



REVISED HAZARDOUS WASTE CLOSURE AND RISK EVALUATION/CORRECTIVE ACTION PROGRAM (RECAP) EVALUATION

Prepared For:

**General Motors Corporation
Shreveport Truck Assembly Plant
7600 General Motors Boulevard
Shreveport, Caddo Parish, Louisiana
Agency Interest No.: 3349**

**NOVEMBER 2003
REF. NO. 17332 (1)**

Prepared By:

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RECAP FORM 1
RECAP SUBMITTAL SUMMARY

A completed RECAP Submittal Summary form shall be included as the first page of the RECAP Submittal.

Facility Owner Name: General Motors Corporation

Facility Owner Mailing Address: P. O. Box 30011
Shreveport, Louisiana 71130-0011

Facility Operator Name: Mr. David Burroughs

Facility Operator Mailing Address: Same as above.

Facility Physical Address: 7600 General Motors Boulevard
Shreveport, Louisiana 71129

Parish: Caddo

Latitude/Longitude of Primary Facility Entrance: Latitude: 32°25'19" North/Longitude: 93°55'01" West

Latitude/Longitude Method: U.S.G.S. 7.5-minute Topographic Map "Greenwood, LA," 1982

Facility Contact Person: Mr. David Burroughs

Facility Contact Person's Phone Number: (518) 683-9267

Facility Contact Person's Mailing Address: Same as above.

Facility LDEQ Identification Numbers: Agency Interest No.: 3349
LAD 089 317 341

Area of Investigation Name: AOI-1 (Surface Soil - Thinner Tank Pad), AOI-2 (Potential Surface Soil - Thinner Tank Pad), AOI-3 (Groundwater - Thinner Tank Pad), AOI-4 (Surface Soil - Drum Pad), AOI-5 (Groundwater - Drum Pad)

Area of Investigation Location: AOI-1, AOI-2 and AOI-3; Former Thinner Tank Pad area;
AOI-4 and AOI-5: Drum Pad area.

Area of Investigation Size: <0.5-acre.

Indicate How Release Occurred (if known): Resulted from operation of HWMU's.

List Constituents Released (if known): Acetone, Methyl-Ethyl Ketone (MEK), Methyl-Isobutyl
Ketone, Ethylbenzene, Trichloroethene, Benzene, TPH-ORO
Arsenic, Barium, Cadmium and Lead

RECAP Submittal Date: August 2002, November 2003 (Revised)

RECAP Submittal Prepared by: I. Wesley Jones

RECAP Submittal Preparer's Employer: Conestoga-Rovers & Associates (CRA)

Site Ranking: Class 1 Class 2 Class 3 Class 4

Media Impacts:

<input checked="" type="checkbox"/> Surface Soil	<input type="checkbox"/> Groundwater 1A	<input type="checkbox"/> Surface water
<input checked="" type="checkbox"/> Potential Surface Soil	<input type="checkbox"/> Groundwater 1B	<input type="checkbox"/> Sediment
<input type="checkbox"/> Subsurface Soil	<input type="checkbox"/> Groundwater 2A	<input type="checkbox"/> Biota
	<input type="checkbox"/> Groundwater 2B	
	<input type="checkbox"/> Groundwater 2C	
	<input checked="" type="checkbox"/> Groundwater 3A	
	<input type="checkbox"/> Groundwater 3B	
	<input type="checkbox"/> Groundwater Classification Unknown	

Aquifer: Wilcox

Depth Groundwater First Encountered: ≈ 10 feet

Fractional Organic Carbon Content: 0.02

Distance from POC to POE: >2,000 feet Dilution Factor Applied: 440

Is NAPL Present? Yes No

Current Land Use Non-Industrial Industrial NAICS: 562112

Potential Future Land Use Non-Industrial Industrial NAICS: 336112/562112

Is There Offsite Contamination? Yes No

If Yes, Land Use Offsite: Non-Industrial Industrial NAICS: _____

Management Option(s) Used:

SO: Are the maximum detected concentrations for all COC in all impacted media less than or equal to the limiting SS? Yes No

MO-1: Are the exposure concentrations for all COC in all impacted media less than or equal to the limiting MO-1 RS? Yes No

MO-2: Are the exposure concentrations for all COC in all impacted media less than or equal to the limiting MO-2 RS? Yes No

Appendix K: Are the exposure concentrations for all COC in all impacted media less than or equal to the limiting Appendix K RS? Yes No

MO-3A: Is the cumulative cancer risk less than or equal to the limiting 1E-06? Yes No
Is the total hazard index less than or equal to 1.0? Yes No

MO-3B: Are the exposure concentrations for all COC in all impacted media less than or equal to the limiting MO-1 RS? Yes No

Is Corrective Action Proposed? Yes No

Are Institutional Controls Proposed? Yes No

Have Interim Correction Actions Been Performed? Yes No

If yes, explain.

Is There a Current or Potential Ecological Impact? Yes No

What is the Action Being Requested for Management of this AOI?

NFA-ATT CAP Approval Closure Plan Approval

RECAP Standards Applied at the AOI:

Constituents of Concern	Soil RECAP Standards (mg/kg)	Groundwater RECAP Standards (mg/L)
MO-1		
Acetone	7,000 (0-15' bgs)	N/A
Benzene	3.2 (0-15' bgs)	N/A
Ethylbenzene	230 (0-15' bgs)	N/A
2-Butanone (MEK)	22,000 (0-15' bgs)	N/A
4-Methyl-2-Pentanone (MIK)	2,400 (0-15' bgs)	N/A
Trichloroethene	14 (0-15' bgs)	N/A
Arsenic	N/A	100
Barium	N/A	19,800
Cadmium	N/A	20
Lead	N/A	22
TPH-ORO	N/A	10,000

Notes:

N/A = Not Applicable.

