FIRST FIVE-YEAR REVIEW REPORT
FOR THE
PAB OIL AND CHEMICAL SERVICES, INC. SUPERFUND SITE
ABBEVILLE, LOUISIANA

JULY 2002

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
DALLAS, TEXAS

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FIRST FIVE-YEAR REVIEW FOR
PAB OIL AND CHEMICAL SERVICES, INC. SUPERFUND SITE
ABBEVILLE, LOUISIANA

This memorandum documents the U.S. Environmental Protection Agency's (EPA) approval of the PAB Oil and Chemical Services, Inc. (PAB) Superfund Site First Five-Year Review Report.

Summary of Five-Year Review Findings

The selected remedy called for surface water treatment, excavation, biological treatment, residuals solidification/stabilization, on-site disposal, a clay cover, and ground water monitoring. The remedial action (RA) began in June 1997 with the site mobilization and ended in August 1998 after the completion of capping, grading, and revegetation. Operations and maintenance (O&M) activities were scheduled quarterly for the first year after completion (August 1998 to July 1999), and semiannually from years 2 (August 1999) to 5 (July 2004). The remedy appears to be performing as intended and is currently protective of human health and the environment.

The cap on monitoring well 8 has a broken hinge and there are a few breaches in the fence. The detection limits used in some metal analyses have been above the Maximum Contaminant Levels (MCLs) for those metals. No statistical analysis has been performed on ground water data to verify if ground water quality on-site is degrading. There is no institutional control in place to prohibit drilling on-site.

Actions Needed

The broken hinge on monitoring well 8 should be replaced. Breaches in the fence need to be repaired. The detection limit for arsenic should be lowered to its MCL of 0.01 milligrams per liter (mg/L). Statistical analysis of ground water data should be performed to verify ground water quality on-site is not degrading. A conveyance notice should be filed by the PAB Group with the Parish Clerk to ensure that residential use of the property, breaches of the cap integrity, drilling into the contaminated aquifer, and use of ground water from the Site is prohibited.

Determinations

I have determined the remedy for the PAB site is protective of human health and the environment and will remain so provided the action items identified in this report are addressed as described above.

Pamela Phillips, Acting — July 26, 2002

Myron O. Knudson, P.E. — Date
Director
Superfund Division
U.S. Environmental Protection Agency, Region 6

CONCURRENCES:

FIRST FIVE-YEAR REVIEW FOR

PAB OIL AND CHEMICAL SERVICES, INC. SUPERFUND SITE

EPA ID# LAD980749139

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Craig Carroll
Remedial Project Manager

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ACRONYMS AND ABBREVIATIONS

ACL	Alternate concentration limit
ARAR	Applicable or relevant and appropriate requirement
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
COC	Contaminant of concern
cPAH	Carcinogenic polycyclic aromatic hydrocarbon
CRDL	Contract-required detection limit
yd^3	Cubic yard
EPA	U.S. Environmental Protection Agency, Region 6
ESD	Explanation of Significant Differences
IRIS	Integrated Risk Information System
LAC	Louisiana Administrative Code
LDEQ	Louisiana Department of Environmental Quality
MCL	Maximum contaminant level
MCLG	Maximum contaminant level goal
µg/L	Micrograms per liter (ppb)
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and maintenance
PAB	PAB Oil and Chemical Services, Inc.
PAH	Polycyclic aromatic hydrocarbon
ppm	Parts per million
PRP	Potentially responsible party
RA	Remedial action
RAGS	Risk Assessment Guidance for Superfund
RAO	Remedial action objectives
RD	Remedial design
RECAP	Risk Evaluation/Corrective Action Program
RI/FS	Remedial investigation/feasibility study
ROD	Record of Decision
TAL	Target analyte list
TCLP	Toxicity characteristic leaching procedure
Tetra Tech	Tetra Tech EM Inc.
TRC	TRC Environmental Solutions, Inc.
UAO	Unilateral Administrative Order

EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency, Region 6 (EPA), conducted a five-year review of the remedial actions (RA) implemented at the PAB Oil and Chemical Services, Inc. (PAB) Superfund site in Abbeville, Louisiana. The purpose of the five-year review is to determine if the remedy at the site is protective of human health and the environment. This review was conducted from February through March 2002, and the findings and conclusions are documented in this report.

The PAB site was put on the National Priorities List on March 31, 1989. Following a remedial investigation and feasibility study, EPA signed a Record of Decision (ROD) on September 22, 1993. The selected remedy called for surface water treatment, excavation, biological treatment, residuals solidification/stabilization, on-site disposal, a clay cover, and ground water monitoring. Improved analytical techniques used during pre-design investigation activities, which took place in 1993 and 1995, showed that biological treatment of soils and sludges would not be required and was therefore deemed unnecessary. Apart from this, all aspects of the remedy remained the same. This change to the remedy was made and documented in the Explanation of Significant Differences signed by EPA on March 12, 1997.

Due to the disposal of treated soils and sludges in an on-site disposal unit, operation and maintenance (O&M) at the PAB site includes maintenance to the disposal cell, disposal cell cap, and associated drainage ditches in addition to ground water monitoring. Additionally, the PAB Group LLC will inspect the condition of the road and the conditions of the site fencing and make necessary repairs.

The PAB Group conducted the RA with EPA oversight. The RA began in June 1997 with the site mobilization and ended in August 1998 after the completion of capping, grading, and revegetation. The RA completed at this site included: (1) dewatering and backfilling of the pond, which involved treatment and discharge of approximately 6 million gallons of water; (2) removal of the top 6 inches of the entire saltwater pond bottom and incorporation into soils/sludges treated by solidification/stabilization in the pit area; (3) solidification/stabilization of approximately 7,000 cubic yards of soils/sludges; and (4) backfilling, grading, and revegetation with grass seed. The remedial action objectives (RAOs) listed in the ROD to (1) prevent direct contact, ingestion, and migration of the disposal pit sludges and associated soils; (2) prevent direct contact with surface waters; and (3) prevent the potential for human exposure to contaminated ground water were met by the successful implementation of the RA. The constructed remedy is operational and performing as intended.

Recommendations and follow-up actions include: (1) repair broken hinge on monitoring well MW-8; (2) repair fence to prevent unauthorized entry and maintain the protectiveness of the remedy; (3) revise analytical method to detect arsenic in ground water at the MCL of 0.01 mg/L; (4) revise sample analysis process as necessary to ensure consistent filtration of samples prior to analysis; (5) perform statistical analysis of ground water data to verify on-site ground water quality is not degrading; and (6) implement institutional controls in the form of a conveyance notice to preserve the integrity of the disposal cell cap and prevent consumption of ground water on site.

The PAB site remedy is currently protective of human health and the environment. The remedial action objectives of the ROD are being met.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site Name (from WasteLAN): PAB Oil and Chemical Services, Inc. Superfund Site

EPA ID (from WasteLAN): LAD980749139

Region: 6 | **State:** LA | **City/County:** Abbeville, Vermilion

SITE STATUS

NPL Status: ☐ Final ☒ Deleted ☐ Other (specify) First Five-Year Review

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

Multiple OUs?* ☐ YES ☒ NO | **Construction Completion Date:** August 1998

Has site been put into reuse? ☐ YES ☒ NO

REVIEW STATUS

Reviewing Agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author Name: Craig Carroll

Author Title: Remedial Project Manager | **Author Affiliation:** U.S. EPA, Region 6

Review Period:** 02/11/2002 to 08/30/2002

Date(s) of Site Inspection: 2/21/2002

Type of review:
☒ Statutory
☐ Policy ☐ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ 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 Onsite Construction at OU1
☐ Actual RA Start at OU #___
☐ Construction Completion
☐ Previous Five-Year Review Report
☐ Other (specify)_____

Triggering Action Date (from WasteLAN): 6/09/97

Due Date (Five Years After Triggering Action Date): 6/09/02

* "OU" refers to operable unit
** The review period refers to the period during which the five-year review was conducted.

Five-Year Review Summary Form

Issues:

- Broken hinge on monitoring well 8 cover
- Breach in fence
- No institutional controls are in place to prohibit drilling on site
- Some metal detection limits higher than their respective MCLs
- Inconsistent filtration of samples prior to analysis
- No statistical analysis of ground water data performed

Recommendations and Follow-up Actions:

- Hinge on monitoring well 8 and breaches in fence should be repaired.
- Institutional controls should be implemented in the form of a conveyance notice to preserve landfill cap integrity and prevent use of ground water on-site.
- Ground water sample collection techniques should remain consistent during and across sampling events.
- Analytical method used to detect arsenic in ground water must have a detection limit equal to or less than arsenic's MCL of 0.01 mg/L.
- Statistical analysis of ground water data should be performed to verify ground water quality on site is not degrading.

Protectiveness Statement(s):

The remedial action is currently protective of human health and the environment.

Long-term Protectiveness:

Ground water data must be analyzed for trends in site-wide contaminant concentrations in the ground water to evaluate long-term protectiveness. Institutional controls must be implemented to maintain long-term protectiveness of the remedy.

1.0 INTRODUCTION

The purpose of the five-year review is to determine if the remedy at the PAB Oil and Chemical Services, Inc. Superfund site ("Site") in Abbeville, Louisiana is protective of human health and the environment. The U.S. Environmental Protection Agency Region 6 (EPA), with assistance from Tetra Tech EM Inc. (Tetra Tech), and in coordination with the Louisiana Department of Environmental Quality (LDEQ), conducted a five-year review of the remedial action (RA) implemented at the Site. The Site consists of a single operable unit for soil and ground water. This is the first five-year review for the Site, and addresses the entire Site. The triggering date for this review was the initiation of the RA on June 9,1997. The review was conducted from February through August 2002, and the methods, findings, conclusions, and recommendations from the review are documented in this report.

This review is required by statute. EPA must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA §121(c), as amended, 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.

NCP Part 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 the initiation of the selected remedial action.

Due to the fact that hazardous substances, pollutants, or contaminants remain at the PAB site above levels that allow for unrestricted use and unlimited exposure, a five-year review is required.

2.0 SITE CHRONOLOGY

Table 1 lists the chronology of events for the PAB site. Information on the chronology of events for the site is also available on the Internet at http://www.epa.gov/superfund/sites/cursites/c3la/a0600576.htm.

3.0 BACKGROUND

3.1 PHYSICAL CHARACTERISTICS

The PAB site covers approximately 16.7 acres in Vermilion Parish, Louisiana, near the southwestern portion of the State (see Figure 1). It is located approximately 3 miles north of the town of Abbeville (population 13,000), adjacent to Route 167, which connects Abbeville with Lafayette, Louisiana, located about 21 miles north. The Site and surrounding area are flat and have a general surface elevation approximately 20 feet below mean sea level. The Site is located within the unconsolidated sediments of the Atlantic-Gulf Coastal Plain physiographic province. There are basically three subsurface stratigraphic units: an upper clay unit ranging from 0 to 2 feet below ground surface (bgs), a middle clay/silt/sand unit extending from 19 to 23 feet bgs, and a lower sand/gravel unit extending to depths of at least 110 feet bgs. Ground water beneath the site was encountered at approximately 30 feet bgs in the upper Chicot Aquifer System, Abbeville Unit. The ground water flow direction under the Site was found to be generally west-northwest with a gradient of 0.0002 foot per foot.

3.2 LAND AND RESOURCE USE

The primary land use near the Site is agricultural and residential. There is no significant change in future land use projected. Three city wells in Abbeville provide drinking water to approximately 18,000 people. Private wells within 3 miles of the Site serve an additional 2,100 people.

