily sludge was encountered at depths of 18 feet and contained volatile organic compounds, PAHs, pentachlorophenol, PCBs, and metals including lead and arsenic. Municipal and industrial wastes were identified in the trenches through the landfill but no other hot spots were identified in the landfill contents.

The EPA completed a separate ground water investigation for the Site and the results are presented in a September 1996 RI Report. A total of 14 monitoring wells were installed at the Site to determine the impact of contaminants leaching from the landfill and

oily sludge pit into the ground water. Wells were screened at depths of 10 - 35 feet (to account for the fluctuating water table), 50 - 70 feet, and 135 - 145 feet. Ground water sample analyses detected only inorganic contamination, principally lead, arsenic, and manganese. Ground water sample analyses did not detect volatile or semi-volatile organic contaminants, pesticides, or PCBs above detection limits or health-based standards. The ground water Feasibility Study report was completed in July 1997.

Record of Decision

The EPA selected a cleanup remedy for the oily sludge pit and landfill in a Record of Decision (ROD) signed in September 1994. The remedy in the ROD was chosen from one of the alternatives presented in a Proposed Plan that was made available for public comment between July 27, 1993, and September 24, 1993.

The 1994 remedy was amended after additional testing data supported an alternative treatment technology for the Site. The public comment period for the Proposed Plan amending the oily sludge pit remedy and proposing a remedy for the ground water was held from January 5, 1998, through February 4, 1998. The EPA signed a ROD Amendment for the Site in July 1998.

The main components of the amended remedy for the oily sludge pit and surrounding landfill included:

- In-situ stabilization/solidification of the oily sludge pit and surrounding soils exceeding the remedial action goals of 500 milligrams per kilogram (mg/kg) lead, 10 mg/kg PCBs, and 3 mg/kg PAHs;
- Installation of a 2-foot thick natural soil cover over part of the landfill and the treated oily sludge pit area; and,
- Property restrictions to prevent exposure to the treated material and landfill contents.

The main component of the ground water remedy included natural attenuation of the metals exceeding the cleanup goals of 50 micrograms per liter ($\mu\text{g/L}$) for arsenic, 2000 $\mu\text{g/L}$ for barium, 4 $\mu\text{g/L}$ for beryllium, 15 $\mu\text{g/L}$ for lead, and 4,088 $\mu\text{g/L}$ for manganese.

To learn more about the South 8th Street Landfill Superfund Site, please contact:

Vincent Malott, Remedial Project Manager
U.S. EPA Region 6 (6SF-AP)
1445 Ross Avenue
Dallas, TX 75202
(214) 665-8313 or 1-800-533-3508 (toll-free)

Information Repositories

Information about the South 8th Street Landfill Superfund site is available at the following locations:

West Memphis Public Library

213 North Avalon
West Memphis, AR 72301
(870) 732-7590
Monday 10 a.m. - 8 p.m.
Tuesday - Thursday 10 a.m. - 7 p.m.
Friday 10 a.m. - 5 p.m.
Saturday 10 a.m. - 3 p.m.
Closed on Sunday

Media inquires should be directed to:

Dave Bary, Office of External Affairs
U.S. EPA Region 6 (6XA-CE)
1445 Ross Avenue
Dallas, TX 75202-2733
(214) 665-2208

U.S. Environmental Protection Agency Region 6 Seventh Floor Reception Area

1445 Ross Avenue, Ste. 12D13
Dallas, TX 75202-2733
Appointments: (214) 665-6548
Monday-Friday - 7:30 a.m. - 4:30 p.m.

**Arkansas Department of
Environmental Quality, Attn: Mr. Masoud Arjmandi**
8001 National Drive
Little Rock, AR 72219
(501) 682-0852
Monday-Friday, excluding holidays - 8:00 a.m. - 4:30 p.m.

On the web...

Information can also be accessed via the U.S. EPA Internet Homepage at:

U.S. EPA Headquarters: www.epa.gov

U.S. EPA Region 6: www.epa.gov/region6

U.S. EPA Region 6 Superfund Division: www.epa.gov/region6/superfund



United States
Environmental Protection
Agency

Region 6
1445 Ross Ave. (6SF-PO)
Dallas, TX 75202

APPENDIX C

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Interview Record

Site Name: South 8th Street Landfill

EPA ID No. : ARD980496723

Subject: Five Year Review

Date: January 30, 2004

Time: 9:30 am

Type of Interview: Phone

Location of Interview: NA

Contact Made By: Vincent Malott

Title: Remedial Project Manager

Organization: EPA Region 6

Individual Contacted: Kent Ingram

Title: President

Organization: Razorback Concrete

Address: 211 N. 6th Street,
P.O. Box 1028
West Memphis, AR 72303-1028

Telephone: 870-735-9580

Email:

Summary of Conversation: There were no concerns regarding the current site status since the site has been cleaned up. Site redevelopment is proceeding and the addition of fill material and re-grading the site is expected to be completed by the summer of 2005.

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Interview Record

Site Name: South 8th Street Landfill

EPA ID No. : ARD980496723

Subject: Five Year Review

Date: January 23, 2004

Time: 5:00 pm

Type of Interview: Phone

Location of Interview: NA

Contact Made By: Vincent Malott

Title: Remedial Project Manager

Organization: EPA Region 6

Individual Contacted: Abbott Widicombe

Title: Owner

Organization: Tom Sawyer RV Park

Address: P.O. Box 1055
West Memphis, AR 72303

Telephone: 870-735-6028

Email: NA

Summary of Conversation:

There were no concerns regarding the current site status since the site has been cleaned up. The surrounding area is available for reuse and redevelopment. Potential concerns were expressed regarding the limitations on extending existing water supply lines through part of the former landfill area.