EXECUTIVE SUMMARY

- General Motors (GM) has operated two interim status hazardous waste management units (HWMUs) at its Shreveport Truck Assembly Plant since 1979. The two units are identified as the Drum Waste Management Pad (Drum Pad) and the Thinner Tank System Pad (Thinner Tank Pad). In May 2001, GM submitted a Hazardous Waste Storage Facility Closure Plan (Closure Plan) to the Louisiana Department of Environmental Quality (LDEQ) for review and approval. The Closure Plan was approved February 27, 2002. Activities associated with closure of the two HWMUs began March 5, 2002, and were completed April 26, 2002.
- To verify that operation of the two units had not adversely impacted subsurface soils or groundwater at the site, GM contracted Conestoga-Rovers & Associates (CRA) to conduct a site investigation according to the LDEQ-approved Closure Plan.
- The Thinner Tank Pad consisted of two 10,000-gallon thinner tanks (1-waste tank, 1-product tank, only the waste tank is regulated as a hazardous waste management unit.), a concrete secondary containment 28 feet wide by 36 feet long by 2 feet deep, with a capacity of 14,406 gallons, and a loading pad 12 feet wide by 40 feet long, with a containment capacity of 1,795 gallons. The Drum Pad measures approximately 224 feet long by 89 feet wide for a total of 19,936 square feet.
- The Thinner Tank Pad tanks, containment and loading pad were dismantled, removed, and disposed or recycled. The loading pad was replaced with a concrete drive used to access the newly constructed Thinner Tank System located just north of the previous Thinner Tank Pad. The remainder of the Thinner Tank Pad site was covered with rock to facilitate reuse of the area for parking and equipment storage. The Drum Pad was decontaminated and inspected for integrity and will continue to be used for <90-day storage of hazardous waste.
- Impact to the site would most likely be attributable to past operations of the HWMUs. The potential constituents of concern (COCs) were identified as constituents known to have been present in waste streams handled in the HWMUs. The list of potential COCs was approved by LDEQ prior to initial site investigation activities. The potential COCs for soil and groundwater at the site included Volatile Organic Compounds (VOCs) and the metals Arsenic, Barium, Cadmium, Chromium VI, and Lead, as reflected in Table 2 of the following report. The final COCs for each medium are those with exposure/source concentrations greater than the respective RECAP Screening Option (SO) Screening Standards (SS), as discussed in Section 4.5 of the following report. The final COCs identified were Acetone, Ethylbenzene, 2-butanone (or Methyl-ethyl Ketone (MEK)), 4-Methyl-2-Pentanone (or Methyl-isobutyl Ketone (MIK)), Trichloroethene, Barium and Lead.

- Soils at the site consist of predominately brown, gray and red silty clays with clayey silts/sands near saturated intervals. Groundwater was encountered at depths ranging from approximately 10 feet below ground surface (bgs) to approximately 23 feet bgs. Groundwater at the site was determined to be Classification 3A, non-drinking water (GW_{3NDW}).
- Media impacted included: Surface Soil (0-3 feet bgs) in the Thinner Tank Pad and Drum Pad areas, Potential Surface Soil (3-15 feet bgs) in the Thinner Tank Pad area, and groundwater in the Thinner Tank Pad and Drum Pad areas. The highest COC concentrations in surface soil were Acetone at 18.3 mg/kg, Ethylbenzene at 39.3 mg/kg, MEK at 45.9 mg/kg, and MIK at 29 mg/kg in the Thinner Tank Pad area, and Trichloroethene at 0.0942 mg/kg in the Drum Pad area. The highest COC concentrations in potential surface soil were Acetone at 53.2 mg/kg, MEK at 60.3 mg/kg and MIK at 6.29 mg/kg in the Thinner Tank Pad area. The maximum COC concentrations in groundwater were Barium at 2.81 mg/L and Lead at 0.179 mg/L in the Drum Pad area. There were no COCs detected above the RECAP SO SS in groundwater in the Thinner Tank Pad area. Also, there were no COCs detected in subsurface soil above the RECAP SO SS in either the Thinner Tank Pad or the Drum Pad areas.
- The only potential affected receptors identified were construction workers who might perform future subsurface activities. Other exposures are unlikely since access to the sites is limited to GM employees and contractors, and both areas are covered with either concrete or rock.
- All COC concentrations detected were far below applicable RECAP Management Option 1 (MO-1) Limiting RECAP Standards (RS). In an August 2002 submittal, GM provided certification of closure in compliance with LAC 33:V.3517 and requested acknowledgement of closure and no further action at this time (NFA-ATT) designation from LDEQ with regard to the two units.
- In August 2002, GM submitted a Hazardous Waste Closure/RECAP Evaluation Report to LDEQ. The report summarized all HWMU closure and site investigation activities, established Limiting RS for the site and requested NFA-ATT designation from LDEQ with regard to the two units.
- In a correspondence dated May 13, 2003, thirteen NODs were issued by the Louisiana Department of Environmental Quality (LDEQ) Office of Environmental Services, Permits Division, pertaining to the RECAP Report.
- On June 4, 2003, GM and CRA personnel met with LDEQ personnel to discuss the NODs. As a result, GM agreed to perform additional site assessment activities to address the NODs in order to satisfy the requests of LDEQ.

- Subsequently, CRA prepared a HWMU Closure Plan Addendum describing additional site assessment activities required to satisfy the additional data needs referenced in the NODs.
- The Closure Plan Addendum was submitted to LDEQ by GM on July 23, 2003 and approved by LDEQ on August 18, 2003.
- Additional Site Investigation activities were performed August 19-22, 2003, in accordance with the approved Modified Closure Plan Addendum and the existing LDEQ-approved Modified Closure Plan.
- As a result of the Additional Site Investigation activities, the prevailing groundwater flow direction in the vicinity of the site was determined to be to the northeast, toward Lake Hayes. Slug tests performed during the Additional Site Investigation activities indicated a sustained aquifer yield of approximately 550 gallons per day, thereby confirming the groundwater classification of the shallow aquifer to be Groundwater 3 non-drinking water.
- Laboratory analytical results of soil and groundwater samples collected during the Additional Site Investigation lead to the addition of one COC in soil (Benzene) in the Thinner Tank Pad area and one COC (total oil-range petroleum hydrocarbons (TPH-ORO)) in groundwater in the Drum Pad area. In addition, six Polycyclic Aromatic Hydrocarbons (PAHs) had laboratory method detection limits above RECAP SS and required further evaluation under RECAP MO-1.
- Re-evaluation of the existing and newly collected data from the HWMUs, using RECAP MO-1, confirmed all observed constituent concentrations below site-specific Limiting RS. Therefore, with this submittal, GM respectfully requests NFA-ATT designation from LDEQ with regard to the two units.

1.0 INTRODUCTION

1.1 SITE HISTORY

On October 23, 1984, the General Motors (GM) Shreveport Assembly Plant (GM Plant) submitted a Resource Conservation and Recovery Act (RCRA) Part I application to the Louisiana Department of Environmental Quality (LDEQ) for the storage of hazardous waste over 90 days at two hazardous waste management units (HWMUs). The two units are identified as the Drum Waste Management Pad (Drum Pad) and the Thinner Tank System Pad (Thinner Tank Pad). GM operated the two HWMUs in this configuration until 1979, at which time > 90 day storage ceased.