3.3 HISTORY OF CONTAMINATION

From 1978 to approximately 1983, PAB began site operations as a disposal facility for oil field drilling mud and saltwater under State interim approval. PAB sold the waste oil skimmed from the oil-based drilling mud separation/disposal pits located in the northeast part of the Site to reclaimers. In 1980, the

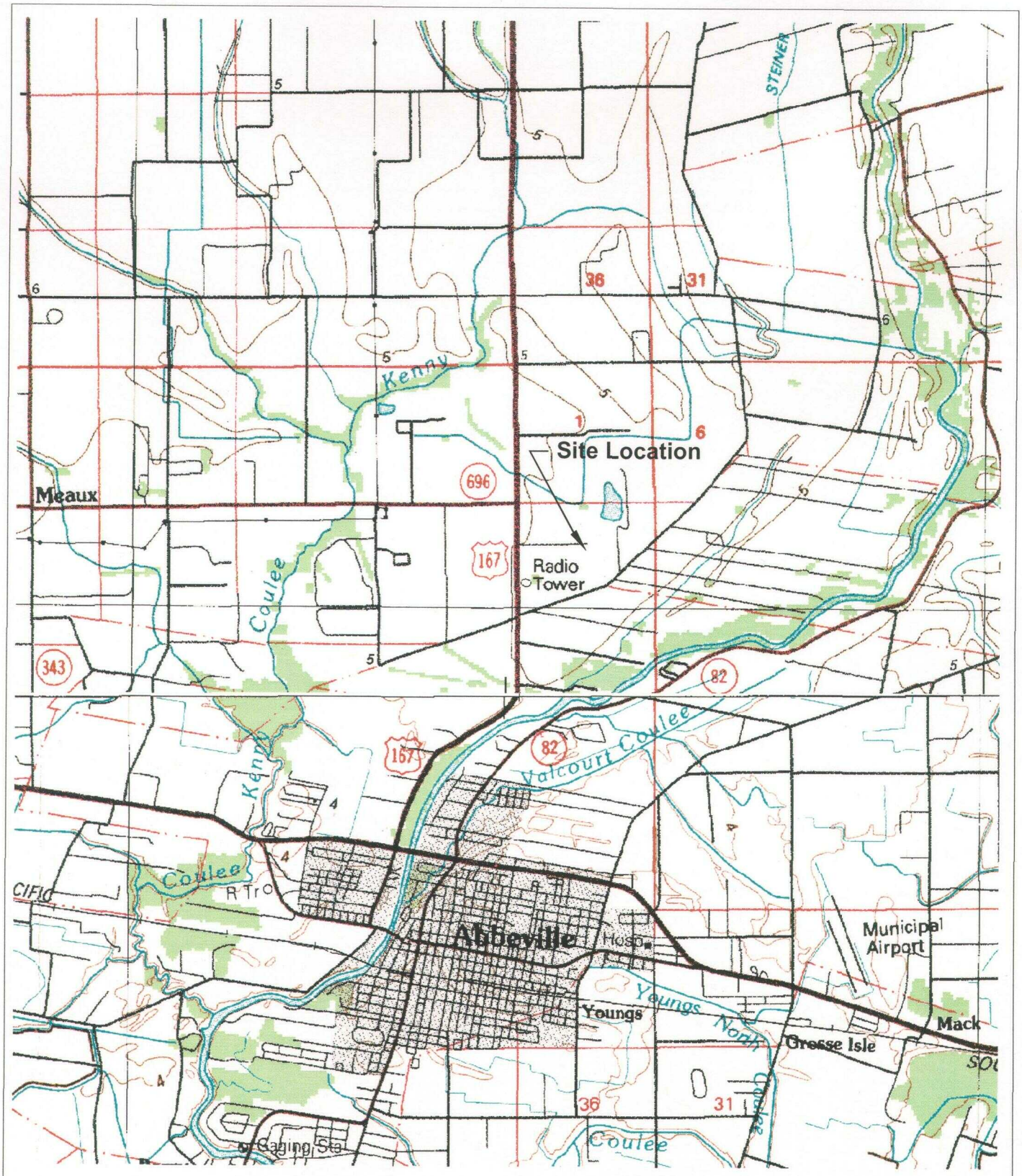
State passed an amendment which established new requirements for off-site drilling mud and saltwater disposal facilities. PAB was granted temporary authority to operate with 90 days to comply with the new requirements. Investigations triggered by a citizen's complaint of illegal discharges determined the majority of the on-site contamination was a direct result of the drilling mud and fluids, produced water, workover fluids, and tank bottoms the facility received from oil and gas exploration and production. Other contamination was attributed to pesticides from local agricultural uses and naturally occurring contamination, such as arsenic in the ground water.

3.4 INITIAL RESPONSE

In 1984, 1985, and 1987, EPA conducted site investigations. Concern for the potential to contaminate the underlying Chicot Aquifer, a drinking water source, was the primary reason the Site was proposed to the National Priorities List (NPL) on June 24, 1988. The final listing date on the NPL was March 31, 1989. In 1991, it was discovered that an immediate threat was posed by ignitable waste contained in one of four on-site storage tanks that was structurally damaged. Therefore, in 1992, a removal action was implemented by the PAB Remediation Group, L.L.C. (PAB Group) under an Administrative Order on Consent (AOC) with EPA to relocate the waste from all four storage tanks, dismantle the tanks, and treat and dispose of the waste off site. Following a remedial investigation and feasibility study, EPA signed a Record of Decision (ROD) on September 22, 1993. The selected remedy called for surface water treatment, excavation, biological treatment, residuals solidification/stabilization, on-site disposal, a clay cover, and ground water monitoring with an estimated cleanup cost of over $12,000,000, and annual operation and maintenance (O&M) costs of almost $86,000.

3.5 BASIS FOR TAKING RESPONSE

Sludges, sediments, surface water, and ground water at the site were contaminated with concentrations of beryllium, barium, benzene, toluene, and carcinogenic and non-carcinogenic PAHs that, if not addressed by the response action selected in the ROD, presented an imminent and substantial endangerment to public health, welfare, or the environment.



SOURCE: MODIFIED FROM USGS, CROWLEY LOUISIANA, 1;100,000 SCALE MAP, 1985.

PAB OIL AND CHEMICAL SERVICES, INC.
VERMILLION PARISH, LOUISIANA

FIGURE 1
SITE LOCATION MAP

PREPARED FOR: EPA

BY: Tetra Tech EM Inc.

TABLE 1

CHRONOLOGY OF SITE EVENTS

Date	Event
July 1980	Site discovery
October 1987 to April 1988	Performed search for potentially responsible parties but none identified
March 1989	Site was listed on the NPL
July 1989	Federally financed removal assessment
November 1989 to September 1990	Continued search for responsible parties and identified PRPs
March 1992 to January 1993	Treatability study
January 1993	Human health risk assessment
January 1993	Ecological risk assessment
June 1990 to September 1993	Combined RI/FS
September 1993	Record of Decision
October 1992 to December 1993	Conducted search to update PRP list
September 1991	PRP financed removal assessment
October 1991 to February 1992	PRP removal
September 1993 to September 1995	PRP financed removal assessment
March 1997	Explanation of significant differences
February 1997 to March 1997	Consent decree
November 1994 to May 1997	PRP RD
June 1997 to August 1998	PRP RA
August 1999 to January 2000	Deletion from NPL
October 23, 1998	Fourth quarter 1998 inspection

TABLE 1 (Continued)

CHRONOLOGY OF SITE EVENTS

Date	Event
January 26-27, 1999	1st quarter 1999 inspection and monitoring
April 19, 1999	2nd quarter 1999 inspection
July 20-21, 1999	3rd quarter 1999 inspection and monitoring
October 18, 1999	4th quarter 1999 inspection
January 19, 2000	1st quarter 2000 inspection and monitoring
April 20, 2000	2nd quarter 2000 inspection
July 18, 2000	3rd quarter 2000 inspection and monitoring
October 18, 2000	4th quarter 2000 inspection
January 14, 2001	1st quarter 2001 inspection and monitoring
April 17, 2001	2nd quarter 2001 inspection
July 31, 2001	3rd quarter 2001 inspection and monitoring
December 20, 2001	4th quarter 2001 inspection

Notes:

NPL	National Priorities List
PRP	Potentially responsible party
RA	Remedial action
RD	Remedial design
RI/FS	Remedial investigation and feasibility study

4.0 REMEDIAL ACTIONS

The following sections discuss the remedy selected, remedy implementation, and O&M.

4.1 REMEDY SELECTED

EPA signed the ROD for the Site on September 22, 1993. RAOs were established to aid in the development and screening of RA alternatives for the Site. The RAOs for the Site are listed below:

- Prevent direct contact, ingestion, and migration of the disposal pit sludges and associated soils
- Prevent direct contact with contaminated surface waters
- Prevent the potential for human exposure to contaminated ground water

The selected remedy called for surface water treatment, excavation, biological treatment, residuals solidification/stabilization, on-site disposal, a clay cover, and ground water monitoring. Analytical data from testing, which took place in 1993 and 1995, showed that all carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in the site soils and sludges were below the remedial goal of 3 parts per million (ppm). Biological treatment, therefore, was deemed unnecessary as part of the RA. All aspects of the remedy remained the same, with the exception of biological treatment, resulting in a cost savings of approximately $4,000,000. This change to the remedy was made and documented in an Explanation of Significant Differences (ESD) signed by EPA on March 12, 1997.

The modified remedy is similar to the remedy selected in the 1993 ROD. The components of the modified remedy documented in the ESD were:

- Excavation and on-site solidification/stabilization of site soils, sludges, and sediments containing arsenic and barium above RAO levels of 10 ppm and 5,400 ppm, respectively. Also, an organophilic clay must be used in the solidification/stabilization mix to chemically stabilize organic compounds contained in the wastes
- Disposal of treated residuals in an on-site disposal unit
- Placement of a compacted clay cover over the disposal unit

- Removal and on-site treatment of all surface water with final discharge to site drainage ditches
- Long-term ground water monitoring
- Long-term site O&M

4.2 REMEDY IMPLEMENTATION

On September 27, 1993, EPA issued a Unilateral Administrative Order (UAO) to a number of potentially responsible parties (PRPs) directing them to perform the remedial design (RD) and RA. The PAB Group conducted the RA with EPA oversight under the UAO Docket No. CERCLA 6-18-94. The RA began in June 1997 with mobilization to the site and ended in August 1998 with the completion of landfill capping, grading, and revegetation. The RA completed at this site included the following major work elements. Dewatering and backfilling of the pond identified in the ROD began soon after site mobilization. Approximately 6 million gallons of water were removed from this large pond; all of the water was treated in an electro-precipitation unit and tested for the discharge standards prior to being discharged into a drainage ditch that leads to the drainage system along Highway 167. Discharge limits were established by LDEQ and documented in a memorandum from the PAB Group which was approved by EPA on April 30, 1997.

The pond bottom sediment was sampled and tested for both total arsenic and barium, as well as for polycyclic aromatic hydrocarbons (PAH). Some of the samples exceeded the RAOs of 5,400 ppm for barium and 10 ppm for arsenic. Therefore, the top 6 inches of the entire saltwater pond bottom was removed and incorporated into the soils/sludges that were being treated by solidification/stabilization in the pit area. Approximately 7,000 cubic yards (yd^3) of this material was treated. The entire area was then brought to grade with clean backfill and revegetated with grass seed.