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Interview Record

Site Name: South 8th Street Landfill

EPA ID No. : ARD980496723

Subject: Five Year Review

Date: February 25, 2004

Time: 3:30 pm

Type of Interview: Phone

Location of Interview: NA

Contact Made By: Vincent Malott

Title: Remedial Project Manager

Organization: EPA Region 6

Individual Contacted: David Peoples

Title: City Attorney for West Memphis

Organization: City of West Memphis

Address: P.O. Box 1728
205 South Redding
West Memphis, AR 72303

Telephone: 870-732-7515

Email: dpeeples@citywm.com

Summary of Conversation:

There were no concerns regarding the current site status since the site has been cleaned up. Ongoing litigation regarding contribution claims by other PRPs remains the focus of the City Attorney.

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APPENDIX D

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Appendix D
Five Year Review Site Inspection Checklist

Site Name: South 8th Street Landfill
EPA ID No. : ARD980496723
Date of Inspection: January 22, 2004, February 5, 2004
Person Conducting Inspection: Vincent Malott
Title: Remedial Project Manager
Organization: EPA Region 6

I. Access and Institutional Controls

- A. Fencing:** Not Applicable
Remarks: The site institutional controls do not require the presence of fencing around the former landfill. The site fencing was originally installed in 1992 as part of an interim action to prevent exposure to the unsecured site. Fencing around the site was removed by the PRPs following the completion of the source control remedial action with the exception of the fencing present in the wooded area on the levee side of the landfill. Also, at the request of the landowner, the security gate installed by the PRPs during the remedial action construction was left in place to prevent trespassers at the site. This security gate has since been replaced by the current landowners and now restricts access to the Site from traffic on South 8th Street.
- B. Signs:** Not Applicable.
Remarks: Signs were removed during the fence removal.
- C. Institutional Controls:** Applicable
Remarks: Institutional controls were recorded in the property easement by the previous landowner. The current landowner was notified of the institutional controls via a phone call and supplied with a copy of the Final RA report. There was no evidence of violations of the property easement. The type of monitoring is through periodic inspections by EPA personnel with no set schedule or frequency. The institutional controls are available in Appendix E. The institutional controls are adequate since the current property development centered on the treated oily sludge mound is focused on elevating the land surface for future barge terminal operations, rather than excavating into the surface of the landfill.

- D. General:** There was evidence of illegal dumping of debris and trash on top of the treated mound area. In addition, a new security fence was installed by the barge terminal operators on the south side that isolates their entrance road and property from the rest of the landfill area in Area 1 of the Site. The security gate is generally locked and prevents unauthorized access to the Site. The only land use change in the area is the closing of the police firing range located west of the site along South 8th Street. The anticipated future development of the property as a barge unloading operation will not affect the remedy protectiveness or the site institutional controls.

II. General Site Conditions

- A. Roads:** South 8th Street is paved and maintained by the City of West Memphis up to the entrance to the site. After entering the site, the road surface is composed of gravel. The road also splits leading to the two existing barge terminal operations located both upstream and downstream. A second elevated road structure that leads to the upstream or northern barge terminal was installed on the north side of the treated oily sludge mound. This road was not gated or fenced at the time of the inspections in 2004.
- B. Other:** No other changes in the site appearance was noted during the inspection.

III. Landfill Cover

- A. Settlement:** There is no evidence of settlement across the treated mound area at the former oily sludge pit.
- B. Cracks:** There are no cracks in the soil cover on the treated mound area at the former oily sludge pit.
- C. Erosion:** The small-scale erosional rivulets noted during the 2002 ground water sampling activities have been covered with fill as part of the property redevelopment activities centered on the treated oily sludge mound.

- D. Holes:** There are no holes in the soil cover on the treated mound area at the former oily sludge pit.
- E. Vegetation:** There are no requirements to maintain or mow vegetation across the landfill surface. Since the site floods from the adjacent Mississippi River, the vegetation prevents or reduces the possible erosion from flood waters.
- F. Slope Instability:** The slopes of the mound at the former oily sludge pit have been reinforced with fill material during redevelopment activities.

IV. Pond/Wetland

- A. Siltation:** The pond receives silt and mud during flooding events by the Mississippi River. The amount of material does not threaten the potential volume of water that can be held in the pond, and provides some benefit by improving the retention capability of the pond.
- B. Vegetation:** Vegetation is present along the inside flanks of the pond. The vegetation is established at the site in response to fluctuating water levels in the pond.

V. Overall Observations

- A. Implementation of the Remedy:**

Following completion of the remedial construction activities in 2000 and the ground water monitored natural attenuation remedy in 2003, the only remedial objective remaining from the 1998 ROD Amendment is to prevent direct contact or ingestion of the landfill contents. The institutional controls are intended to prevent this exposure through the prohibition on excavations into or through the landfill or stabilized oily sludge pit area. Based on the site inspection and community interviews, the institutional controls are effective and functioning as intended.
- B. Adequacy of O&M:**

Periodic site inspections are sufficient to verify land reuse activities have not compromised the institutional controls for the site.

C. Early Indicators of Potential Remedy Problems:

Remedy protectiveness can be compromised through either erosional events due to flooding or rainfall or site reuse activities that result in excavations into the soil cover or the underlying landfill contents. There is no evidence that either event has compromised the remedy protectiveness.

D. Opportunities for Optimization:

There are no scheduled O&M activities for this Site.

APPENDIX E

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View of the main entrance to the Site from South 8th Street and the sign for the Tom Sawyer RV park. April 2004.



View of the two security gates at the main entrance to the site. The road and gate on the right is in Area 1 of the Site and leads to the southern barge terminal operation. The road and gate on the left separates Area 1 from the the oily sludge mound in Area 2. April 2004



View of the Area 1 landfill along the security fence separating the Site from the barge terminal road in Area 1. The view is orientated southward with the southern barge terminal in the background. Area 1 is covered with heavy vegetation. April 2004.



View of the top of the oily sludge mound orientated northward toward the RV park. April 2004.