Drum Pad

The Drum Pad measures approximately 224 feet long by 89 feet wide for a total of 19,936 square feet. It is equipped with secondary containment and spill diversion. Operations at the drum pad consist of segregation of compatible wastes awaiting proper disposal, triple rinsing of drums used to temporarily store wastes, and temporary storage of waste containment vessels/equipment prior to use. The area receives D001 wastes streams from the plant. Past waste streams received at the pad have included waste solvents, paint-related wastes, elpo-related wastes, and non-flammable oils, sealers and adhesives. The drum pad is constructed of an approximately 8-inch thick reinforced concrete slab that is curbed and sloped toward three floor drains. The floor drains convey liquids to a sump located immediately north of the Drum Pad. The sump contents are subsequently directed to GM pre-treatment system before they are discharged to the City of Shreveport POTW under the City's Industrial Pretreatment Program (GM Industrial User Permit #CIU-002). A corrugated metal roof covers the entire Drum Pad and prevents contact of pad elements with storm water.

Thinner Tank Pad

The Thinner Tank Pad consisted of two 10,000-gallon thinner tanks. One of the tanks contained virgin (non-RCRA regulated) thinner, the other contained used thinner from GM painting operations. Adjacent to the tanks was a truck loading and unloading area with containment area draining to a sump located in the northeast corner of the tank secondary containment. The used thinner tank received approximately 500 gallons of (D001) used thinner per day. In the past, the waste tank was used to temporarily store (F003) used solvent (Purge Thinner). The used thinner was removed, via vacuum truck, at a minimum of every 3 weeks or when the volume of the waste tank exceeded 6,000 gallons. Used thinner from the GM Plant is sent to a RCRA-permitted facility for disposal via supplemental fuels program.

The thinner tanks had the following dimensions:

Thinner Tank Dimensions	
Diameter	8 feet
Length	27.1 feet
Wall Thickness	0.125 inches
Total Thinner Tank Capacity	10,189 gallons

The thinner tanks were located within a secondary containment of the following dimensions:

Thinner Tank Pad Containment Dimensions	
Depth	2 feet
Length	36 feet
Width	28 feet
Saddle Depth	2 feet
Saddle Length	7.5 feet
Saddle Width	1 foot
Total Containment Capacity	14,406 gallons

The Tanker Loading Pad containment dimensions were as follows:

Tanker Loading Pad Containment Dimensions	
Depth	0.5 feet
Length	40 feet
Width	12 feet
Total Containment Capacity	1,795 gallons

The thinner tank pad system was equipped with a sump in the northeast corner of the tank secondary containment. The sump measured 2.5 feet square and served both the tank containment and the tanker truck loading areas. The sump directed its contents via aboveground piping to GM's wastewater pretreatment system prior to discharge to the City of Shreveport POTW under Industrial User Permit #CIU-002.

The following list of wastes, volumes and locations indicate the maximum quantities stored at both the Thinner Tank Pad and Drum Pad at any one time during the life of the facility.

Hazardous Waste	Tank/Container	Location
Elpo-Related Wastes (D008)	20-30 Cu. Yards	Drum Pad
Paint-Related Wastes - Liquid (D001, F003)	Drums/Totes - 6,000 Gal.	Drum Pad
Paint-Related Wastes - Solid (D001, F003)	Drums - 1,000 Gal.	Drum Pad
Waste Sealers/Adhesives (D001, F005)	Drums - 1,000 Gal.	Drum Pad
Waste Thinner (D001)	Tank - 6,000 Gal.	Thinner Tank Pad
Non-Hazardous Waste	Tank/Container	Location
Waste Vinyl Sealer and Drum Liners	23 Cu. Yard Gondola	Drum Pad
Waste Oils and Absorbents (solids)	23 Cu. Yard Gondola	Drum Pad
Waste Powder Paint	23 Cu. Yard Gondola	Drum Pad

Closure Plan Submittal

In May 2001, GM submitted a Hazardous Waste Storage Facility Closure Plan (Closure Plan) to the LDEQ for review and approval. Thirteen deficiencies were noted by LDEQ in the Closure Plan. In July 2001, GM submitted a response to the LDEQ Notice of Deficiencies that modified the Closure Plan to account for the deficiencies. In August and September 2001, LDEQ noted further deficiencies in the Modified Closure Plan. In December 2001, GM submitted a response to these deficiencies. Final approval of the Modified Closure Plan was granted in an LDEQ correspondence letter dated February 27, 2002. A copy of the Modified Closure Plan, Notices of Deficiency (NODs), GM responses to NODs, and a copy of the LDEQ correspondence granting approval of the plan are included in Appendix A.

Closure of the HWMUs was conducted from March 14 through April 26, 2002. Site Investigation activities consistent with the approved Modified Closure Plan were conducted April 24 through April 26, 2002. Site Investigation activities were conducted to confirm if soil and/or groundwater have been adversely impacted as a result of operation of the two HWMUs.

Records collected during closure activities, including Site Safety Checklists, Daily Activity Logs, Daily Sign-In Sheets, Daily Safety Meeting Logs, and Photographs taken during Thinner Tank Pad Closure, are provided in Appendix A.

Following successful closure and site investigation activities, GM submitted a Hazardous Waste Closure and RECAP Evaluation Report summarizing site activities and demonstrating that impact to the site due to past operations of the HWMUs did not approach a level representing an undue risk to human health or the environment. However, after reviewing the submittal the LDEQ issued 13 NODs in reference to the report. On July 23, 2003, GM submitted a Modified Closure Plan Addendum to address NODs issued by LDEQ regarding the initial Hazardous Waste Closure and RECAP Evaluation report, submitted in August 2002. The Modified Closure Plan Addendum was approved by LDEQ in correspondence dated August 18, 2003.

On August 19-22, 2003 Additional Site Investigation activities were performed by CRA at the site in accordance with the Modified Closure Plan Addendum submitted in July 2003. Descriptions of the April 24 to 26, 2001, site investigation and the August 19-22, 2003 Additional Site Investigation activities are provided in Appendix B. All boring logs, analytical and geotechnical data generated from activities conducted at the site are also included in Appendix B.