The major component of the remedy was to stabilize/solidify the sludge pit material. The contaminated soils and sludges were combined with reagent materials, including cement, ferrous sulfate, and organophilic clay in order to achieve the performance standards. The performance standards included an unconfined compressive strength exceeding 50 pounds per square inch and toxicity characteristic leaching procedure (TCLP) values for arsenic and barium of less than 0.05 ppm and 2.0 ppm, respectively. The sludge/soil treatment performance standards are documented in a memorandum from

the PAB Group that was approved by EPA on May 15, 1997. Once the treated material was tested and found to meet these standards, it was placed back into area where the three pits were consolidated for final disposal. Before placement of any material in the pit, the pit bottom was sampled and found to be free of contamination. Approximately 25,000 yd^3 of material was treated in this manner. Once the three pits were filled with the treated material, all the pits were brought up to grade and the low permeability cap installed per the approved grading specifications. A topsoil layer was then applied, and the area was revegetated with grass seed. All RAOs identified in the ROD were met by implementation of the remedy. The constructed remedy is operational and performing according to engineering specifications.

4.3 OPERATION AND MAINTENANCE

The ROD and Unilateral Administrative Order for the RD and RA, after an approved ESD was signed, required the following activities:

- Disposal of treated soils and sludges in an on-site disposal unit
- Dewatering and backfilling of the saltwater pond
- Long-term ground water monitoring

Due to the disposal of treated soils and sludges in an on-site disposal unit, maintenance to the disposal cell, disposal cell cap, and associated drainage ditches is one of the PAB Group LLC's on-going responsibilities. Maintenance and monitoring activities that will sustain the design properties of the cell and monitor migration of contaminants include: (1) regrading of erosion scars (with or without addition of material), rills, or minor surface slumps in the cover and on the berm slopes; (2) clean out of accumulated sediment and debris in drainage ditches; (3) reseeding of cover as necessary; (4) inspecting the cover for settlement and regrade as necessary; (5) inspecting the cover for damage and repair as necessary; (6) surveying the cap settlement monuments; and (7) long-term ground water monitoring. Additionally, the PAB Group will inspect the conditions of the road and site fencing and make necessary repairs.

Monitoring activities, as outlined above, were scheduled quarterly for the first year after completion of the RA (August 1998 to July 1999), and semiannually from years 2 (August 1999) to 5 (July 2004). Site inspection and monitoring reports that were reviewed are shown in Table 2.

4.4 OPERATION AND MAINTENANCE COSTS

Table 3 presents costs incurred by the PAB Group LLC due to activities associated with the site. These costs are substantially lower than the annual O&M cost of approximately $86,000 projected in the ROD. The PAB Group attributed this to the fact that only 5 of the 12 wells on site have been monitored since the approval of the modified O&M plan.

4.5 PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

This is the first five-year review to be conducted for the PAB site. The second five-year review is scheduled to occur in 2007.

5.0 FIVE-YEAR REVIEW PROCESS

PAB's first five-year review was led by Craig Carroll, EPA Remedial Project Manager. Mr. Todd Thibodeaux of LDEQ assisted with the site inspection and review of the five-year review report. The PAB Group was notified by EPA at the start of the five-year review process. Additionally, residents of Abbeville city were notified of the review through a public notice placed in the *Abbeville Meridional* in March 2002. This five-year review consisted of a review of relevant documents, a review of standards, ground water monitoring data, interviews, and a site inspection conducted on February 21, 2002. The documents reviewed included: (1) 1993 ROD; (2) 1997 ESD; (3) Final Quality Assurance Project Plan; (4) Remedial Design Sampling and Analysis Plan; (5) Remedial Action Report; (6) Operation and Maintenance Plan; and (7) Inspection and Monitoring Reports. Upon completion, the report will be made available at the local information repository for the site and a notice will be placed in the local newspaper. Parish and City official contacted during the review process will also be notified.

TABLE 2

INSPECTION AND MONITORING REPORTS AVAILABLE FOR REVIEW

Date	Inspection	Ground Water Monitoring
October 23, 1998	✓	
January 26 to 27, 1999	✓	✓
April 19, 1999	✓	
July 20 to 21, 1999	✓	✓
October 18, 1999	✓	
January 19, 2000	✓	✓
April 20, 2000	✓	
July 18, 2000	✓	✓
October 18, 2000	✓	
January 14, 2001	✓	✓
April 17, 2001	✓	
July 31, 2001	✓	✓
December 20, 2001	✓	

TABLE 3

COSTS FOR ACTIVITIES ASSOCIATED WITH THE SITE

Cumulative Cost Reporting Period	Phase	PAB Oil and Chemical Services, Inc
July 1998 through June 1999	Operation and Maintenance	$19,900
July 1999 through June 2000	Operation and Maintenance	$17,800
July 2000 through June 2001	Operation and Maintenance	$12,000
July 2001 through March 2002	Operation and Maintenance	$2,600

6.0 FIVE-YEAR REVIEW FINDINGS

The following sections present the findings of this five-year review.

6.1 SURVEYS

In accordance with the community involvement requirements of the five-year review guidance, key individuals were identified from the Site file, and, in consultation with the EPA Community Involvement Coordinator for the Site, then contacted by mail and telephone to solicit their opinions regarding the RA. Questionnaires were provided to the following people because of their involvement with the Site:

- Lee A. Guillory, P.E., U.S. Army Corps of Engineers
- Michael Bertrand, Secretary-Treasurer, Vermilion Parish Police Jury
- Alexander M. Isaly, Project Navigator, Ltd.
- Tom Vrenick, Aquaterra Engineering
- Todd Thibodeaux, LDEQ
- Freddy Arceneaux, President, Abbeville Chamber of Commerce
- The Honorable Brady Broussard, City of Abbeville Mayor
- Jeremy Primeaux, Adjacent Resident

The Superfund Site Survey Forms from those that responded are included in Attachment C. No continuing or unresolved issues were discovered during the interview process. Most comments received were positive and commended the efforts of everyone involved in the remedial process. One interviewee expressed concern that the Site had not yet been converted into a football or soccer field.

6.2 SITE INSPECTION

A site inspection was conducted on February 21, 2002 to assess the condition of the Site and the measures employed to protect human health and the environment from the contaminants still present at the site. Attendees included: (1) Mr. Todd Thibodeaux of LDEQ; (2) Mr. Rich Johnson of LDEQ;

(3) Mr. Alexander M. Isaly of Project Navigator, Ltd.; (4) Mr. Tom Vrenick of Aquaterra Engineering; (5) Mr. Craig Carroll of EPA; and (6) Mr. Mark H. Taylor of Tetra Tech. The site visit report is provided in Attachment B of this document.

Visually, there were no signs or evidence of contamination at the Site. Most monitoring wells visually inspected were in good condition, clearly labeled, protected from impact, and securely encased (lock and cover). The exceptions were: (1) the hinge to the casing of monitoring well 8 was rusted through and will require maintenance and (2) due to a tractor passing too close the pad of monitoring well 4 during soggy conditions, regrading may be necessary to bring the area back to its remediated condition. The vegetative cover at the Site, including that on the clay cap, appeared similar in type, plant health, and density to typical areas outside the Site.

6.3 REMEDIATION GOALS REVIEW

The RAO section of the 1993 ROD identified the following requirements to be considered in developing remediation goals for the Site RA:

- Applicable or relevant and appropriate requirements (ARARs) relative to acceptable exposure levels for systemic toxicants and carcinogens
- Maximum contaminant level goals (MCLG) established under the Safe Drinking Water Act that are set at levels above zero
- Maximum contaminant levels (MCL) when the MCLGs are set at zero or are not relevant and appropriate
- Cumulative risk in excess of 1×10^{-4} in addition to chemical-specific ARARs
- State and Federal Water Quality Standards and criteria established under the Clean Water Act (Section 303, Clean Water Act, 1987, as amended, and Title 33 of the Louisiana Administrative Code [LAC] Chapter 11) because treated surface water was to be discharged to site drainage ditches
- Alternate concentration limits (ACL) established in accordance with CERCLA Section 121(d)(2)(B)(ii)
- Endangered Species Act protection of sensitive habitats of protected species

As part of determining Remediation Goals, ARARs were identified for the site. ARARs are divided into chemical-, location-, and action-specific categories, and are discussed below.

6.3.1 Chemical-Specific ARARs

Chemical-specific ARARs are usually health- or risk-based numerical values or methodologies that, when applied to site-specific conditions, result in the establishment of numerical values. These values establish the acceptable amount or concentration of a chemical that may remain in or be discharged to the ambient environment (EPA 1988). If more than one chemical-specific ARAR exists for a contaminant of concern (COC), the most stringent level will be identified as an ARAR for the RA. Several chemical-specific ARARs for the PAB site were identified in the 1993 ROD (see page 54 of ROD), including:

- State and Federal Water Quality Standards and criteria established under the Clean Water Act (Section 303, Clean Water Act, 1987, as amended, and Title 33 of the LAC Chapter 11), applicable because treated surface water was to be discharged to site drainage ditches
- National Ambient Air Quality Standards (40 Code of Federal Regulations [CFR] 50.6) relevant and appropriate during excavation

Each chemical-specific ARAR is discussed below where changes have occurred since 1993.

State and Federal Water Quality Standards Established Under the Clean Water Act (Section 303, Clean Water Act, 1987, as Amended, and Title 33 of the Louisiana Administrative Code [LAC] Chapter 11)

These discharge limitations were applied to the discharge of surface water below the RAO levels, or treated surface waters that met the RAOs. The State of Louisiana established the RAOs for surface water prior to discharge. The surface water treatment process was completed, and currently no surface water is collected, treated, or discharged.

National Ambient Air Quality Standards (40 CFR 50.6)

These air quality standards were relevant and appropriate when applied to the vapors and particulate matter released during the excavation, treatment, and consolidation of wastes. Since waste excavation, treatment and consolidation have been completed, these standards are no longer relevant and appropriate.

6.3.2 Location-Specific ARARs

Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities in certain environmentally sensitive areas. Examples of areas that might prompt a location-specific ARAR include wetlands, sensitive ecosystems or habitats, flood plains, and areas of historical significance. There are no location-specific ARARs for the site according to the 1993 ROD (page 40). No new location-specific requirements that are applicable to or may be relevant and appropriate for the PAB site have been promulgated.

6.3.3 Action-Specific ARARs

Action-specific ARARs are usually (1) technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes or (2) requirements to conduct certain actions to address particular site circumstances. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. Because there are usually several alternative actions for any remedial site, very different requirements can come into play. These action-specific requirements do not in themselves determine the remedial alternative; rather, they indicate how a selected alternative must be achieved.

The action-specific ARARs identified in the 1993 ROD for the PAB site were standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities (40 CFR 264), including Subparts G, L, M, and N relevant during waste treatment, disposal, and long-term monitoring. Specifically:

- Requirements for placement of a cap over waste as required by 40 CFR 264.310(a), 264.117(c), and 264.310(b)

- Closure of land treatment units as required by 40 CFR 264.280
- Operation of land treatment units as required by 40 CFR 264.271 and 264.273
- Surface water control as required by 40 CFR 264.251(c) and (d) and 264.301(c) and (d)

The requirements for ground water monitoring in Part 264 Subchapter F are incorporated by reference in 40 CFR 264.310(b). Also included as an ARAR was State of Louisiana Statewide Order 29-B, dated October 20, 1990, specifically, Sections 129.B.6 and 129.M.7. The amendment to Statewide Order 29-B addressed pit closure and land treatment requirements for nonhazardous oil field waste, as defined by Statewide Order 29-B, that were disposed of at the Site.