View of the side slope of the oily sludge mound orientated northward along the western edge of the mound. January 2004.



View of the oily sludge mound following treatment in August 2000. View is orientated southward along the eastern edge of the mound. August 2000.



View orientated southward of the fill material being added to the raise the ground elevation between the Mississippi River and the top of the oily sludge mound. April 2004.



View of the fill material between the Mississippi River and the oily sludge mound. January 2004.



View of the Area 3 landfill. The elevated road in the foreground that runs from left to right in the photo is the barge terminal access road. The RV park is in the background. View is orientated northward from the northern edge of the treated oily sludge mound area. January 2004.



View of Area 3 landfill. April 2004.



View of the barge terminal located at the mid-point of the Site. The elevated road along the right side of the photo connects the barge terminal with South 8th Street.



View of the pond in the former borrow pit in Area 3 of the landfill in January 2004. The view is orientated northward with the RV park in the background. April 2004.



The rotasonic drilling method was used to collect cores from the treated oily sludge pit mound area. The locations were selected in the northern half of the mound area where the sludge was stabilized/solidified using an in-situ auger. The view is toward the northeast with the northernmost barge terminal in the background.



The stabilized/solidified material from the mound area is extruded from the core barrel. February 2004.



The extruded core was placed on a plywood board for sampling. The cores were collected from the upper 6 feet of treated waste material.

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APPENDIX F

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Rosenthal

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF ARKANSAS
JONESBORO DIVISION

FILED
U.S. DISTRICT COURT
EASTERN DISTRICT ARKANSAS

DEC 19 2000

JAMES W. McCORMACK, CLERK
By *Paula DeGate* DEP. CLERK

UNITED STATES OF AMERICA,
AND THE STATE OF ARKANSAS

Plaintiffs,

v.

AIRCRAFT SERVICE
INTERNATIONAL, INC., ET AL.,

Defendants.

CIVIL ACTION NOS. J-C-98-362
J-C-98-363

CONSENT DECREE
SOUTH 8TH STREET LANDFILL SUPERFUND SITE AND
GURLEY PIT SUPERFUND SITE

90-112-19672
LAWSON DAVIS
ENGINEERING & CONSULTING

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**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF ARKANSAS
JONESBORO DIVISION**

| | | |
|--|---|------------------------------|
| UNITED STATES OF AMERICA, AND THE STATE OF ARKANSAS |) | |
| |) | |
| Plaintiffs, |) | |
| |) | |
| v. |) | CIVIL ACTION NOS. J-C-98-362 |
| |) | J-C-98-363 |
| |) | |
| AIRCRAFT SERVICE |) | |
| INTERNATIONAL, INC., <u>ET AL.</u> , |) | |
| |) | |
| Defendants. |) | |
| |) | |

CONSENT DECREE

I. BACKGROUND

A. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), filed an amended complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. §§ 9606, 9607.

B. The United States in its amended complaint seeks, inter alia: (1) reimbursement of costs incurred by EPA and the Department of Justice for response actions at the South 8th Street Landfill Superfund Site in West Memphis, Arkansas ("South 8th Street Site"), and at the Gurley Pit Site in Edmondson, Arkansas ("Gurley Pit Site"), together with accrued interest; and (2) performance of

Decree, except those required by Section XXV (Retention of Records). "Work" specifically includes, but is not limited to, the Remedial Action and the work performed by the Settling Defendants' Supervising Contractor and Project Manager.

V. GENERAL PROVISIONS

5. Objectives of the Parties

The objectives of the Parties in entering into this Consent Decree are to protect public health or welfare or the environment by the implementation of response actions at the South 8th Street Site by the Settling Defendants, to reimburse Plaintiffs' response costs and to resolve all claims for Past and Future Response Costs at the South 8th Street Site and the Gurley Pit Site between the Plaintiffs and Settling Defendants as provided in this Consent Decree, to resolve the claims of the State and Settling Defendants which have been or could have been asserted against the United States with regard to the South 8th Street Site and the Gurley Pit Site, and to provide Settling Defendants and the Settling Federal Agencies with protection from contribution actions or claims as provided in this Consent Decree.

6. Commitments by Settling Defendants and Settling Federal Agencies

a. Settling Defendants shall finance and perform the South 8th Street Site Remedial Action in accordance with this Consent Decree, the ROD, the SOW, and all work plans and other plans, standards, specifications, and schedules set forth herein or developed by Settling Defendants and approved by EPA pursuant to this Consent Decree. Settling Defendants shall also reimburse the United States and the State for Past Response Costs, Future Response Costs, State Past Response

and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal or state permit or approval, Settling Defendants shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. The Settling Defendants may seek relief under the provisions of Section XVIII (Force Majeure) of this Consent Decree for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work.

c. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

9. Notice of Obligations to Successors-in-Title

a. With respect to any property owned or controlled by the Owner Settling Defendant that is located within the South 8th Street Site, within 90 days after the entry of this Consent Decree, the Owner Settling Defendant shall submit to EPA for review and approval a notice to be filed with the Office of the Circuit Clerk of Crittenden County, State of Arkansas, which shall provide notice to all successors-in-title that the property is part of the South 8th Street Site, that EPA selected a remedy for the South 8th Street Site on July 22, 1998, and that the Settling Defendants have entered into a Consent Decree requiring implementation of the remedy. Such notice shall identify the United States District Court in which the Consent Decree was filed, the name and civil action number of this case, and the date the Consent Decree was entered by the Court. The Owner Settling Defendant shall record the notice within 15 days of EPA's approval of the notice. The Owner Settling Defendant shall provide EPA with a certified copy of the recorded notice within 30 days of recording such notice.

b. Within 15 days after the entry of this Consent Decree, the Owner Settling Defendant

shall record at the Office of the Circuit Clerk of Crittenden County, Arkansas, a notice of obligation to provide access to the South 8th Street Site under Section IX (Access and Institutional Controls).