1.2 SITE DESCRIPTION

The GM Plant is located in Caddo Parish, Louisiana, south of U.S. Interstate 20, between the city limits of Shreveport and Greenwood, Louisiana. More specifically, the GM Plant is located in Sections 28, 29, 32 and 33 of Township 17 North, Range 15 West. The property is bordered to the north by Union Pacific Railroad's Reisor Yard, to the south by General Motors Boulevard, to the East by undeveloped land owned by the Caddo Parish Police Jury, and to the West by Dinkins Drive. The coordinates of the primary facility entrance are Latitude 32° 25' 19" North and Longitude 93° 55' 01" West. The location of the facility, surrounding cross streets, and land use, are provided on the Vicinity Map (Figure 1).

The Drum Pad and former Thinner Tank Pad are located on the West Side of the GM Plant as depicted on the Facility Map (Figure 2). Site Plans depicting the layout of the two HWMUs are presented as Figures 3 (Thinner Tank Pad) and 4 (Drum Pad). The known locations of utility lines are depicted on the site plans.

The site is located in a heavily industrial area referred to as West Shreveport Industrial Park. North of the GM Plant are industrial and residential properties. Properties to the South, East and West of the plant are undeveloped. A surrounding land use map, depicting land use near the site, is included as Figure 5.

The ground surface across the site is relatively flat with an elevation of approximately 238 feet above mean sea level (MSL). Site surface water drainage follows area topography and is toward the southeast.

The soil stratigraphy consists of predominantly red-brown silty clay to the maximum depth of study (29 feet). Soil Profile Cross Sections of the HWMUs are provided as Figures 6A and 6B. The minimum depth of the saturated column is approximately 10 feet bgs.

The site is in an area underlain by the Wilcox Group of Paleocene age. The Wilcox Group consists predominately of interbedded layers of clay and sand of varying thicknesses. Boulder concretions of limestone and thin seams of lignite occur occasionally in the clays. The thickness of this formation is approximately 400 feet ("Water Resources of Bossier and Caddo Parishes, Louisiana," by L. V. Page and H. G. May, 1964, Louisiana Geological Survey, Water Resources Bulletin No. 5).

The Carrizo-Wilcox aquifer is the primary groundwater source for northwest Louisiana, according to the U.S. Geological Survey, "Water Resources Investigations Report 95-4176," 1991. The Carrizo Sand consists of massive, discontinuous medium to coarse-grained sands that overlies fine to medium-grained sands, clays, and lignite layers of the Wilcox Group. The Carrizo Sand and the Wilcox Group are hydraulically connected and are considered one aquifer.

The Carrizo-Wilcox aquifer outcrops in Caddo, Bossier, DeSoto, Natchitoches, Red River, and Sabine Parishes and recharges from infiltration of rainwater and from shallower aquifers. Average hydraulic conductivity of the Carrizo is 27 feet per day, while the Wilcox is only 12 feet per day. Potable water is available throughout Caddo Parish from the Wilcox Group, which yields enough water for rural use and small industry. The top of the Wilcox Group ranges in depth from 50 to 100 feet bgs. Groundwater movement in the Wilcox Group is typically away from the Red River during periods of high-river stage and toward the river during low-river stages. Groundwater quality in the Wilcox Aquifer is generally good, although some areas may contain high concentrations of sodium, chloride, and iron. The direction of near-surface groundwater flow is usually a function of topography and local drainage.

Based on water well survey information obtained from the Louisiana Department of Transportation and Development (LDOTD), Water Resources Section, there are 15 domestic wells and three public supply wells within a 1-mile radius of the site. The wells are completed at depths ranging from 165 to 270 feet bgs. The wells are discussed in greater detail in Section 5.3. A copy of the LDOTD water well survey is included in

Appendix C. A Water Well Map, depicting the locations of the identified wells, is provided as Figure 7.

1.3 SITE RANKING AND JUSTIFICATION

In accordance with the Louisiana Department of Environmental Quality's Risk Evaluation/Corrective Action Program (RECAP), the site ranking was selected based on the ranking system in *Standard Guide for Risk-Based Corrective Action at Petroleum Release Sites* (ASTM E 1739-95). On the scale of one to four, with four being the lowest in urgency of response action required to protect human health and the environment, the site receives a ranking of four. The ranking is justified on the basis of:

- 1) Shallow impacted soils are not present in significant quantities;
- 2) The shallow impacted groundwater is not used for potable water anywhere in the city; and
- 3) Potential for human contact with surface soils is minimal because both sites are located within the boundaries of the General Motors Shreveport Assembly Plant. Therefore, access is restricted to GM employees, contractors, and plant guests.

A Conceptual Site Model is provided as Figure 8 and is discussed further in Section 5.2.

1.4 RECAP OPTION(S) IDENTIFICATION

This RECAP evaluation of the Thinner Tank Pad and Drum Pad was conducted to determine if the sites were adversely impacted such that closure of the HWMUs would not be possible due to unacceptable constituent concentrations resultant from former operations. GM hopes to demonstrate that residual contamination does not pose an undue risk to human health or the environment and seeks No Further Action status designation by LDEQ for both HWMUs.

Tiers of analysis used by CRA to evaluate the site according to LDEQ RECAP guidelines were the RECAP Screening Option (SO), and Appendix I Management Option 1 (MO-1). The following information is furnished to demonstrate the applicability for site evaluation utilizing these options:

- An industrial exposure scenario is under consideration. The AOIs are within an industrial site (NAICS Code = 562112 - Hazardous Waste Collection) and no sensitive sub-populations exist on or near the site;

- The potential for human exposure is limited to exposure via ingestion, inhalation from volatile emissions emanating from the soil and groundwater, and dermal contact with impacted soil. Exposure pathways via surface water, sediment, or biota are virtually non-existent;
- The area of impacted soil in each AOI is less than 0.5 acre;
- The impacted soil and groundwater COC concentrations are in declining conditions;
- Non-Aqueous Phase Liquid (NAPL) is not present;
- Soil and/or groundwater impacted with volatile constituents are not present under an enclosed structure;
- High fugitive dust emissions are not present due to the presence of surface pavement (cement) and grass cover over the entire site;
- Based on the relatively flat topography, the presence of surface pavement over the majority of the Drum Pad and the presence of pavement and rock over the majority of the former Thinner Tank Pad, the potential for impact due to any surface water runoff is virtually non-existent. In addition, biota impact is similarly non-existent;
- The potential for discharge of Constituents of Concern (COCs) to surface water via a groundwater discharge from the AOCs is virtually non-existent due to the distance to the nearest down-gradient surface water body from the site;
- Volatile emissions from groundwater to ambient air do not represent a significant source of exposure via the inhalation pathway; and
- There are no unusual current or future site conditions that may affect exposure potential at the site.