The construction quality assurance program used during the RA addressed the substantive requirements of 40 CFR 264 by addressing surface and storm water run-on and run-off, ground water collection and treatment during waste consolidation and treatment, and installation of the final cover. The March 12, 1997 ESD eliminated the biological treatment portion of the initially selected remedy in the 1993 ROD; therefore requirements of Subpart M are no longer relevant.

O&M activities began in January 1999 (Project Navigator 2001) and have been conducted in accordance with procedures outlined in the O&M Plan for the PAB site (TRC Environmental Solutions, Inc. [TRC] 1998). Inspection reports issued since the approval of the plan indicate the remedy is functioning in compliance with the action-specific ARARs for the Site. The most recent inspection report (Project Navigator, Ltd. 2002) indicated that as of January 10, 2002, the schedule presented in the O&M plan (TRC 1998) has been followed. During the third quarter of 2001, a modified O&M schedule with reduced monitoring and sampling was proposed but has not yet been approved by EPA.

6.4 DATA REVIEW

A review of the inspection reports through fourth quarter 2001 indicates that the procedures outlined in the O&M plan (TRC 1998) have insured to date that the RA for the PAB site is being maintained as designed and constructed.

The RAO to protect human health and the environment by preventing direct contact, ingestion, and migration of the disposal pit sludges and associated soils continues to be met by the intact cap, which was most recently inspected on December 20, 2001. The cap was noted to be in good condition, with no erosion, damage, settlement, slippage/failure, or desiccation observed. Thus, migration of the contaminants is prevented by the intact cap. With the exception of a few minor breaches in the fence, the fence, gates, locks, and signs are in place and in proper condition as of December 20, 2001, which further limit access to the Site and preclude direct contact or ingestion of sludges and soils. However, institutional controls may be needed to restrict future activities on-site, such as drilling, that would destroy the integrity of the cap or cause exposure to on-site ground water.

The Louisiana Risk Evaluation/Corrective Action Program (RECAP), promulgated on June 20, 2000, includes specific language on the use institutional controls to prevent exposure to contaminated media at remediated sites. It states, "Institutional controls will usually require a legal instrument stating restrictions on use to be recorded in the parish conveyance records for the subject property. However other legal controls such as zoning ordinances by local government may be implemented to prevent installation of ground water wells, or use of water from existing wells."

The RAO to prevent direct contact with contaminated surface waters was met when the contaminated surface waters were treated and discharged according to permit. Because the wastes are now capped which prevents contamination of precipitation or surface water run-on, this RAO continues to be met.

The RAO to prevent the potential for human exposure to contaminated ground water continues to be met. Ground water data indicated no radical change in COC concentrations. Table 4 on page 19 summarizes COC concentrations in ground water over the entire O&M period. Nickel and chromium were the only COCs detected above their MCLs. Nickel continues to exceed its MCL of 100 µg/L in MW-2 (Project Navigator, Ltd. 2001). Chromium exceeded its MCL and MCLG in at least one of three wells (MW-2, MW-3, and MW-6) during every sampling event except the last one. Chromium was not detected in any of the monitored wells during the last sampling event. However, so long as the shallow ground water from the Site, in particular near MW-2, is not ingested on a chronic basis, the remedy remains protective. Placement of additional institutional controls to limit drilling into the shallow aquifer on or near the site should be considered to ensure the remedy remains protective.

TABLE 4

SUMMARIZED GROUND WATER MONITORING RESULTS FOR DETECTED COCs

Monitoring Well ID	COC		Barium	Chromium	Copper	Nickel	Selenium
	MCL		2	0.1	1.3	0.1	0.05
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-2	Average	GW COC Concentration	0.317	0.203	0.000	0.171	0.000
	Maximum		0.367	0.458	0.000	0.226	0.000
	Minimum		0.270	0.053	0.000	0.105	0.000
MW-3	Average		0.155	0.511	0.000	0.074	0.003
	Maximum		0.183	0.612	0.000	0.097	0.004
	Minimum		0.133	0.410	0.000	0.050	0.002
MW-5	Average		0.231	0.000	0.037	0.050	0.000
	Maximum		0.260	0.000	0.037	0.050	0.000
	Minimum		0.159	0.000	0.037	0.050	0.000
MW-6	Average		0.166	0.133	0.000	0.077	0.000
	Maximum		0.216	0.250	0.000	0.156	0.000
	Minimum		0.145	0.074	0.000	0.044	0.000

Notes:

COC	Contaminant of concern
GW	Ground water
MCL	Maximum contaminant level
mg/L	Milligram per liter

7.0 TECHNICAL ASSESSMENT

The following conclusions support the determination that the remedy at the PAB site is currently protective of human health and the environment.

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

- **Remedial Action Performance**—Volatile organic compounds and semivolatile organic compounds have never been detected in ground water since the RA. Some metals have been consistently detected, but a concentration trend may not be suggested without statistical analysis.

- **System Operations/O&M**—O&M ground water monitoring activities are being conducted according to plan.

- **Cost of System Operations/O&M**—Only cost summaries listed in Table 3 were reviewed. Incurred costs are significantly below anticipated costs in the ROD. This is because only 5 of the 12 wells are now sampled regularly.

- **Opportunities for Optimization**—There were no opportunities for system optimization observed during this review. The monitoring well network provides sufficient data to assess the quality of site ground water, and maintenance on the cap is sufficient to maintain its integrity. The decision to reduce costs by minimizing sampling frequency should be evaluated after statistical analysis of ground water concentration trends is conducted.

- **Early Indicators of Potential Issues**—None.

- **Implementation of Institutional Controls**—A conveyance notice should be filed by the PAB Group with the Vermillion Parish Clerk to ensure residential use of the property, breaches of the integrity of the cap, drilling into the contaminated aquifer, and use of ground water at the Site is prohibited unless authorized by LDEQ.

Question B: Are the assumptions used at the time of remedy selection still valid?

- **Changes in Standards and To Be Considered**—There are no changes that bear on the protectiveness of the remedy.

- **Changes in Exposure Pathways**—There are no changes that bear on the protectiveness of the remedy.

- **Changes in Toxicity and Other Contaminant Characteristics**—There are no changes that bear on the protectiveness of the remedy.

- **Changes in Risk Assessment Methodologies**—There are no changes that bear on the protectiveness of the remedy.

- **Expected Progress Towards Meeting RAOs**—The RAOs relating to contaminated surface water, sludges, and soils have been met. Institutional controls will be required to meet the RAO associated with exposure to contaminated ground water. Progress towards this RAO will be evaluated after statistical analysis of ground water COC concentration trends is performed.

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

No other information has been identified to question the protectiveness of the remedy.

8.0 ISSUES

The following issues were noted:

1. **Detection Limits**—The ROD states for cost estimating purposes, that the analytical reporting is to be done in the U.S. EPA CLP format. Summarized in Table 5 are the metals detection limits listed in each sampling report, the metal MCLs, and the current (December 21, 2001) contract-required detection limit (CRDL) in the Contract Laboratory Program (CLP). Based on a comparison of these values, the following was noted: (1) detection limits for beryllium, cadmium, lead, antimony, and thallium were above the MCLs for at least one sampling event; (2) CRDLs for beryllium, antimony, and thallium are above the MCLs; and (3) detection limits for arsenic, selenium, thallium, and lead were above their CRDLs in the last three sampling events. However, since selenium and lead had detection limits at or below the MCLs for the last three sampling events and beryllium, antimony, and thallium were reported at low concentrations in site sludges these issues are not indications the remedy may be failing.

2. **Statistical analysis of ground water data not presented in the Semi-annual Engineer's Report**—The ROD required an "evaluation" of ground water quality data. The semi-annual engineer's report included no statistical analyses and evaluation of trends in ground water COC concentrations.

TABLE 5

SUMMARY OF DETECTION LIMITS

(mg/L)								
	Sample Report Quarter						CRDL	MCL
	1st Q. 1999	3rd Q. 1999	1st Q. 2000	3rd Q. 2000	1st Q. 2001	3rd Q. 2001	(mg/L)	(mg/L)
Metal (Method)								
Arsenic (7060A)	0.010	0.010	0.010				0.010	0.010
Mercury (SW7420A)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.002
Selenium (7740)	0.002	0.002	0.002				0.005	0.050
Thallium (7841)	0.003	0.005	0.003				0.010	0.002
Metals (6010B)								
Silver	0.010	0.010	0.010	0.010	0.010	0.010	0.010	
Barium	0.100	0.100	0.010	0.100	0.010	0.010	0.200	2.000
Beryllium	0.010	0.010	0.005	0.005	0.005	0.005	0.005	0.004
Cadmium	0.010	0.010	0.005	0.005	0.005	0.005	0.005	0.005
Chromium	0.050	0.050	0.010	0.010	0.010	0.010	0.010	0.100
Copper	0.020	0.020	0.010	0.010	0.010	0.010	0.025	1.300
Nickel	0.050	0.050	0.040	0.040	0.040	0.040	0.040	0.100
Lead	0.050	0.050	0.015	0.015	0.015	0.015	0.003	0.015
Antimony	0.100	0.100	0.060	0.060	0.060	0.060	0.060	0.006
Zinc	0.010	0.020	0.020	0.020	0.020	0.020	0.020	
Arsenic				0.040	0.040	0.040	0.010	0.010
Selenium				0.040	0.040	0.040	0.005	0.050
Thallium				0.020	0.020	0.020	0.010	0.002

Highlighted cells have detection limits higher than the MCL and could represent situations where the MCL is unknowingly exceeded.

Notes:

CRDL	Contract-required detection limit
MCL	Maximum contaminant level
mg/L	Milligram per liter

3. **Inconsistency in filtration prior to analysis**—As noted in the site visit report (Attachment B), the initial round of ground water samples were filtered prior to analysis for metals; however, several subsequent rounds were not. The most recent round of samples were filtered prior to analysis. Because filtered samples measure total dissolved metals and unfiltered samples measure total metals, the two sample types cannot be reliably compared in a trend analysis.

4. **Monitoring well requires maintenance**—As noted in the site visit report, the cover on monitoring well 8 has a broken hinge that should be replaced.

5. **Breaches in fence**—As noted in the site visit report, the fence appears damaged as a result of vandalism and needs repair.

Table 6 summarizes issues for the PAB site.

9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 7 summarizes recommendations and follow-up actions for the PAB site.

10.0 PROTECTIVENESS STATEMENTS

The remedy for the Site is currently protective of human health and the environment.

11.0 NEXT REVIEW

This is a site that requires ongoing five-year reviews. The next review will be completed within five years of the date of signature for this review.

TABLE 6

ISSUES IDENTIFIED

Issue	Currently Affects Protectiveness (Y/N)
Monitoring Wells Require Maintenance	
Monitoring well 8 has a broken hinge on the well cap.	N
Security Measures Required	
Breaches in the fence were noted during the site visit.	Y
Surface Conditions	
None	N
Surface Water	
None	N
Ground Water	
Detection limits of some metals above MCLs	N
Statistical analysis of the ground water monitoring data not included in Engineer's report.	N
Inconsistency in filtration of sample prior to analysis.	N
No institutional control to prevent drilling on site	Y

Note:

MCL Maximum contaminant level

TABLE 7

RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)
Broken hinge on MW-8	Repair	PAB Group	LDEQ	Within 3 months of final report date	N
Damaged fence	Repair	PAB Group	LDEQ	"	Y
Detection limits of some metals above MCLs	Maintain consistency in detection limits across sampling events. Detection limit for arsenic should be reduced to its MCL of 0.01 mg/L	PAB Group	EPA	"	N
No statistical analysis of ground water data in Engineer's Report.	Perform statistical analysis to verify site ground water quality is not degrading	PAB Group	EPA	"	N
Inconsistent sample filtration	Revise sample analysis process to ensure consistency	PAB Group	EPA	"	N
No formal restriction to prohibit drilling on site	The PAB Group should file a conveyance notice with Vermillion Parish Clerk to prohibit drilling on site, and activities that could compromise the integrity of the clay cap.	PAB Group	LDEQ	Within 6 months of final report date	Y

Notes:

EPA U.S. Environmental Protection Agency
LDEQ Louisiana Department of Environmental Quality
MW Monitoring well
MCL Maximum contaminant level
mg/L Milligrams per liter
PAB PAB Oil and Chemical Services, Inc.