Each subsequent instrument conveying an interest to any such property included in the South 8th Street Site shall reference the recorded location of such notice.

c. At least 30 days prior to the conveyance of any interest in property located within the South 8th Street Site, including, but not limited to, fee interests, leasehold interests, and mortgage interests, the Owner Settling Defendant conveying the interest shall give the grantee written notice of this Consent Decree, a notice of obligation to provide access under Section IX (Access and Institutional Controls), and notice of related covenants and easements pursuant to Paragraph 24. At least 30 days prior to such conveyance, the Owner Settling Defendant shall also give written notice to EPA and the State of the proposed conveyance, including the name and address of the grantee, and the date on which notice of the Consent Decree was given to the grantee. In no event shall the conveyance of an interest in property that includes, or is a portion of, the South 8th Street Site release or otherwise affect the liability of the Settling Defendants to comply with the Consent Decree.

d. In the event of any such conveyance, the Owner Settling Defendant's obligations under this Consent Decree, including, but not limited to, its obligation to provide or secure access and institutional controls for the South 8th Street Site, as well as to abide by such institutional controls pursuant to Section IX of this Consent Decree, shall continue to be met by the Owner Settling Defendant. In no event shall the conveyance release or otherwise affect the liability of the Owner Settling Defendant to comply with all provisions of this Consent Decree, absent the prior written consent of EPA. If the United States approves, the grantee may perform some or all of the Work

under this Consent Decree.

**VI. PERFORMANCE OF THE WORK AT THE SOUTH 8TH STREET SITE BY
SETTLING DEFENDANTS**

10. Selection of Supervising Contractor.

a. All aspects of the Work to be performed by Settling Defendants pursuant to Sections VI (Performance of the Work by Settling Defendants), VII (Remedy Review), VIII (Quality Assurance, Sampling and Data Analysis), and XV (Emergency Response) of this Consent Decree shall be under the direction and supervision of the Supervising Contractor, the selection of which shall be subject to disapproval by EPA. EPA has approved the Settling Defendants' selection of Conestoga-Rovers and Associates as the initial Supervising Contractor. If at any time thereafter, Settling Defendants propose to change a Supervising Contractor, Settling Defendants shall give notice to EPA and must obtain an authorization to proceed from EPA before the new Supervising Contractor performs, directs, or supervises any Work under this Consent Decree.

b. If EPA disapproves a proposed Supervising Contractor, EPA will notify Settling Defendants in writing with its reasons for disapproval. Settling Defendants shall submit to EPA a list of contractors, including the qualifications of each contractor, that would be acceptable to them within 30 days of receipt of EPA's disapproval of the contractor previously proposed. EPA will provide written notice of the names of any contractor(s) that it disapproves and an authorization to proceed with respect to any of the other contractors. Settling Defendants may select any contractor from that list that is not disapproved and shall notify EPA of the name of the contractor selected within 21 days of

20. Upon request, the Settling Defendants shall allow split or duplicate samples to be taken by EPA and the State or their authorized representatives. Settling Defendants shall notify EPA not less than 14 days in advance of any sample collection activity unless shorter notice is agreed to by EPA. In addition, EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow the Settling Defendants to take split or duplicate samples of any samples it takes as part of the Plaintiffs' oversight of the Settling Defendants' implementation of the Work.

21. Settling Defendants shall submit to EPA four copies of the results of all sampling and/or tests or other data obtained or generated by or on behalf of Settling Defendants with respect to the South 8th Street Site and/or the implementation of this Consent Decree unless EPA agrees otherwise.

22. Notwithstanding any provision of this Consent Decree, the United States and the State hereby retain all of their information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

IX. ACCESS AND INSTITUTIONAL CONTROLS

23. If the South 8th Street Site, or any other property where access and/or land/water use restrictions are needed to implement this Consent Decree, is owned or controlled by any of the Settling Defendants, such Settling Defendants shall, commencing upon the date of entry of this Consent Decree, provide the United States, the State, and their representatives, including EPA and its contractors and Settling Defendants, with access at all reasonable times to the South 8th Street Site, or such other property, for the purposes of conducting any activity related to this Consent

Decree including, but not limited to:

- a. Performing the Work;
- b. Monitoring the Work;
- c. Verifying any data or information submitted to the United States;
- d. Conducting investigations relating to contamination at or near the South 8th Street Site;
- e. Obtaining samples;
- f. Assessing the need for, planning, or implementing additional response actions at or near the South 8th Street Site;
- g. Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Settling Defendants or their agents, consistent with Section XXIV;
- h. Assessing Settling Defendants' compliance with this Consent Decree; and
- i. Performing any other activities necessary to implement the ROD, including, but not limited to, Monitoring.

24. a. Commencing on the date of lodging of this Consent Decree, the Owner Settling Defendant shall refrain from using that portion of the South 8th Street Site described in Appendix F in any manner that would interfere with or adversely affect the integrity or protectiveness of the remedial measures to be implemented pursuant to this Consent Decree or any other remedial measures pursuant to the ROD. Such restrictions include, but are not limited to: 1) the installation of wells for the purposes of withdrawing water from the alluvial aquifer is prohibited until such time as the remedial goals for the ground water operable unit have been achieved; 2) the removal of vegetation from the landfill cover is prohibited if such removal may result in the subsequent erosion or removal of

the soil cover over the landfill contents or treated material; 3) the excavation or trenching into the treated material is prohibited; and 4) the excavation or trenching into the landfill cover or landfill contents is prohibited unless such trenching or excavation is necessary for i) the maintenance or repair to existing utilities or pipelines, ii) the planting of trees or shrubs, or iii) the installation of fencing; and