1.5 PREVIOUS RECAP ASSESSMENT RESULTS

A RECAP assessment of the HWMU sites was performed and submitted as part of a Hazardous Waste Closure and RECAP Evaluation report, in August 2002. Results of this initial report indicated COC concentrations below applicable Limiting RECAP RS in all impacted media.

2.0 HWMU CLEAN CLOSURE METHODOLOGY

The Thinner Tank Pad and Drum Pad were clean closed according to the LDEQ-approved hazardous waste storage facility closure plan. Clean closure (as defined in *Risk-Based Clean Closure*, EPA, 1998) of the two HWMUs was accomplished by:

- 1) Removing all waste and waste residue (as described in Sections 4.1, 4.2, 5.1, and 5.2 of the approved Closure Plan);
- 2) Demonstrating that residual COC concentrations in impacted media are less than the applicable Limiting RECAP Standards (RS); and
- 3) Demonstrating that residual COC concentrations in impacted media do not pose an unacceptable risk to ecological receptors.

Closure of the HWMUs was accomplished by implementing the step-wise methodology described in the approved Closure Plan. The following sections describe and document the closure methodology employed and demonstrate compliance with the approved Closure Plan.

Copies of Daily Site Safety Checklists, Daily Activity Logs, Daily Sign-In Logs and records of Daily Safety Meetings generated during HWMU closure activities are included in Appendix A.

2.1 THINNER TANK PAD CLOSURE

2.1.1 INVENTORY REMOVAL

Inventory removal was the responsibility of Rineco Corporation (Rineco) of Benton, Arkansas, and its subcontractor Integrated Technical Services (ITS). Payne Mechanical Services (Payne) personnel, contracted to GM, also participated in all aspects of the Thinner Tank Pad closure. Inventory removal began March 5, 2002. The primary limitation on removal of the contents of the Waste Thinner Tank was the presence of sludge on the bottom of the tank. The original plan for removal of the sludge was to suspend the sludge in residual thinner remaining in the tank. To facilitate the suspension process, virgin thinner was pumped from the Product Thinner Tank that was located adjacent to the Waste Thinner Tank. Suspension was to be accomplished by circulating the Waste Thinner Tank contents and by using a diesel-powered pump and venturi valve located on the bottom of the tank to break up and homogenize the sludge. However, the venturi method proved too slow due to limited access to the tank and a decision was made to "wet cut" the end of the Waste Thinner Tank in order to provide

better access to the tank contents. Opening the ends of the tanks would also facilitate decontamination procedures following inventory removal.

On March 7, circulation of contents of the Used Thinner Tank continued while scaffolding was erected to prepare for hydro-cutting the tanks. On March 8, hydro-cutting was performed. Since the cutting involved the use of an abrasive that could potentially spark, a decision was made to purge the tanks with an inert gas prior to hydro-cutting. Both tanks were purged with nitrogen in order to displace any oxygen in the tank that could contribute to an explosion. The upper one-third of the south end of each tank was removed and placed in a decontamination area for eventual characterization and disposal.

Following removal of the tank ends, a decision was made to break up the sludge by re-circulating the tank contents through a fire nozzle. The resulting high-pressure stream was directed at the sludge. This process proved effective and the majority of the Used Thinner Tank contents were homogenized and pumped into a tanker truck for transport to Rineco's (GM-approved) hazardous waste treatment, storage and disposal (TSD) facility for disposal. Residual sludge was removed from the Used Thinner Tank manually by ITS personnel certified for confined space entry. All remaining solid material was placed in vacuum boxes for transport and disposal at Rineco.

All tank cutting and waste disposal activities were conducted under the auspices of GM Environmental, Security, Industrial Hygiene, and Fire departments. Inventory removal activities were completed on March 14, 2002.

2.1.2 DECONTAMINATION

After the Used Thinner Tank was deemed "RCRA empty," decontamination of both tanks was accomplished by pressure washing, followed by sand blasting. The tanks were then removed and transported to a salvage facility for disposal. Tank decontamination was performed by Martin Specialty Coatings (Martin) personnel from March 15 through March 21, 2002.

Prior to and during inventory removal and decontamination activities, the Thinner Tank Pad piping network was dismantled, cut into manageable-sized pieces, and stored in 55-gallon drums for transport and disposal as hazardous waste at Rineco.

2.1.3 DEMOLITION

Following tank decontamination and removal, the remaining concrete tank saddles, containment walls, concrete pad and ancillary equipment were broken into manageable-sized pieces, characterized and properly disposed of as either construction/demolition debris, mixed industrial, or hazardous waste at GM-approved facilities. Following demolition, the former Thinner Tank Pad area was graded and covered with SB-2 rock. The truck loading areas removed as part of the demolition were formed and re-poured to facilitate access to the new Thinner Tank Pad installed to the north of the former pad prior to closure.

Closure of the Thinner Tank Pad was completed April 24, 2002. Photographs documenting Thinner Tank Pad closure are included as Appendix A6.

2.2 DRUM PAD CLOSURE

2.2.1 INVENTORY REMOVAL

Due to current operating conditions and requirements at GM, it was necessary for the Drum Pad to continue to be used for accumulation of hazardous waste on a <90-day basis throughout closure. During closure the Drum Pad hazardous wastes were systematically removed and those areas undergoing decontamination and inspection were segregated from those areas not involved in closure activities. This allowed daily operations on the Drum Pad to continue unimpeded by closure activities.

2.2.2 DECONTAMINATION

The Drum Pad was decontaminated by GM in two stages, as follows:

- 1) Liquid and solid residual wastes on the concrete floor and containment surfaces were removed by mechanical means (e.g., scraping, vacuum, absorbents, etc.);
- 2) The floor and containment area surfaces were then pressure washed;
- 3) The floor and containment area surfaces were then double-rinsed using low pressure water and mops, as needed, to clean the surface. No detergents were used during the double-rinse; and
- 4) Wash water from the pressure washing and double-rinse was collected in the floor drains and conveyed to GM's onsite wastewater treatment facility for treatment prior to discharge to the City of Shreveport's POTW.

2.2.3 FACILITIES INSPECTION

Following decontamination, the entire Drum Pad was visually inspected by GM personnel for cracks, deterioration, and failures that might indicate areas of waste intrusion to the subsurface. No failures were reported.