ATTACHMENT A

DOCUMENTS REVIEWED

(Two Pages)

DOCUMENTS REVIEWED

Project Navigator, Ltd. 2002. Fourth Quarter 2001 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. January 10.

Project Navigator, Ltd. 2001a. Third Quarter 2001 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. September 24.

Project Navigator, Ltd. 2001b. Second Quarter 2001 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. May 1.

Project Navigator, Ltd. 2001c. First Quarter 2001 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. March 7.

Project Navigator, Ltd. 2000a. Fourth Quarter 2000 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. December 22.

Project Navigator, Ltd. 2000b. Third Quarter 2000 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. September 7.

Project Navigator, Ltd. 2000c. Second Quarter 2000 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. May 12.

Project Navigator, Ltd. 2000d. First Quarter 2000 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. April 5.

Project Navigator, Ltd. 1999a. Fourth Quarter 1999 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. November 5.

Project Navigator, Ltd. 1999b. Third Quarter 1999 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. September 13.

Project Navigator, Ltd. 1999c. Second Quarter 1999 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. June 4.

Project Navigator, Ltd. 1999d. First Quarter 1999 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. March 22.

Project Navigator, Ltd. 1998a. Fourth Quarter 1998 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. December 14.

Project Navigator, Ltd. 1998b. Final Revisions Operations and Maintenance Plan (Cover letter), PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. October 6.

TRC Environmental Solutions, Inc. (TRC) 1998. Operations and Maintenance Plan, PAB Oil & Chemical Services, Inc., Abbeville, Louisiana. September 1998.

Remediation Technologies, Inc. 1995. Remedial Design Sampling and Analysis Plan, PAB Oil and Chemical Services, Inc. Superfund Site, Vermillion Parish, Louisiana. May 1995.

Environmental Solutions, Inc. 1995. Final Quality Assurance Project Plan, PAB Oil and Chemical Services, Inc. Superfund Site, Vermillion Parish, Louisiana. July 1995.

U.S. Environmental Protection Agency (EPA). 1998. Remedial Action Report, PAB Oil and Chemical Services, Inc. Superfund Site, Vermillion Parish, Louisiana. August 27.

EPA. 1997. Explanation of Significant Differences, PAB Oil and Chemical Services, Inc. Superfund Site, Vermillion Parish, Louisiana. March 12.

EPA. 1993. Record of Decision, PAB Oil and Chemical Services, Inc. Superfund Site, Vermillion Parish, Louisiana. September 22.

ATTACHMENT B

SITE VISIT REPORT

(41 Pages)

Five-Year Review Site Visit Report
for
PAB Oil and Chemical Services, Inc. Superfund Site
Abbeville, Louisiana

April 19, 2002

PREPARED BY:

Region 6
U.S. Environmental Protection Agency
Dallas, TX 75202-2733

Work Assignment No.	:	105-FRFE-06B1
EPA Region	:	6
Date Prepared	:	April 19, 2002
Contract No.	:	68-W6-0037
Prepared by	:	Tetra Tech EM Inc.
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CONTENTS

ACRONYMS AND ABBREVIATIONS

AOC	Administrative Order on Consent
bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminants of concern
cPAH	Carcinogenic polycyclic aromatic hydrocarbons
cy	Cubic yard
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility study
GOU	Ground water operable unit
LDEQ	Louisiana Department of Environmental Quality
MCL	Maximum contaminant level
µg/L	Microgram per liter
NPL	National Priorities List
O&M	Operations and maintenance
OSWER	Office of Solid Waste and Emergency Response
PAB	PAB Oil and Chemical Service, Inc.
PAH	Polyaromatic hydrocarbons
PCB	Polychlorinated biphenyls
ppm	Parts per million
PRP	Potentially responsible party
psi	Pounds per square inch
QA/QC	Quality assurance and quality control
RA	Remedial action
RAC	Response Action Contract
RAG	Remedial action goal
RAO	Remedial action objective
RI	Remedial investigation
RI/FS	Remedial investigation/feasibility study
ROD	Record of Decision
TAG	Technical Assistance Grant
TAL	Target analyte list
TCL	Target compound list
TCLP	Toxicity characteristic leaching procedure
Tetra Tech	Tetra Tech EM Inc.
TRC/ESI	TRC Environmental Solutions, Inc.
UAO	Unilateral Administrative Order

1.0 INTRODUCTION

Tetra Tech EM Inc. (Tetra Tech) received Work Assignment No. 105-FRFE-06B1 from the U.S. Environmental Protection Agency (EPA) under Response Action Contract (RAC) No. 68-W6-0037. Under this work assignment, Tetra Tech is authorized to conduct a five-year review of the remedial action (RA) implemented at the PAB Oil and Chemical Service, Inc., (PAB) Superfund site, hereinafter referred to as the site.

Tetra Tech visited the site to verify that all components of the remedies are operating in accordance with criteria established in the respective Record of Decisions (ROD). This report summarizes the results of that visit.

2.0 BACKGROUND

Between 1979 and 1983, PAB accepted oil and gas exploration and production wastes, including drilling muds, drilling fluids, and produced waters for disposal on site. The site consisted of three impoundments, or pits, that were used to receive drilling wastes.

The site covers approximately 16.7 acres in Vermilion Parish, Louisiana, near the southwestern portion of the state. It is located approximately 3 miles north of the town of Abbeville (population 13,000), adjacent to Route 167, which connects Abbeville with Lafayette, Louisiana, located about 21 miles north. The primary land use near the site is agricultural and residential. Three city wells in Abbeville provided water to approximately 18,000 people. Private wells within 3 miles of the site served an additional 2,100 people. Concern for the potential to contaminate the underlying Chicot Aquifer, a drinking water source, was the primary reason the site was proposed to the National Priorities List (NPL) on June 24, 1988. The final listing date on the NPL was March 31, 1989.

The potentially responsible party (PRP) group conducted an emergency removal action in accordance with an Administrative Order on Consent (AOC), effective October 8, 1991.

Remedial investigation (RI) field activities for the PAB site were conducted from January 1991 through October 1991, and the final report was issued in February 1993. On-site contamination included

inorganic parameters such as arsenic, barium, beryllium, calcium, chloride, chromium, cobalt, lead, magnesium, mercury, nickel, silver, and zinc. The organic contaminants found were mostly PAHs, including phenanthrene, fluoranthene, pyrene, and chrysene.

EPA signed the ROD on September 22, 1993. The selected remedy called for surface water treatment, excavation, biological treatment, residuals solidification/stabilization, on-site disposal, a clay cover, and ground water monitoring with an estimated cleanup cost of over 12 million dollars, with annual operation and maintenance costs of almost $86,000.

The biological treatment portion of the originally prescribed remedy was to treat all carinogenic polycyclic aromatic hydrocarbons (cPAHs) in soils and sludges to below the established RA objective (RAO) of 3 parts per million (ppm). However, when analysis proved that all cPAHs in the site soils and sludges were below the RAO of 3 ppm, biological treatment was deemed unnecessary. This change to the remedy was made and documented in the Explanation of Significant Differences (ESD) signed by EPA on March 12, 1997.

On September 27, 1994, EPA issued a Unilateral Administrative Order (UAO) for remedial design and RA. Under the terms of the UAO, the PAB Group conducted the RA with EPA oversight. The RA began in June 1997 with the site mobilization and ended in June 1998 with the completion of capping, grading, and revegetation. The RA completed at this site included the following major work elements.

Dewatering and backfilling of the pond identified in the ROD began soon after site mobilization. Approximately 6 million gallons of water were removed from this large pond; all of the water was treated in an electro-precipitation unit and tested for the discharge standards prior to being discharged into a drainage ditch that leads to the drainage system along Highway 167.

The top 6 inches of the entire saltwater pond bottom was removed and incorporated into the soils/sludges that were being treated by solidification/stabilization in the pit area. Approximately 7,000 cy of this material was treated. The entire area was then brought up to grade with clean backfill and revegetated with grass seed.

The major component of the remedy was to stabilize/solidify the sludge pit material. The contaminated soils and sludges were solidified and stabilized to achieve an unconfined compressive strength exceeding 50 pounds per square inch (psi) and TCLP values for arsenic and barium of less than 0.05 ppm and 2.0 ppm, respectively. The treated material was then placed back into the pit area.

The final closeout report documented that EPA completed all construction activities for the PAB site in accordance with Office of Solid Waste and Emergency Response (OSWER) Directive 9320.2-09 (dated August 1995) close out procedures for NPL sites. EPA and the LDEQ conducted a final site inspection on May 27, 1998, and determined that the RA had been successfully completed by the PAB Site remediation Group L.L.C.

The operations and maintenance (O&M) plan, prepared by the PRPs in compliance with the UAO, was approved by EPA in August 1998.

3.0 SITE VISIT ACTIVITIES

A site visit was conducted on February 21, 2002, to assess the condition of the site and the protective measures employed to protect human health and the environment from the contaminants still present at the site.

Community involvement and keeping citizens living near NPL sites well informed, are important parts of the five-year review process. Tetra Tech published a notice in the community newspaper on the day of the site visit, to inform the public of EPA's current involvement with the site and solicit community input.

The following individuals attended the site inspection:

- Todd Thibodeaux, LDEQ
- Rich Johnson, LDEQ
- Alexander M. Isaly, Project Navigator, Ltd.
- Tom Vrenick, Aquaterra Engineering

- Craig Carroll, EPA
- Mark H. Taylor, Tetra Tech

The inspection evaluated the condition of some of the monitoring wells; the condition of the site drainage, vegetation, and roads; the condition of the clay cap; and the site fencing. Photographs taken during the site visit are presented in Exhibit A, and the completed five-year review site visit checklist is presented in Exhibit B. A summary of the findings from the site visit follows.

The weather conditions during the inspections were clear, dry, and mild. No evidence of a recent rain was present; however, several areas within the boundary of the site were soggy. Standing water was present in the east drainage ditch.

4.0 FINDINGS

There were no visual signs or evidence of contamination at the site. The selected remedy for the site—solidification, stabilization, and on-site disposal—did not require any operating engineered systems to be evaluated.

With exceptions, most monitoring wells visually inspected were in good condition, clearly labeled, protected from impact, and securely encased (lock and cover). The exceptions being (1) the hinge to the casing of monitoring well 8 was rusted through and will require maintenance, and (2) due to a tractor passing too close the pad of monitoring well 4 during soggy conditions, regrading may be necessary to bring the area back to its original "good" condition.

The cover at the site, including that on the clay cap, appeared similar (in vegetative type, plant health, and density) to typical areas adjacent to but not associated with the CERCLA site.

The 5-year review site inspection was scheduled on the same day as the PAB Group LLC's quarterly inspection and semi-annual ground water event. However, the settlement monument survey and ground water sampling activities occurred prior to the visit. Based on dialogue exchanged during the perimeter inspection, Aquaterra (PAB Group LLC's subcontractor for sampling, surveying, and inspecting the site) was able to obtain water samples from monitoring wells 2, 3, 5, 6, and 9, and water levels from

wells 1 through 12; and perceived no noticeable movement to the elevation landmarks when surveyed the day before.