b. The Owner Settling Defendant shall execute and record in the Office of the Circuit Clerk of Crittenden County, State of Arkansas, an easement, running with the land, that (i) grants a right of access for the purpose of conducting any activity related to this Consent Decree or any other activity related to implementing the ROD, including, but not limited to, Monitoring; and (ii) grants the right to enforce the land/water use restrictions listed in Paragraph 24(a) of this Consent Decree, or other restrictions that EPA determines are necessary to implement, ensure non-interference with, or ensure the protectiveness of the remedial measures to be performed pursuant to this Consent Decree or the ROD. Such Owner Settling Defendant shall grant access rights and the rights to enforce the land/water use restrictions to (i) the United States; (ii) the State and its representatives; (iii) the other Settling Defendants; and/or (iv) other appropriate grantees. Such Owner Settling Defendant shall, within 90 days of entry of this Consent Decree, submit to EPA for review and approval with respect to such property:

i. A draft easement that is enforceable under the laws of the State of Arkansas, free and clear of all prior liens and encumbrances (except as approved by EPA), and acceptable under the Attorney General's Title Regulations promulgated pursuant to 40 U.S.C. § 255; and

ii. a current title commitment or report prepared in accordance with the U.S. Department of Justice Standards for the Preparation of Title Evidence in Land Acquisitions by the United States (1970) (the "Standards").

Within 15 days of EPA's approval and acceptance of the easement, such Owner Settling Defendant shall update the title search and, if it is determined that nothing has occurred since the effective date of the commitment or report to affect the title adversely, record the easement with the Office of the Circuit Clerk of Crittenden County, Arkansas. Within 30 days of recording the easement, such Owner Settling Defendant shall provide EPA with final title evidence acceptable under the Standards, and a certified copy of the original recorded easement showing the clerk's recording stamps.

25. To the extent that any property other than the South 8th Street Site to which access is required for the implementation of this Consent Decree is owned or controlled by persons other than Settling Defendants, Settling Defendants shall use best efforts to secure from such persons access for Settling Defendants, as well as for the United States and the State and their representatives, including, but not limited to, their contractors, as necessary to effectuate this Consent Decree. For purposes of this Paragraph "best efforts" includes the payment of reasonable sums of money in consideration of access. If any access required to complete the Work is not obtained within 45 days of the date of entry of this Consent Decree, or within 45 days of the date EPA notifies the Settling Defendants in writing that additional access beyond that previously secured is necessary, Settling Defendants shall promptly notify the United States and the State in writing, and shall include in that notification a summary of the steps Settling Defendants have taken to attempt to obtain access. The United States and the State may, as it deems appropriate, assist Settling Defendants in obtaining access. Settling Defendants shall reimburse the United States and the State, in accordance with the procedures in Section XVI (Payment of Response Costs), for all costs incurred by the United States and the State in obtaining access.

APPENDIX G

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William L. Johnson Co., Inc.

RECEIVED

P. O. Box 1055
West Memphis, AR 72303

Phone 870-735-6028
Fax 870-735-6038

2003 FEB 27 PM 4:19
AR/OK/TX BRANCH

February 19, 2003

Mr. Vincent Mallott
Remedial Project Manager
South Eighth Street Landfill Site
United States Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

Dear Mr. Mallott:

Enclosed please find the recorded NOTICE to comply with Section V.9.a. of the South Eighth Street Landfill Consent Decree.

Also enclosed please find the recorded EASEMENT to comply with Section IX. 24.b. of said Consent Decree.

Sorry for the delay.

Sincerely,

William L. Johnson Co., Inc.

by Abbott C. Widdicombe

Abbott C. Widdicombe

President

870-735-6028

1286 South 8th Street

P. O. Box 1055

West Memphis, AR 72303

1539

EASEMENT

BOOK 1013 PAGE 770

This easement is made, executed and delivered this 6th day of March, 2001, by and between WILLIAM L. JOHNSON, CO., INC., an Arkansas corporation (hereinafter called "Grantor"), in favor of the UNITED STATES OF AMERICA and its representatives, the STATE OF ARKANSAS and its representatives, the Settling Defendants identified in that certain Consent Decree (hereinafter the "Consent Decree") entered on December 19, 2000 in the United States District Court for the Eastern District of Arkansas, in Civil Action Nos. J-C-98-362 and J-C-98-363 entitled United States of America and The State of Arkansas, Plaintiffs v. Aircraft Service International, Inc., et al, Defendants (hereinafter collectively called "Grantees"),

WITNESSETH:

WHEREAS, Grantor is the owner of the real property located in Crittenden County, Arkansas, described hereinbelow; and,

WHEREAS, this Easement is made, executed, delivered and recorded by the Grantor in order to comply with the requirements of the Consent Decree referred to hereinabove; and,

NOW, THEREFORE, in consideration of the premises, and other good and valuable considerations, the receipt and sufficiency of which are hereby acknowledged by the Grantor, the Grantor hereby grants and conveys to the Grantees as follows:

I.

Grantor, for itself and its successors and assigns, does hereby grant, bargain, sell and convey unto the Grantees, and their successors and assigns forever, a permanent and perpetual easement

for the purposes set forth hereinbelow, running with the following described real property located in Crittenden County, Arkansas, to-wit:

See Exhibit "A" for legal description

II.

The easement herein granted is for the purpose of the Grantees' access to the real property described hereinabove to conduct any activity related to environmental contamination, including, but not limited to, any activity related to the Consent Decree, any activity related to the implementation of the Record of Decision (the "ROD"), monitoring activities, any activity related to a reopener of the Consent Decree, or any remedial investigatory or operation and maintenance activity related to environmental contamination. Grantor hereby grants the Grantees the right to enforce the land/water use restrictions listed in Paragraph 24(a) of the Consent Decree, or other restrictions that the U. S. Environmental Protection Agency determines are necessary to implement, ensure non-interference with, or ensure the protectiveness of the remedial measures to be performed pursuant to the Consent Decree or the ROD.

IN WITNESS WHEREOF, the Grantor, by its duly authorized President, has hereunto set its hand and seal on the day and date first hereinabove written.