2.3 WASTE DISPOSAL

All wastes generated as a result of Thinner Tank Pad and Drum Pad closure activities were disposed of in accordance with the LDEQ-approved Closure Plan. The following is a summary of wastes generated and processed during closure of the two interim status units:

- 7 drums (0.78 tons) of piping contaminated with paint was shipped to Rineco in Benton, Arkansas, and subsequently disposed of via incineration;
- 4 drums (0.17 tons) of rags resulting from closure activities were disposed of as fuel blend at Rineco in Benton, Arkansas;
- 7 drums (1.6 tons) of rinse water were disposed of as fuel blend at Rineco in Benton, Arkansas;
- 5 shipments (56.37 tons) of non-contaminated debris were land disposed at BFI-Woolworth Road Landfill in Shreveport, Louisiana;
- 4 shipments (55.025 tons) of non-hazardous impacted soil were land disposed at East Oak Landfill in Oklahoma City, Oklahoma;
- 4 shipments (13.19 tons) of scrap steel were recycled through Commercial Metals Company in Shreveport, Louisiana; and
- 3 shipments (47.16 tons) of used thinner/sludge were disposed of as fuel blend at Rineco in Benton, Arkansas.

Copies of manifests documenting the above referenced waste disposal are included as Appendix A7.

2.4 CONFIRMATORY SAMPLING AND ANALYSIS

Confirmatory sampling and analysis were conducted by performing an initial Site Investigation and subsequent Additional Site Investigation of both the Thinner Tank Pad and Drum Pad interim status waste unit areas. The site investigations were conducted according to the LDEQ-approved Modified Closure Plan and Modified

Closure Plan Addendum. Results of the site investigations are included in subsequent sections of this report. A description of all site investigation activities is provided in Appendix B.

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3.0 SITE INVESTIGATIONS

3.1 SITE INVESTIGATION ACTIVITIES

CRA installed 22 direct-push technology (DPT) soil borings (SB-1 through SB-22) and seven temporary monitoring wells (TMW-1 through TMW-7) on April 24, 25 and 26, 2001. The soil borings were installed to 10 feet below ground surface (bgs) and the temporary monitoring wells were installed to from 21 to 29 feet bgs. These borings and temporary wells were installed to provide information regarding impact to the site due to past operations of the HWMUs.

In order to address concerns expressed by LDEQ in the form of NODs issued in response to the initial Hazardous Waste Closure and RECAP Evaluation, CRA subsequently installed seven DPT soil borings as part of an Additional Site Investigation. On August 19-22, 2003 soil borings TMW-8 through TMW-13 were installed to from 15 to 21 feet bgs. Soil borings TMW-8, TMW-9, TMW-11 and TMW-12 were converted to temporary monitoring wells. In addition, three monitoring wells (MW-1 through MW-3) were installed to assess aquifer characteristics at the site. A detailed description of all site investigation activities is presented in Appendix B.

3.2 SITE INVESTIGATION RESULTS

Initially, hydraulic conductivity values were determined by performing flexible wall triaxial falling head calculation tests (ASTM D5084, Method C) on representative soil cores from the site. Hydraulic conductivity values were utilized to determine a projected sustainable yield for the aquifer under investigation. Estimated well yield for the unconfined aquifer was calculated to be 0.5 gallons per day. (Note: It is CRA's experience that hydraulic conductivities determined in the laboratory often underestimate the actual hydraulic conductivity by an order of magnitude or more. Taking this into consideration, the estimated well yield still appeared to be far less than 800 gallons per day.) However, in response to LDEQ request, CRA performed hydraulic conductivity (slug-out) tests on the three monitoring wells installed as part of the Additional Site Investigation activities performed August 19-22, 2003. Hydraulic conductivity (K) values were calculated by the Bouwer and Rice Method (1976) as determined from the recovery versus time graphs with a commercially available software routine. Hydraulic conductivity values were utilized to calculate a sustainable aquifer yield, for the aquifer under investigation, equal to approximately 550 gallons per day. Information relating to aquifer classification and groundwater use is provided in Appendix D.

The soils encountered at the site are described as brown, gray and red silty or sandy clays and clayey silts and sands to the maximum depth of investigation of 29 feet. Soil sample vapor screening results are presented on the boring logs located in Appendix B, Exhibit B1. No phase-separated hydrocarbons or visible evidence of contamination were observed at the site during the installation and sampling of the April 2002 or August 2003 soil borings. The minimum depth to groundwater at the site is approximately 10 feet bgs.

Soil samples collected during the installation of soil borings (SB-1 through SB-22) and temporary monitoring wells (TMW-1 through TMW-7) in April 2002, and soil borings (TMW-10 and TMW-13) and temporary monitoring wells (TMW-8, TMW-9, TMW-11 and TMW-12) in August 2003, were analyzed for volatile organic compounds (VOCs), and the metals Arsenic, Barium, Cadmium, Chromium VI, and Lead according to the LDEQ-approved Closure Plan. In addition, soil samples collected from TMW-12 and TMW-13, during the August 2003 investigation, were analyzed for diesel-range and oil-range total petroleum hydrocarbons (TPH-DRO and TPH-ORO) and the 13 RECAP indicator Polycyclic Aromatic Hydrocarbons (PAHs) listed in Table D-1 of the RECAP document. Soil Borings SB-1 through SB-9 and TMW-10, and temporary monitoring wells TMW-1, TMW-2, TMW-8, TMW-9 and TMW-11 were installed in the former Thinner Tank Pad area. Soil Borings SB-10 through SB-22 and TMW-13, and temporary monitoring wells TMW-3 through TMW-7 and TMW-12 were installed in the Drum Pad area according to the Closure Plan and Modified Closure Plan Addendum. Soil sample analytical results are provided on Tables 1A and 1C. Soil constituent concentrations exceeding RECAP Screening Standards are presented graphically on Figures 9 and 11.

Groundwater analytical results obtained from water samples collected from the temporary monitoring wells (TMW-1 through TMW-9, TMW-11 and TMW-12) are provided in Tables 1B and 1D. Groundwater constituent concentrations exceeding RECAP Screening Standards are presented graphically on Figures 10 and 12.

During the April 2002 field activities, soil samples collected from soil boring SB-20 (5-7') and from temporary monitoring well TMW-6 (5-7') were analyzed for organic carbon content. The results are attached to Appendix B, Exhibit B2. The total organic carbon value was converted to fractional organic carbon (foc) for the RECAP evaluation by dividing the total organic content by 174. The fractional organic carbon contents of the soil samples analyzed were determined to be 0.03 mg/kg and 0.009 mg/kg, respectively.