According to Section IX of the September 1993 ROD, the following statements apply to O&M activities:

Page 50: "The site ground water will be monitored by sampling 12 site monitoring wells twice a year for 30 years."

Page 51: "All of the above specifics identified in the description of the selected remedy are presented for cost assumption purposes. These specifics will be better defined during the final design."

Page 53: "Criteria to be evaluated will include statistical changes in ground water contaminant concentrations, the identification and characterization (including risk assessments) of contaminant plume(s) attributed to the site, and comparisons with appropriate drinking water standards. The ground water monitoring program will be developed during the Remedial Design and contained in the Operations and Maintenance Plan."

Since both the ROD and O&M plan were available during the site visit, it was noted at that time that the information documenting the well selection monitoring scheme, and the statistical evaluation of the sampling results, were not immediately available. Sampling and analysis techniques were discussed with the Aquaterra representative. According to Aquaterra, the first series of monitoring well samples were analyzed after being filtered, later samples were analyzed without being filtered, and the most recent samples were again analyzed after being filtered. The ROD seems to suggest, at least for cost estimating purposes, that the samples will be analyzed for both total (unfiltered samples), and dissolved (filtered samples) TAL metals, not just one or the other. This inconsistency across sampling events makes it difficult to compare data from one event with another.

The following costs, according to PAB Group's records, were incurred due to activities associated with the site.

Cumulative Cost Reporting Period	Phase	PAB Oil and Chemical Services, Inc
July 1998 through June 1999	O&M	$19,900
July 1999 through June 2000	O&M	$17,800
July 2000 through June 2001	O&M	$12,000
July 2001 through March 2002	O&M	$2,600

5.0 REFERENCES

Project Navigator, Ltd. 2002. Fourth Quarter 2001 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. January 10.

Project Navigator, Ltd. 2001a. Third Quarter 2001 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. September 24.

Project Navigator, Ltd. 2001b. Second Quarter 2001 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. May 1.

Project Navigator, Ltd. 2001c. First Quarter 2001 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. March 7.

Project Navigator, Ltd. 2000a. Fourth Quarter 2000 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. December 22.

Project Navigator, Ltd. 2000b. Third Quarter 2000 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. September 7.

Project Navigator, Ltd. 2000c. Second Quarter 2000 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. May 12.

Project Navigator, Ltd. 2000d. First Quarter 2000 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. April 5.

Project Navigator, Ltd. 1999a. Fourth Quarter 1999 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. November 5.

Project Navigator, Ltd. 1999b. Third Quarter 1999 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. September 13.

Project Navigator, Ltd. 1999c. Second Quarter 1999 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. June 4.

Project Navigator, Ltd. 1999d. First Quarter 1999 Inspection and Monitoring Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. March 22.

Project Navigator, Ltd. 1998. Fourth Quarter 1998 Inspection Report: Operations and Maintenance Activities, PAB Oil and Chemical Services, Inc. Site, Abbeville, Louisiana. December 14.

TRC Environmental Solutions, Inc. (TRC). 1998. Operations and Maintenance Plan, PAB Oil & Chemical Services, Inc., Abbeville, Louisiana. September 1998.

Remediation Technologies, Inc. 1995. Remedial Design Sampling and Analysis Plan, PAB Oil and Chemical Services, Inc. Superfund Site, Vermillion Parish, Louisiana. May 1995.

Environmental Solutions, Inc. 1995. Final Quality Assurance Project Plan, PAB Oil and Chemical Services, Inc. Superfund Site, Vermillion Parish, Louisiana. July 1995.

U.S. Environmental Protection Agency (EPA). 1993. Record of Decision, PAB Oil and Chemical Services, Inc. Superfund Site, Vermillion Parish, Louisiana. September 22, 1993.

EPA. 1997. Explanation of Significant Differences, PAB Oil and Chemical Services, Inc. Superfund Site, Vermillion Parish, Louisiana. March 12, 1997.

EXHIBIT B

SITE VISIT CHECKLIST

(13 Pages)

FIVE-YEAR REVIEW SITE VISIT CHECKLIST

Information may be completed by hand and attached to the five-year review report as supporting documentation of site status. "N/A" refers to "not applicable."

I. SITE INFORMATION

Site Name: PAB Oil and Chemical Services, Inc. Superfund Site	**Date of Inspection:** February 21, 2002
Location and Region: Abbeville, Louisiana, Region 6	**EPA ID: LAD980749139**
Agency, office, or company leading the five-year review: Tetra Tech EM Inc.	**Weather/temperature: Clear and moderate**

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☐ Ground water pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other

Attachments: ☐ Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M Site Manager** Alexander M. Isaly (Name) | Project Manager (Title) | 2/21/02 (Date)
   Interviewed: ☒ by mail ☐ at office ☐ by phone Phone no. (714) 449-8926
   Problems, suggestions: ☒ Report attached See the Five-Year Review Report

2. **O&M Staff** Tom Vrenick (Name) | Senior Engineering Technician (Title) | 2/21/02 (Date)
   Interviewed: ☐ by mail ☐ at office ☐ by phone Phone no. (225) 344-6052
   Problems, suggestions: ☒ Report attached See appendices to the Five-Year Review Report

3. **Local regulatory authorities and response agencies** (i.e.; State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.). Fill in all that apply.

Agency	Louisiana Department of Environmental Quality			
Contact	Todd Thibodeaux	Environmental Scientist	2/21/02	(225) 165-0474
	Name	Title	Date	Phone no.

Problems, suggestions: ☒ Report attached

Agency				
Contact				
	Name	Title	Date	Phone no.

Problems, suggestions: ☐ Report attached

4. Other interviews (optional): ☒ Report attached to Five-Year Review Report				
Joe Sensebe, U.S. Army Corps of Engineers				
Michael Bertrand, Secretary-Treasurer, Vermilion Parish Police Jury				
Freddy Arceneaux, President, Chamber of Commerce				
The Honorable Brady Broussard, Mayor, City of Abbeville				

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. O&M Documents				
☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A	
☐ As-built drawings	☐ Readily available	☐ Up to date	☐ N/A	
☐ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A	
Remarks: None				
2. Site-Specific Health and Safety Plan	☐ Readily available	☐ Up to date	☒ N/A	
☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☒ N/A	
Remarks: Health and Safety Plan not available during inspection.				
3. O&M and OSHA Training Records	☐ Readily available	☒ Up to date	☐ N/A	
Remarks: Information not available during inspection.				
4. Permits and Service Agreements				
☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A	
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A	
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A	
☐ Other permits	☐ Readily available	☐ Up to date	☒ N/A	
Remarks:				
5. Gas Generation Records	☐ Readily available	☐ Up to date	☒ N/A	
6. Settlement Monument Records	☒ Readily available	☒ Up to date	☐ N/A	
7. Ground Water Monitoring Records	☒ Readily available	☒ Up to date	☐ N/A	
8. Leachate Extraction Records	☐ Readily available	☐ Up to date	☒ N/A	
9. Discharge Compliance Records				
☐ Air	☐ Readily available	☐ Up to date	☒ N/A	
☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A	
Remarks: No discharge from the site other than surficial stormwater runoff.				
10. Daily Access/Security Logs	☐ Readily available	☐ Up to date	☒ N/A	
Remarks: Access to the site not addressed in ROD.				

IV. O&M COSTS

1. O&M Organization

☐ State in-house ☐ Contractor for State
☒ PRP in-house ☒ Contractor for PRP
☐ Other

2. O&M Cost Records

☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate ☐ Breakdown attached

Total annual cost by year for review period, if available

Date		Date	Total Cost
From	to		- ☐ Breakdown attached
From	to		- ☐ Breakdown attached
From	to		- ☐ Breakdown attached
From	to		- ☐ Breakdown attached
From	to		- ☐ Breakdown attached
From	to		- ☐ Breakdown attached
From	to		- ☐ Breakdown attached
From	to		- ☐ Breakdown attached

3. Unanticipated or Unusually High O&M Costs During Review Period

Nothing was noted.

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. Fencing damaged ☐ Location shown on site map ☐ Gates secured ☒ N/A

Remarks:

B. Other Access Restrictions

1. Signs and other security measures ☐ Location shown on site map ☐ N/A

Remarks: Monitoring wells closed and locked.

C. Institutional Controls

1. Implementation and enforcement

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by) Ground water monitoring
Frequency Semi-annual
Responsible party/agency PRP
Contact

Name	Title	Date	Phone no.
Alexander M. Isaly	Project Manager	2/21/02	(714) 449-8926

Reporting is up-to-date ☒ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ☒ N/A
Other problems or suggestions: ☐ Report attached
Some of the metal analyses were completed before filtering the sample.

2. Adequacy ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks:
None

D. General

1. Vandalism/trespassing ☐ Location shown on site map ☐ No vandalism evident
Remarks: Trespassing apparent, some fencing cut.

2. Land use changes onsite ☐ N/A
Remarks: The PRP plans on giving the majority of the land to the parish for soccer fields (reuse).

3. Land use changes offsite ☒ N/A
Remarks:

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. Roads damaged ☐ Location shown on site map ☒ Roads adequate ☐ N/A
Remarks:

B. Other Site Conditions

Remarks: Site was in good condition during visit. The vegetation in the areas remediated appear very similar in nature and in health as the vegetation in the surrounding environment that was not part of the remediation. There are a few barren areas at the northern toe of the cell, the southern toe of the cell, and eastern toe of the cell that may not be able to sustain vegetation.

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. Settlement (Low spots) ☐ Location shown on site map ☒ Settlement not evident
Areal extent Depth
Remarks:

2. Cracks ☐ Location shown on site map ☒ Cracking not evident
Lengths Widths Depths
Remarks:

3. Erosion ☐ Location shown on site map ☒ Erosion not evident
Areal extent Depth
Remarks:

4. Holes ☐ Location shown on site map ☒ Holes not evident
Areal extent Depth
Remarks:

5. Vegetative Cover ☒ Grass ☒ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks: There are a few barren areas at the northern toe of the cell, the southern toe of the cell, and eastern toe of the cell that may not be able to sustain vegetation.

6. Alternative Cover (armored rock, concrete, etc.) ☒ N/A
Remarks:

7. Bulges ☐ Location shown on site map ☒ Bulges not evident
Areal extent Depth
Remarks:

8. Wet Areas/Water Damage ☒ Wet areas/water damage not evident
☒ Wet areas ☐ Location shown on site map ☐ Areal extent
☒ Ponding ☐ Location shown on site map ☐ Areal extent
☐ Seeps ☐ Location shown on site map ☐ Areal extent
☐ Soft subgrade ☐ Location shown on site map ☐ Areal extent
Remarks: The ponding was not evident on the cap; however, standing water was evident in various location around the cap (esp. in the ditch to the east).