WILLIAM L. JOHNSON, CO., INC.,
Grantor

BY: Abbott C. Widdicombe
ABBOTT C. WIDDICOMBE, President

A C K N O W L E D G M E N T

STATE OF ARKANSAS

COUNTY OF CRITTENDEN

On this day before me, the undersigned Notary Public, duly qualified and acting within and for the said State and County, appeared in person the within named ABBOTT C. WIDDICOMBE, to me personally well known, who stated that he was the President of William L. Johnson Company, Inc., an Arkansas corporation, and was authorized by the bylaws and resolutions of said corporation to execute the foregoing instrument in the name, and on behalf, of same. He further acknowledged that he had executed said instrument for the consideration, uses and purposes therein mentioned and set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 7th day of March, 2001.

Wm. C. [Signature]
NOTARY PUBLIC

My Commission Expires:

12/1/2002

THIS INSTRUMENT PREPARED BY:

Saxton and Ayres
Attorneys at Law
P. O. Box 2207
West Memphis, AR 72303

TITLE NOT EXAMINED AND NO
OPINION GIVEN AS TO STATUS OF
SAME.

BEING A LEGAL DESCRIPTION OF A PROPOSED RESTRICTION AREA, BEING SITUATED IN WEST MEMPHIS, CRITTENDEN COUNTY, ARKANSAS, SAID PROPOSED RESTRICTION AREA TO BE KNOWN FOR THE PURPOSES OF THIS DESCRIPTION AS THE "SUBJECT" PROPERTY, AND SAID SUBJECT PROPERTY BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEING A FRACTIONAL PART OF THE NORTHEAST QUARTER OF SECTION 19, TOWNSHIP 5 NORTH, RANGE 9 EAST, A FRACTIONAL PART OF THE SOUTHEAST QUARTER OF SAID SECTION 19, AND A FRACTIONAL PART OF THE NORTHWEST QUARTER OF SECTION 20, TOWNSHIP 5 NORTH, RANGE 9 EAST AND DESCRIBED AS:

COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SAID SECTION 19 (PER DICKINSON & BENNETT, INC SURVEY DATED JULY 15, 1992, OF RECORD IN PLAT BOOK 4 - PAGE 53, CIRCUIT CLERK'S OFFICE, CRITTENDEN COUNTY, ARKANSAS); THENCE NORTH 90 DEGREES 00 MINUTES 00 SECONDS EAST - 3896.42 FEET; THENCE SOUTH 00 DEGREES 00 MINUTES 00 SECONDS WEST - 101 FEET TO THE POINT OF BEGINNING; THENCE NORTH 21 DEGREES 02 MINUTES 55 SECONDS EAST - 596.49 FEET; THENCE NORTH 72 DEGREES 11 MINUTES 41 SECONDS EAST - 261.21 FEET; THENCE NORTH 42 DEGREES 29 MINUTES 40 SECONDS EAST - 671.01 FEET; THENCE NORTH 32 DEGREES 25 MINUTES 01 SECONDS EAST - 192.04 FEET; THENCE NORTH 47 DEGREES 42 MINUTES 46 SECONDS EAST - 518.07 FEET; THENCE NORTH 38 DEGREES 40 MINUTES 50 SECONDS EAST - 253.93 FEET; THENCE NORTH 36 DEGREES 32 MINUTES 56 SECONDS EAST - 139.23 FEET; THENCE SOUTH 21 DEGREES 02 MINUTES 01 SECONDS EAST - 256.39 FEET; THENCE SOUTH 44 DEGREES 52 MINUTES 00 SECONDS WEST - 704.78 FEET; THENCE SOUTH 41 DEGREES 52 MINUTES 49 SECONDS EAST - 456.32 FEET; THENCE SOUTH 54 DEGREES 53 MINUTES 43 SECONDS WEST - 39.31 FEET; THENCE SOUTH 47 DEGREES 12 MINUTES 30 SECONDS WEST - 159.19 FEET; THENCE SOUTH 35 DEGREES 38 MINUTES 48 SECONDS WEST - 342.16 FEET; THENCE NORTH 44 DEGREES 27 MINUTES 14 SECONDS WEST - 83.08 FEET; THENCE SOUTH 58 DEGREES 32 MINUTES 42 SECONDS WEST - 586.64 FEET; THENCE NORTH 48 DEGREES 39 MINUTES 34 SECONDS WEST - 153.68 FEET; THENCE SOUTH 42 DEGREES 28 MINUTES 58 SECONDS WEST - 404.71 FEET; THENCE SOUTH 07 DEGREES 51 MINUTES 04 SECONDS WEST - 73.70 FEET; THENCE SOUTH 48 DEGREES 14 MINUTES 22 SECONDS EAST - 157.76 FEET; THENCE SOUTH 02 DEGREES 26 MINUTES 27 SECONDS EAST - 27.20 FEET; THENCE SOUTH 40 DEGREES 24 MINUTES 13 SECONDS WEST - 78.30 FEET; THENCE SOUTH 85 DEGREES 57 MINUTES 31 SECONDS WEST - 28.56 FEET; THENCE NORTH 48 DEGREES 25 MINUTES 54 SECONDS WEST - 370.66 FEET TO THE POINT OF BEGINNING.

CONTAINING 22.844 ACRES, LESS AND EXCEPT ANY PUBLIC RIGHT OF WAY IN EIGHTH (8TH) STREET (PUBLIC ROAD - WIDTH AND EXTENTS UNKNOWN).

THE ABOVE DESCRIBED PROPERTY IS VACANT LAND.

BEARINGS ARE RELATIVE TO SAID DICKINSON & BENNETT, INC SURVEY.

State of Arkansas, County of Crittenden
Filed for record the 9th day of March 20 01 at 12:11
o'clock A M and recorded in Book 1013, Page 770
BY Amber Humphrey DONNA PALMER, CIRCUIT CLERK D.C.