3.3 DATA EVALUATION/USABILITY

The laboratory analytical data generated from investigation activities have been evaluated to determine if these data can be used for risk assessment purposes. In accordance with RECAP investigation requirements, laboratory data were generated using EPA-approved analytical methods, sample quantitation limits are within an acceptable range, data qualifiers are used where necessary, and field and laboratory QA/QC samples are provided to assess field and/or laboratory contamination/accuracy. Based on this review, the data are considered acceptable for use in this RECAP evaluation.

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4.0 AREAS OF INVESTIGATION AND CONSTITUENTS OF CONCERN

4.1 AOI IDENTIFICATION

LDEQ-derived RECAP Screening Option (SO) Screening Standards (SS) were compared with analytical data obtained during the site investigations. Based on findings from the site, Area(s) of Investigation (AOI) in each HWMU area were identified with constituent concentrations above the SO SS values. The AOIs were identified as follows:

AOI-1: Thinner Tank Pad Surface Soil. AOI-1 is located in the Thinner Tank Pad area and is comprised of rectangular area of surface soil (0-3 feet bgs) extending northeast to southwest and encompassing SB-1 and SB-7, SB-9, and TMW-8 through TMW-11. This area is approximately 1,100 square feet in size, considerably less than 0.5 acre (see Figure 13).

AOI-2: Thinner Tank Pad Potential Surface Soil. AOI-2 is also located in the Thinner Tank Pad area and is comprised of a square area of potential surface soil (3-15 feet bgs) surrounding SB-7. This area is approximately 225 square feet in size, considerably less than 0.5 acre (see Figure 13).

AOI-3: Thinner Tank Pad Groundwater. AOI-3 is located in the Thinner Tank Pad area and consists of groundwater encompassing TMW-1, TMW-2 and TMW-11. This area of groundwater is approximately 1,300 square feet in size (see Figure 13).

AOI-4: Drum Pad Surface Soil. AOI-4 is located in the Drum Pad area and is comprised of a square area of surface soil (0-3 feet bgs) surrounding SB-11 and TMW-12. This area is approximately 4,500 square feet in size, considerably less than 0.5 acre (see Figure 14).

AOI-5: Drum Pad Groundwater. AOI-5 is located in the Drum Pad area and consists of groundwater stretching from TMW-4 to TMW-7. This area of groundwater is approximately 20,000 square feet in size (see Figure 14).

Area of Investigation (AOI) identification is discussed further in Section 7.

4.2 IDENTIFICATION OF THE COCs FOR EACH IMPACTED MEDIUM

Impact to the site would undoubtedly be attributable to past operations of the HWMUs. The potential COCs were identified as constituents known to have been present in waste streams handled in the HWMUs (see below). The list of potential COCs was approved by LDEQ prior to site investigation activities. The final COC list for the AOCs for each

medium are those with exposure/source concentrations greater than the respective RECAP SO SS, as discussed in Section 5.5. The potential COCs for soil and groundwater at the site include the metals Arsenic, Barium, Cadmium, Chromium VI, and Lead, VOCs, TPH-DRO, TPH-ORO and 13 RECAP indicator PAHs as reflected in Table 2.

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5.0 EXPOSURE ASSESSMENT

5.1 CURRENT AND FUTURE LAND USE

As discussed in Section 1.0, the areas of concern have been utilized in the past as interim status HWMUs. Following "clean" closure of the HWMUs, GM will change from interim status to storage and generator status. The former Thinner Tank Pad has been replaced with a newly constructed Thinner Tank system located adjacent to it to the north. There are currently no plans to re-use the area occupied by the previous Thinner Tank Pad. Following closure, it is GM's intent to continue use of the Drum Pad for <90-day storage of hazardous waste.

5.2 GROUNDWATER CLASSIFICATION, POC, AND POE

In accordance with the RECAP document, groundwater at the site is designated as Classification 3A based on the following: there are no domestic or agricultural supply wells located within a 1-mile radius of the site that are screened in the same stratum as the aquifer of concern, and the estimated maximum sustainable yield from the stratum is less than 800 gallons per day. These assumptions are based on the results of falling head permeability tests conducted on representative soil cores from the site and on slug tests performed on monitoring wells MW-1 through MW-3. The nearest downgradient water body, Lake Hayes, does not serve as a drinking water supply, therefore, groundwater at the site is further categorized as Groundwater 3A non-drinking water (GW_{3NDW}).

The point of exposure for groundwater (POE) is defined as the point of actual or potential exposure between an organism and chemical agent. For GW_{3NDW}, the POE is the distance from the Point of Compliance (POC) to the point of discharge from the aquifer to the nearest downgradient surface water body. As mentioned above, the nearest surface water body to the site is Lake Hayes, which is located greater than 2,000 feet northeast of the site. The initial depth to groundwater measured in the soil borings at the site was approximately 10 feet bgs. Groundwater elevation data from monitoring wells MW-1 through MW-3 were used to generate a potentiometric surface for the site. The prevailing groundwater flow direction was determined to be toward the northeast. The minimum distance to a POE of 2,000 feet is used for the MO-1 evaluation. A Potentiometric Map, depicting static groundwater elevations (as measured on August 28, 2003) and prevailing groundwater flow direction in the vicinity of the Thinner Tank Pad and Drum Pad, is provided as Figure 15. A POE Map, depicting the distance from the POCs to the POE is provided as Figure 16.

The POC is a sampling location placed as near to the source as feasible without causing impact to the groundwater and at which reproducible and representative samples can be withdrawn. The POC for AOI-3 (Thinner Tank Pad Groundwater) is TMW-11. The POC for AOI-5 (Drum Pad Groundwater) is temporary monitoring well TMW-7.

5.3 DEVELOPMENT OF A CONCEPTUAL MODEL

The potential COCs and exposure pathways are identical for both the Thinner Tank Pad and Drum Pad. Therefore a conceptual site model (CSM) has been developed for both HWMUs and is presented as Figure 8. The model includes identification of all sources, source media, migration pathways, exposure media, exposure points/pathways, and receptors. Current and future land use at the site was also considered in developing the CSM. During site investigation activities, a sensitive receptor survey was conducted to identify any biological receptors, natural receptors, and/or subsurface structures (natural or man-made) which may be threatened or affected should a release occur. The survey identified several potential receptors.