9. **Slope Instability** Areal extent Remarks:	☐ Slides	☐ Location shown on site map	☒ No evidence of slope instability
B. Benches ☐ Applicable ☒ N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1. **Flows Bypass Bench** Remarks:		☐ Location shown on site map	☐ N/A or okay
2. **Bench Breached** Remarks:		☐ Location shown on site map	☐ N/A or okay
3. **Bench Overtopped** Remarks:	☐ Location shown on site map		☐ N/A or okay
C. Letdown Channels ☐ Applicable ☒ N/A (Channel lined with erosion control mats, rip rap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1. **Settlement** Areal extent Remarks:		☐ Location shown on site map Depth	☐ No evidence of settlement
2. **Material Degradation** Material type Remarks:		☐ Location shown on site map Areal extent	☐ No evidence of degradation
3. **Erosion** Areal extent Remarks:		☐ Location shown on site map Depth	☐ No evidence of erosion
4. **Undercutting** Areal extent Remarks:		☐ Location shown on site map Depth	☐ No evidence of undercutting
5. **Obstructions** ☐ Location shown on site map Size Remarks:		Type Areal extent	☐ No obstructions

6. Excessive Vegetative Growth Type
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent
Remarks:

D. Cover Penetrations ☒ Applicable ☐ N/A

1. Gas Vents ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☒ N/A
Remarks:

2. Gas Monitoring Probes
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☒ N/A
Remarks:

3. Monitoring Wells (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☒ N/A
Remarks:

4. Leachate Extraction Wells
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☒ N/A
Remarks:

5. Settlement Monuments ☒ Located ☒ Routinely surveyed ☐ N/A
Remarks:

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. Gas Treatment Facilities
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs O&M
Remarks:

2. Gas Collection Wells, Manifolds, and Piping
☐ Good condition ☐ Needs O&M
Remarks:

3. Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs O&M ☐ N/A
Remarks:

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1.	**Outlet Pipes Inspected** Remarks:	☐ Functioning	☐ N/A
2.	**Outlet Rock Inspected** Remarks:	☐ Functioning	☐ N/A
G.	**Detention/Sedimentation Ponds**	☐ Applicable	☒ N/A
1.	**Siltation** Areal extent ☐ Siltation not evident Remarks:	Depth	☐ N/A
2.	**Erosion** Areal extent ☐ Erosion not evident Remarks:	Depth	
3.	**Outlet Works** Remarks:	☐ Functioning	☐ N/A
4.	**Dam** Remarks:	☐ Functioning	☐ N/A
H.	**Retaining Walls**	☐ Applicable	☒ N/A
1.	**Deformations** Horizontal displacement Rotational displacement Remarks:	☐ Location shown on site map Vertical displacement	☐ Deformation not evident
2.	**Degradation** Remarks:	☐ Location shown on site map	☐ Degradation not evident
I.	**Perimeter Ditches/Off-Site Discharge**	☐ Applicable	☒ N/A
1.	**Siltation** Areal extent Remarks:	☐ Location shown on site map Depth	☐ Siltation not evident
2.	**Vegetative Growth** ☐ Vegetation does not impede flow Areal extent Remarks:	☐ Location shown on site map Type	☐ N/A
3.	**Erosion** Areal extent Remarks:	☐ Location shown on site map Depth	☐ Erosion not evident

4. Discharge Structure ☐ Functioning ☐ N/A
Remarks:

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. Settlement ☐ Location shown on site map ☐ Settlement not evident
Areal extent ☐ Depth
Remarks:

2. Performance Monitoring Type of monitoring
☐ Performance not monitored
Frequency ☐ Evidence of breaching
Head differential
Remarks:

IX. GROUND WATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Ground Water Extraction Wells, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. Pumps, Wellhead Plumbing, and Electrical
☐ Good condition ☐ All required wells located ☐ Needs O&M ☐ N/A
Remarks:

2. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances
☐ Good condition ☐ Needs O&M
Remarks:

3. Spare Parts and Equipment
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks:

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. Collection Structures, Pumps, and Electrical
☐ Good condition ☐ Needs O&M
Remarks:

2. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances
☐ Good condition ☐ Needs O&M
Remarks:

3. Spare Parts and Equipment

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks:

C. Treatment System ☐ Applicable ☒ N/A

1. Treatment Train (Check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon absorbers
☐ Filters
☐ Additive (e.g., chelation agent, flocculent)
☐ Others
☐ Good condition ☐ Needs O&M
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of ground water treated annually
☐ Quantity of surface water treated annually

Remarks:

2. Electrical Enclosures and Panels (Properly rated and functional)

☐ N/A ☐ Good condition ☐ Needs O&M

Remarks:

3. Tanks, Vaults, Storage Vessels

☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs O&M

Remarks:

4. Discharge Structure and Appurtenances

☐ N/A ☐ Good condition ☐ Needs O&M

Remarks:

5. Treatment Building(s)

☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored

Remarks:

6. Monitoring Wells (Pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs O&M ☐ N/A

Remarks:

D. Monitored Natural Attenuation

1. **Monitoring Wells** (Natural attenuation remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☐ All required wells located ☐ Needs O&M ☐ N/A

Remarks: At the time of the inspection, Monitoring Well 8 had a broken hinge on the well cap.

X. OTHER REMEDIES

If there are remedies applied at the site that are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The three remedial objective determined to be necessary at the PAB Oil site and the effectiveness of the chosen remedies are as follows:

1. Prevent direct contact, ingestion, and migration of the disposal pit sludges and associated soils. The remedy—on-site solidification/stabilization of site soils, sludges, and sediments and disposal in an on-site disposal unit—appears effective in design and functionality.

2. Prevent direct contact with contaminant surface waters. Implementation of the selected remedy—removal and on-site treatment of all surface water—eliminated the contaminated surface water; therefore, contact with the contaminanted surface water is no longer a threat.

3. Prevent the potential for human exposure to contaminated ground water. The remedy selected to protect this objective—long-term ground water monitoring—will be evaluated in detail in the 5-yr review report.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The O&M activities at the site appear sufficient at insuring that the selected remedy is protective of human health and the environment.

C. Early Indicators of Potential Remedy Failure

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

At the time of the site inspection, no unexpected changes in the cost or scope of O&M activities or high frequency of unscheduled repairs were noted that would compromise the protectiveness of the remedy in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Some of the O&M costs could be minimized by donating a portion of the site to the adjoining city or parish for recreational purposes (as discussed during the site visit, the PAB group has the intention of donating a portion of the property to the city for soccer play). However, such actions will increase the number and type of human receptors to the site. Prior to this potential change, the following is suggested: perform a risk assessment based on the new potential population visiting the site; construct a barrier (fence) around the monitoring wells, drainage ditches, and disposal unit to prevent access/contact to potentially contaminated sources; and placard the area, especially at each potentially contaminated source, with site information (such as contact names and numbers) should anyone require further information or assistance.

ATTACHMENT C

SURVEYS

(12 Pages)

SUPERFUND SITE SURVEY - FORM A		
Site Name: PAB Oil & Chemical Services, Inc.		**EPA Work Assignment No.:** 105-FRFE-06B1
Subject: 5-Year Review Background Information Survey		**Date:** 3/1/2002
Contact Made By:		
Name: Craig Carroll	**Title:** Remedial Project Manager	**Organization:** U.S. EPA
Telephone No.: (214) 665-2220 **E-Mail:** carroll.craig@epa.gov	**Street Address:** 1455 Ross Avenue, Suite 1200 **City, State, Zip:** Dallas, Texas 75202	
Name: Mark H. Taylor	**Title:** Alternate Project Manager	**Organization:** Tetra Tech EM Inc.
Telephone No.: (214) 754-8765 **E-Mail:** startzt@ttemi.com	**Street Address:** 350 N. St. Paul St., Suite 2600 **City, State, Zip:** Dallas, Texas 75201	
Individual Contacted:		
Name: Michael J. Bertrand	**Title:** Secretary-Treasurer	**Organization:** Vermillion Parish Police Jury
Telephone No.: (337) 898-4300 **E-Mail Address:**	**Street Address:** 100 North State Street, Suite 200 **City, State, Zip:** Abbeville, LA 70510	

Survey Questions

Should you choose to respond, please return your survey in the enclosed envelope to Mark H. Taylor by March 15, 2002.

1. What is your impression of the project (general sentiment)?

   General cleanup has been completed in a workman-like manner.

2. What effect have site operations had on the surrounding community?

   None to my knowledge.

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please provide details.

   Project was suppose to have been accepted by the justice department and land donated to police jury, improvements made to construct soccer and/or football fields, but as of yet, nothing has been done.

SUPERFUND SITE SURVEY - FORM A (continued)

Site Name: PAB Oil & Chemical Services, Inc.	EPA Work Assignment No.: 105-FRFE-06B1
Subject: 5-Year Review Background Information Survey	Date: 3/1/2002

Survey Questions (Cont.)

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please provide details.

   No

5. Do you feel well informed about the site's activities and progress?

   Not since initial closeout. See Question 3

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

   No

SUPERFUND SITE SURVEY - FORM A	
Site Name: PAB Oil & Chemical Services, Inc.	EPA Work Assignment No.: 105-FRFE-06B1

Subject: 5-Year Review Background Information Survey		**Date:** 3/1/2002
Contact Made By:		
Name: Craig Carroll	**Title:** Remedial Project Manager	**Organization:** U.S. EPA
Telephone No.: (214) 665-2220 **E-Mail:** carroll.craig@epa.gov	**Street Address:** 1455 Ross Avenue, Suite 1200 **City, State, Zip:** Dallas, Texas 75202	
Name: Mark H. Taylor	**Title:** Alternate Project Manager	**Organization:** Tetra Tech EM Inc.
Telephone No.: (214) 754-8765 **E-Mail:** startzt@ttemi.com	**Street Address:** 350 N. St. Paul St., Suite 2600 **City, State, Zip:** Dallas, Texas 75201	
Individual Contacted:		
Name: Freddy Arceneaux	**Title:** President	**Organization:** Chamber of Commerce
Telephone No.: **E-Mail Address:**	**Street Address:** P.O. Box 116 **City, State, Zip:** Abbeville, LA 70510	

Survey Questions

Should you choose to respond, please return your survey in the enclosed envelope to Mark H. Taylor by March 15, 2002.

1. What is your impression of the project (general sentiment)?

2. What effect have site operations had on the surrounding community?

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please provide details.

Survey Questions (Cont.)

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please provide details.

5. Do you feel well informed about the site's activities and progress?

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

SUPERFUND SITE SURVEY - FORM A	
Site Name: PAB Oil & Chemical Services, Inc.	**EPA Work Assignment No.:** 105-FRFE-06B1
Subject: 5-Year Review Background Information Survey	**Date:** 3/1/2002
Contact Made By:	

Name: Craig Carroll	**Title:** Remedial Project Manager	**Organization:** U.S. EPA
Telephone No.: (214) 665-2220 **E-Mail:** carroll.craig@epa.gov	**Street Address:** 1455 Ross Avenue, Suite 1200 **City, State, Zip:** Dallas, Texas 75202	
Name: Mark H. Taylor	**Title:** Alternate Project Manager	**Organization:** Tetra Tech EM Inc.
Telephone No.: (214) 754-8765 **E-Mail:** startzt@ttemi.com	**Street Address:** 350 N. St. Paul St., Suite 2600 **City, State, Zip:** Dallas, Texas 75201	
Individual Contacted:		
Name: The Honorable Brady Broussard c/o Pam Gaspard	**Title:** Mayor	**Organization:** City of Abbeville
Telephone No.: (337) 898-4206 **E-Mail Address:**	**Street Address:** 101 North State Street **City, State, Zip:** Abbeville, LA 70510	

Survey Questions

Should you choose to respond, please return your survey in the enclosed envelope to Mark H. Taylor by March 15, 2002.

1. What is your impression of the project (general sentiment)?

   Project located out of the city limits; should contact Vermilion Parish Police Jury.

2. What effect have site operations had on the surrounding community?

   Unknown

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please provide details.

   No

Survey Questions (Cont.)

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please provide details.