EXHIBIT A

1540

NOTICE

BOOK 1013 PAGE 774

Notice is hereby given that the following described property located in Crittenden County, Arkansas, to-wit:

See Exhibit "A" for legal description

is included in the South 8th Street Landfill Superfund Site ("Site"). The United States Environmental Protection Agency selected a remedy for the Site on July 22, 1998. A Consent Decree was entered into by the Settling Defendants, as identified therein, requiring implementation of such remedy. The Consent Decree was entered by the United State District Court for the Eastern District of Arkansas, in Civil Action Nos. J-C-98-362 and J-C-98-363 entitled United States of America and The State of Arkansas, Plaintiffs v. Aircraft Service International, Inc., et al, Defendants, on December 19, 2000.

The Consent Decree prohibits the use of certain portions of the Site, as described in Appendix F to the Consent Decree, in any manner that would interfere with or adversely affect the integrity or protectiveness of the Site remedy. Such restrictions include, but are not limited to: 1) the installation of wells for the purposes of withdrawing water from the alluvial aquifer is prohibited until such time as the remedial goals for the ground water operable unit have been achieved; 2) the removal of

vegetation from the landfill cover is prohibited if such removal may result in the subsequent erosion or removal of the soil cover over the landfill contents or treated material; 3) the excavation or trenching into the treated material is prohibited; 4) the excavation or trenching into the landfill cover or landfill contents is prohibited unless such trenching or excavation is necessary for i) the maintenance or repair to existing utilities or pipelines, ii) the planting of trees or shrubs, or iii) the installation of fencing.

The Site owner is also required to provide access to the Site or any other property under its ownership or control where access and/or land/water use restrictions are needed for the purposes of conducting any activity related to environmental contamination, including, but not limited to, any activity related to the Consent Decree, any activity related to the implementation of the Record of Decision, monitoring activities, any activity related to a reopener of the Consent Decree, or any remedial investigatory or operation and maintenance activity related to environmental contamination.

DATED this 6th day of March, 2001.

WILLIAM L. JOHNSON COMPANY, INC.

By: Abbott C. Widdicombe
ABBOTT C. WIDDICOMBE, President


A C K N O W L E D G M E N T

STATE OF ARKANSAS

COUNTY OF CRITTENDEN

On this day before me, the undersigned Notary Public, duly qualified and acting within and for the said State and County, appeared in person the within named ABBOTT C. WIDDICOMBE, to me personally well known, who stated that he was the President of William L. Johnson Company, Inc., an Arkansas corporation, and was authorized by the bylaws and resolutions of said corporation to execute the foregoing instrument in the name, and on behalf, of same. He further acknowledged that he had executed said instrument for the consideration, uses and purposes therein mentioned and set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 7th day of March, 2001.



NOTARY PUBLIC

My Commission Expires:

12/1/2002

THIS INSTRUMENT PREPARED BY:

Saxton and Ayres
Attorneys at Law
P. O. Box 2207
West Memphis, AR 72303

TITLE NOT EXAMINED AND NO
OPINION GIVEN AS TO STATUS OF
SAME.

BEING A LEGAL DESCRIPTION OF A PROPOSED RESTRICTION AREA, BEING SITUATED IN WEST MEMPHIS, CRITTENDEN COUNTY, ARKANSAS, SAID PROPOSED RESTRICTION AREA TO BE KNOWN FOR THE PURPOSES OF THIS DESCRIPTION AS THE "SUBJECT" PROPERTY, AND SAID SUBJECT PROPERTY BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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THE ABOVE DESCRIBED PROPERTY IS VACANT LAND.

BEARINGS ARE RELATIVE TO SAID DICKINSON & BENNETT, INC SURVEY.

State of Arkansas, County of Crittenden
Filed for record the 9th day of March 2001 at 12:13
o'clock P M and recorded in Book 1013, Page 774
BY Amber Humphrey DONNA PALMER, CIRCUIT CLERK D.C.



EXHIBIT A

BEING A LEGAL DESCRIPTION OF A PROPOSED RESTRICTION AREA, BEING SITUATED IN WEST MEMPHIS, CRITTENDEN COUNTY, ARKANSAS, SAID PROPOSED RESTRICTION AREA TO BE KNOWN FOR THE PURPOSES OF THIS DESCRIPTION AS THE "SUBJECT" PROPERTY, AND SAID SUBJECT PROPERTY BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEING A FRACTIONAL PART OF THE NORTHEAST QUARTER OF SECTION 19, TOWNSHIP 5 NORTH, RANGE 9 EAST, A FRACTIONAL PART OF THE SOUTHEAST QUARTER OF SAID SECTION 19, AND A FRACTIONAL PART OF THE NORTHWEST QUARTER OF SECTION 20, TOWNSHIP 5 NORTH, RANGE 9 EAST AND DESCRIBED AS:

COMMENCING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SAID SECTION 19 (PER DICKINSON & BENNETT, INC SURVEY DATED JULY 15, 1992, OF RECORD IN PLAT BOOK 4 - PAGE 53, CIRCUIT CLERK'S OFFICE, CRITTENDEN COUNTY, ARKANSAS); THENCE NORTH 90 DEGREES 00 MINUTES 00 SECONDS EAST - 3896.42 FEET; THENCE SOUTH 00 DEGREES 00 MINUTES 00 SECONDS WEST - 101 FEET TO THE POINT OF BEGINNING; THENCE NORTH 21 DEGREES 02 MINUTES 55 SECONDS EAST - 596.49 FEET; THENCE NORTH 72 DEGREES 11 MINUTES 41 SECONDS EAST - 261.21 FEET; THENCE NORTH 42 DEGREES 29 MINUTES 40 SECONDS EAST - 671.01 FEET; THENCE NORTH 32 DEGREES 25 MINUTES 01 SECONDS EAST - 192.04 FEET; THENCE NORTH 47 DEGREES 42 MINUTES 46 SECONDS EAST - 518.07 FEET; THENCE NORTH 38 DEGREES 40 MINUTES 50 SECONDS EAST - 253.93 FEET; THENCE NORTH 36 DEGREES 32 MINUTES 56 SECONDS EAST - 139.23 FEET; THENCE SOUTH 21 DEGREES 02 MINUTES 01 SECONDS EAST - 256.39 FEET; THENCE SOUTH 44 DEGREES 52 MINUTES 00 SECONDS WEST - 704.78 FEET; THENCE SOUTH 41 DEGREES 52 MINUTES 49 SECONDS EAST - 456.32 FEET; THENCE SOUTH 54 DEGREES 53 MINUTES 43 SECONDS WEST - 39.31 FEET; THENCE SOUTH 47 DEGREES 12 MINUTES 30 SECONDS WEST - 159.19 FEET; THENCE SOUTH 35 DEGREES 38 MINUTES 48 SECONDS WEST - 342.16 FEET; THENCE NORTH 44 DEGREES 27 MINUTES 14 SECONDS WEST - 83.08 FEET; THENCE SOUTH 58 DEGREES 32 MINUTES 42 SECONDS WEST - 586.64 FEET; THENCE NORTH 48 DEGREES 39 MINUTES 34 SECONDS WEST - 153.68 FEET; THENCE SOUTH 42 DEGREES 28 MINUTES 58 SECONDS WEST - 404.71 FEET; THENCE SOUTH 07 DEGREES 51 MINUTES 04 SECONDS WEST - 73.70 FEET; THENCE SOUTH 48 DEGREES 14 MINUTES 22 SECONDS EAST - 157.76 FEET; THENCE SOUTH 02 DEGREES 26 MINUTES 27 SECONDS EAST - 27.20 FEET; THENCE SOUTH 40 DEGREES 24 MINUTES 13 SECONDS WEST - 78.30 FEET; THENCE SOUTH 85 DEGREES 57 MINUTES 31 SECONDS WEST - 28.56 FEET; THENCE NORTH 48 DEGREES 25 MINUTES 54 SECONDS WEST - 370.66 FEET TO THE POINT OF BEGINNING.

CONTAINING 22.844 ACRES, LESS AND EXCEPT ANY PUBLIC RIGHT OF WAY IN EIGHTH (8TH) STREET (PUBLIC ROAD - WIDTH AND EXTENTS UNKNOWN).

THE ABOVE DESCRIBED PROPERTY IS VACANT LAND.

BEARINGS ARE RELATIVE TO SAID DICKINSON & BENNETT, INC SURVEY.

EXHIBIT A

APPENDIX H

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KEMRON ENVIRONMENTAL SERVICES, INC.
SAIC
SOUTH 8th STREET GEOTECHNICAL TESTING PROJECT

TABLE 1
Falling Head Permeability Testing - ASTM D5084
Summary of Results

| SAMPLE ID | DATE RECEIVED | Initial Moisture Content (%) | Initial Bulk Density (lbs/ft ³) | Initial Dry Density (lbs/ft ³) | Applied Consolidation Pressure (PSI) | Permeability (cm/sec) |
|-----------|---------------|------------------------------|---|--|--------------------------------------|-----------------------|
| L1 | 02/10/2004 | 45.1 | 83.4 | 57.5 | 10 | 6.3E-07 |
| L1C | 02/10/2004 | 36.2 | 87.4 | 64.1 | 10 | 6.1E-06 |
| L2 | 02/10/2004 | 38.6 | 82.3 | 59.4 | 10 | 4.8E-06 |
| L3 | 02/10/2004 | 31.1 | 90.2 | 68.8 | 10 | 6.1E-06 |

Sampling Note: the L1 and L1C sample IDs refer to co-located cores that were collected during the initial coring effort on Feb. 5, 2004. Core L2 was collected on Feb. 5 2004 after the rotosonic drilling method was modified slightly in the field by reducing the vibrations used for the coring and water was used to extract the core rather than vibrating the core barrel. Core L3 was collected on Feb. 6, 2004.

KEMRON ENVIRONMENTAL SERVICES, INC.
SAIC
SOUTH 8th STREET GEOTECHNICAL TESTING PROJECT

TABLE 1
Unconfined Compressive Stress Testing - ASTM D1633
Summary of Results

| SAMPLE ID | DATE RECEIVED | Initial Diameter (in) | Initial Height (in) | Initial Bulk Density (lbs/ft ³) | UCS Result (lbs/in ²) | Applied Correction Factor | Corrected UCS Result (lbs/in ²) |
|------------------------|---------------|-----------------------|---------------------|---|-----------------------------------|---------------------------|---|
| L1 | 02/10/2004 | 4.2 | 2.1 | 85.2 | 20.7* | NA | NA |
| L1C | 02/10/2004 | 4.2 | 5.3 | 88.1 | 14.7 | 0.93 | 13.7 |
| L1C (dup) ₁ | 02/10/2004 | 4.2 | 6.1 | 86.7 | 12.7 | 0.96 | 12.2 |
| L2 | 02/10/2004 | 4.2 | 6.3 | 83.8 | 19.0 | 0.98 | 18.6 |
| L3 | 02/10/2004 | 4.2 | 8.1 | 87.0 | 30.7 | 1.0 | 30.7 |

Only 2 inches in height of sample L1 was available for testing. Since a minimum height to diameter ratio required is 1:1, the result is only an estimate
Due to a low compressive strength, sample L1C was tested in duplicate to verify the result

Sampling Note: the L1 and L1C sample IDs refer to co-located cores that were collected during the initial coring effort on Feb. 5, 2004. Core L2 was collected on Feb. 5 2004 after the rotosonic drilling method was modified slightly in the field by reducing the vibrations used for the coring and water was used to extract the core rather than vibrating the core barrel. Core L3 was collected on Feb. 6, 2004.