   No

5. Do you feel well informed about the site's activities and progress?

   No

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

   No

SUPERFUND SITE SURVEY - FORM A	
Site Name: PAB Oil & Chemical Services, Inc.	**EPA Work Assignment No.:** 105-FRFE-06B1
Subject: 5-Year Review Background Information Survey	**Date:** 3/1/2002
Contact Made By:	

Name: Craig Carroll	**Title:** Remedial Project Manager	**Organization:** U.S. EPA
Telephone No.: (214) 665-2220 **E-Mail:** carroll.craig@epa.gov	**Street Address:** 1455 Ross Avenue, Suite 1200 **City, State, Zip:** Dallas, Texas 75202	
Name: Mark H. Taylor	**Title:** Alternate Project Manager	**Organization:** Tetra Tech EM Inc.
Telephone No.: (214) 754-8765 **E-Mail:** startzt@ttemi.com	**Street Address:** 350 N. St. Paul St., Suite 2600 **City, State, Zip:** Dallas, Texas 75201	
Individual Contacted:		
Name: Jeremy Primeaux	**Title:**	**Organization:**
Telephone No.: (337) 898-8338 **E-Mail Address:**	**Street Address:** 9227 US Highway 167 **City, State, Zip:** Abbeville, LA 70510	

Survey Questions

Should you choose to respond, please return your survey in the enclosed envelope to Mark H. Taylor by March 15, 2002.

1. What is your impression of the project (general sentiment)?

2. What effect have site operations had on the surrounding community?

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please provide details.

Survey Questions (Cont.)

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please provide details.

5. Do you feel well informed about the site's activities and progress?

6. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

SUPERFUND SITE SURVEY - FORM B		
Site Name: PAB Oil & Chemical Services, Inc.		**EPA Work Assignment No.:** 105-FRFE-06B1
Subject: 5-Year Review Local Authority Survey		**Date:** 3/1/2002
Contact Made By:		
Name: Craig Carroll	**Title:** Remedial Project Manager	**Organization:** U.S. EPA

Telephone No.: (214) 665-2220 **E-Mail:** carroll.craig@epa.gov	**Street Address:** 1455 Ross Avenue, Suite 1200 **City, State, Zip:** Dallas, Texas 75202	
Name: Mark H. Taylor	**Title:** Alternate Project Manager	**Organization:** Tetra Tech EM Inc.
Telephone No.: (214) 754-8765 **E-Mail:** startzt@ttemi.com	**Street Address:** 350 N. St. Paul St., Suite 2600 **City, State, Zip:** Dallas, Texas 75201	
Individual Contacted:		
Name: Lee A. Guillory, P.E.	**Title:** HTRW Construction Mgr.	**Organization:** U.S. Army Corps of Engineers (New Orleans District)
Telephone No.: (504) 862-2934 **E-Mail Address:** Lee.A.Guillory @mvn02.usace .army.mil	**Street Address:** USACE, NOD, CEMVN-CD-QM **City, State, Zip:** 7400 Leake Avenue New Orleans, LA 70118	

Survey Questions

Should you choose to respond, please return your survey in the enclosed envelope to Mark H. Taylor by March 15, 2002.

1. What is your impression of the project (general sentiment)?

   The PAB Oil & Chemical Services, Inc. Superfund Site Stabilization/Solidification and Closure Cap remedial action project was successfully completed and continues to be protective of human health and the environment.

2. Has your office conducted routine communications or activities (site visits, inspections, reporting activities, etc.) regarding the site? If so, please provide the purpose and results.

   None since Quality Assurance services were performed during the time period of 9 June 97 through 24 June 97.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please provide details of the events and the results of the responses.

   Not to my knowledge.

SUPERFUND SITE SURVEY - FORM B (continued)

Site Name: PAB Oil & Chemical Services, Inc.	**EPA Work Assignment No.:** 105-FRFE-06B1
Subject: 5-Year Review Local Authority Survey	**Date:** 3/1/2002

Survey Questions (Cont.)

4. Do you feel well informed about the site's activities and progress?

   No. I am not familiar with the site since remedial action was completed in Jun 1998.

5. Have there been any changes in State laws and regulations that may impact the protectiveness of the ground water or soil remedies?

   Not to my knowledge.

6. Has the site been in compliance with permitting and reporting requirements?

   I don't know.

7. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

   No.

SUPERFUND SITE SURVEY - FORM B		
Site Name: PAB Oil & Chemical Services, Inc.	**EPA Work Assignment No.:** 105-FRFE-06B1	
Subject: 5-Year Review Local Authority Survey	**Date:** 3/1/2002	
Contact Made By:		
Name: Craig Carroll	**Title:** Remedial Project Manager	**Organization:** U.S. EPA
Telephone No.: (214) 665-2220 **E-Mail:** carroll.craig@epa.gov	**Street Address:** 1455 Ross Avenue, Suite 1200 **City, State, Zip:** Dallas, Texas 75202	
Name: Mark H. Taylor	**Title:** Alternate Project Manager	**Organization:** Tetra Tech EM Inc.
Telephone No.: (214) 754-8765 **E-Mail:** startzt@ttemi.com	**Street Address:** 350 N. St. Paul St., Suite 2600 **City, State, Zip:** Dallas, Texas 75201	
Individual Contacted:		
Name: Todd Thibodeaux	**Title:** Environmental Scientist	**Organization:** Louisiana Department of Environmental Quality
Telephone No.: (225) 765-0355 **E-Mail Address:**	**Street Address:** Remediation Services Division, P.O. Box 82179 **City, State, Zip:** Baton Rouge, LA 70884-2178	

Survey Questions

Should you choose to respond, please return your survey in the enclosed envelope to Mark H. Taylor by March 15, 2002.

1. What is your impression of the project (general sentiment)?

   The project was a great success. The remediation process was done correctly. The PRP group was easy to work with, and they were very cooperative.

2. Has your office conducted routine communications or activities (site visits, inspections, reporting activities, etc.) regarding the site? If so, please provide the purpose and results.

   Yes. I have done site inspections and GW sampling oversight along with PRP consultants. The site fence and monitor wells were in pretty good condition. If there was a problem with either one, the PRP's consultants took care of it.

3. Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please provide details of the events and the results of the responses.

   No

SUPERFUND SITE SURVEY - FORM B (continued)	
Site Name: PAB Oil & Chemical Services, Inc.	**EPA Work Assignment No.:** 105-FRFE-06B1
Subject: 5-Year Review Local Authority Survey	**Date:** 3/1/2002

Survey Questions (Cont.)

4. Do you feel well informed about the site's activities and progress?

   Yes

5. Have there been any changes in State laws and regulations that may impact the protectiveness of the ground water or soil remedies?

   Yes. RECAP. This is our Risk Evaluation Corrective Action Program. It will not impact either the soil or groundwater remedies.

6. Has the site been in compliance with permitting and reporting requirements?

   Yes

7. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

   When we will be able to go the NFA (No Further Action) status with this site and get it off our list.

SUPERFUND SITE SURVEY - FORM C		
Site Name: PAB Oil & Chemical Services, Inc.		**EPA Work Assignment No.:** 105-FRFE-06B1
Subject: 5-Year Review Operation and Maintenance Survey		**Date:** 3/1/2002
Contact Made By:		
Name: Craig Carroll	**Title:** Remedial Project Manager	**Organization:** U.S. EPA
Telephone No.: (214) 665-2220 **E-Mail:** carroll.craig@epa.gov	**Street Address:** 1455 Ross Avenue, Suite 1200 **City, State, Zip:** Dallas, Texas 75202	
Name: Mark H. Taylor	**Title:** Alternate Project Manager	**Organization:** Tetra Tech EM Inc.
Telephone No.: (214) 754-8765 **E-Mail:** startzt@ttemi.com	**Street Address:** 350 N. St. Paul St., Suite 2600 **City, State, Zip:** Dallas, Texas 75201	
Individual Contacted:		
Name: Alexander M. Isaly	**Title:** Project Manager	**Organization:** Project Navigator, LTD
Telephone No.: (714) 449-8926 **E-Mail:** aisaly@ projectnavigator.com	**Street Address:** 2600 East Nutwood Avenue, Suite 830 **City, State, Zip:** Fullerton, CA 92831	

Survey Questions

Should you choose to respond, please return your survey in the enclosed envelope to Mark H. Taylor by March 15, 2002.

1. What is your impression of the project (general sentiment)?

   See attachment.

2. Please describe the on-site operation and maintenance (O&M) presence, including staff, frequency of site inspections, and (O&M) activities.

   See attachment.

3. Please describe any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last 5 years. Do they affect the protectiveness or effectiveness of the remedy?

   See attachment.

4. Have the O&M manual and Health and Safety Plan been updated to reflect site changes?

   See attachment.

SUPERFUND SITE SURVEY - FORM C	
Site Name: PAB Oil & Chemical Services, Inc.	**EPA Work Assignment No.:** 105-FRFE-06B1
Subject: 5-Year Review Operation and Maintenance Survey	**Date:** 3/1/2002

Survey Questions (Cont.)

5. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last 5 years? If so, please provide details.

   See attachment.

6. Can you provide insight to potential O&M problems?

   See attachment.

7. Do you have any comments, suggestions, or recommendations regarding the project?

   See attachment.

SUPERFUND SITE SURVEY - FORM C

Site Name: PAB Oil & Chemical Services, Inc.	**EPA Work Assignment No.:** 105-FRFE-06B1
Subject: 5-Year Review Operation and Maintenance Survey	**Date:** 3/1/2002

Contact Made By:		
Name: Craig Carroll	**Title:** Remedial Project Manager	**Organization:** U.S. EPA
Telephone No.: (214) 665-2220 **E-Mail:** carroll.craig@epa.gov	**Street Address:** 1455 Ross Avenue, Suite 1200 **City, State, Zip:** Dallas, Texas 75202	
Name: Mark H. Taylor	**Title:** Alternate Project Manager	**Organization:** Tetra Tech EM Inc.
Telephone No.: (214) 754-8765 **E-Mail:** startzt@ttemi.com	**Street Address:** 350 N. St. Paul St., Suite 2600 **City, State, Zip:** Dallas, Texas 75201	

Individual Contacted:		
Name: Tom Vrenick	**Title:** Senior Engineering Technician	**Organization:** Aquaterra Engineering
Telephone No.: (225) 344-6052 **E-Mail:**	**Street Address:** P.O. Box 82160 **City, State, Zip:** Baton Rouge, LA 70884-2160	

Survey Questions

Should you choose to respond, please return your survey in the enclosed envelope to Mark H. Taylor by March 15, 2002.

1. What is your impression of the project (general sentiment)?

   Project has been successfully closed; monitoring and maintenance has been very good.

2. Please describe the on-site operation and maintenance (O&M) presence, including staff, frequency of site inspections, and (O&M) activities.

   O&M has performed as per the approved workplan - inspections quarterly and sampling semiannually.

3. Please describe any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last 5 years. Do they affect the protectiveness or effectiveness of the remedy?

   No significant changes have occurred.

4. Have the O&M manual and Health and Safety Plan been updated to reflect site changes?

   No significant site changes have occurred warranting changes in these plans.

SUPERFUND SITE SURVEY - FORM C

Site Name: PAB Oil & Chemical Services, Inc.	EPA Work Assignment No.: 105-FRFE-06B1
Subject: 5-Year Review Operation and Maintenance Survey	Date: 3/1/2002

Survey Questions (Cont.)

5. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last 5 years? If so, please provide details.

   No.

6. Can you provide insight to potential O&M problems?

   Do not anticipate any O&M problems. O&M has been managed easily for the past five years, do not see any changes.

7. Do you have any comments, suggestions, or recommendations regarding the project?

   Continue with current procedure.