Potential complete exposure pathways of biological receptors including human, animal, and botanical receptors to impacted media include possible short-term incidental contact/vapor exposure associated with construction activities and physical contact with soil and groundwater impacted with VOCs and metals during construction activities.

A walking receptor survey revealed no natural receptors within 500 feet of the site. Furthermore, impacted soil and groundwater are shallow making significant constituent migration unlikely. Therefore, it is not likely that any natural receptors will be impacted by groundwater migrating from the site.

Man-made receptors include the underground piping network associated with the floor drains/sump beneath the Drum Pad. However, the degree of impact to the subsurface is minimal and impact outside the plant boundaries is unlikely.

A survey of water wells within an approximate 1-mile radius of the site was conducted by reviewing the water well inventory records of the Louisiana Department of Transportation and Development (DOTD). The inventory records revealed 15 domestic-supply wells and three public supply wells within a 1-mile radius of the site. The well registrations show the wells to be completed in the Wilcox aquifer at depths ranging from 165 to 270 feet bgs. The groundwater is shallow at this location, and the aerial extent of impacted groundwater is limited and well defined. Additionally, the majority of the site surfaces are paved. Therefore, it is not likely that active water wells

in the area will be impacted by groundwater migrating from the site. A water well map depicting the locations of these wells is included as Figure 7.

Based on the sensitive receptor survey, the primary potential receptors at the site include construction workers during possible future construction work involving soil excavation within the boundaries of the two former HWMUs.

5.4 ESTIMATION OF EXPOSURE, SOURCE, AND COMPLIANCE CONCENTRATIONS

The source concentration is the concentration of the COC in an environmental medium that may serve as a source for constituent transport and/or transfer to another environmental medium. The exposure concentration is the concentration of the COC to which the receptor is exposed. Source/exposure concentrations for all exposure media identified at the site have been determined in accordance with RECAP requirements. Source media at the site include surface and potential surface soil. Potential complete exposure pathways were identified from preparation of Conceptual Site Model (CSM) and consideration of the potential receptors. These include exposure of construction workers to impacted surface soil (0-3 feet bgs), potential surface soil (3-15 feet bgs), and groundwater. Therefore, exposure media at the site include surface soil, potential surface soil and groundwater. Constituent concentrations detected in soil and groundwater are presented graphically on Figures 9 through 12.

Exposure/source/compliance concentrations for the COCs in each medium were determined in accordance with Section 2.8 of the RECAP document. Exposure/source concentrations for the soils represent the highest measured concentrations of the COCs in soil samples collected from the areas of concern during the April 2001 and August 2003 site assessment activities. To be conservative, compliance concentrations for COCs in groundwater were determined as the highest measured concentrations of the COCs in groundwater samples collected from all temporary monitoring wells rather than from one POC well (Tables 1B and 1D).

The exposure/source concentrations for soil and groundwater in each AOI are presented in Tables 3A and 3B, respectively. Compliance concentrations are presented in Table 3B.

5.5 FINAL COC LIST

The list of COCs was compared with RECAP SS in Table 1A and 1C for soils and Table 1B and 1D for groundwater. Based on a comparison of maximum soil and groundwater concentrations to the Screening Standards, the VOCs Acetone, Benzene, 2-Butanone (MEK), Ethylbenzene, and 4-Methyl-2-Pentanone (MIK) remain as COCs in soil in AOI-1. Acetone, 2-Butanone (MEK), and 4-Methyl-2-Pentanone (MIK) remain as COCs in soil in AOI-2. Arsenic remains as a COC in groundwater in AOI-3. Trichloroethene remains as a COC in soil in AOI-4. And Arsenic, Barium, Cadmium, Lead and TPH-ORO remain as COCs in groundwater in AOI-5. In addition, although none were detected, six PAHs had method detection limits exceeding RECAP SS. Therefore, these constituents were considered COCs in groundwater in AOI-5. These PAHs include Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene and Indeno(1,2,3-cd)pyrene.

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6.0 LIMITING RECAP STANDARDS

6.1 IDENTIFICATION OF THE RECAP STANDARDS FOR EACH IMPACTED MEDIUM

The Appendix I (MO-1) RECAP Standards (RS) for each impacted medium in each AOI have been determined based on the site land use scenario, site groundwater classification, and a determination of risk-based parameters in accordance with the Appendix I option of the RECAP document.

In order to identify the limiting Appendix I (MO-1) RS for a subsurface release, the appropriate land use scenario must be determined. The site is considered an industrial facility and, as such, an industrial exposure scenario is being assumed. Based on these assumptions the appropriate Soil_i were identified from Table 2 of the RECAP document.

Three potential COCs were identified that do not have a soil Screening Standard (Soil_i) value listed in Table 2. Therefore, in accordance with the RECAP document, Soil_i and Soil_{SAT} values were calculated for 1,2,4-Trimethylbenzene, n-Butyl Acetate and n-Butyl Alcohol using RECAP Screening Standard Spreadsheets provided by LDEQ. The lowest of the calculated Soil_i, Soil_{GW} and Soil_{SAT} was utilized as the Screening Standard for each of these compounds. None of the three compounds were detected at concentrations exceeding the calculated SO SS. The spreadsheet calculations and chemical-specific inputs utilized to perform the calculations are included in Appendix E.

The Soil_i(s) were identified to account for surface soil exposures. To account for the additive effects of non-carcinogenic constituents on the same target organ/organ system, the Soil_i must be modified as described in Section 5.2.

The appropriate soil concentration protective of groundwater must also be identified. The soil concentrations protective of groundwater, Soil_{GW3NDW}, were obtained from Table 2 of the RECAP document. As previously noted (Section 4.2), groundwater at the site is classified as Category 3A (GW_{3NDW}), and the distance between the POE and POC is greater than 2,000 feet. The dilution and attenuation factor (DF) was determined to be 440 from the table provided on Page I-3 of the RECAP document. When required, Soil_{GW3NDW} values from RECAP Table 2 were multiplied by the DF to calculate an adjusted Soil_{GW3NDW} value for each COC. Soil_{SAT} values were also obtained from RECAP Table 2.

The Limiting RS for groundwater were determined with the same assumptions and distance from the POC to the POE as the Soil evaluation. The initial values for GW_{3NDW} were selected from RECAP Table 2. A DF of 440 for each AOI was determined from the

table provided on Page I-30 of the RECAP document. The appropriate DF was applied to the GW_{3NDW} values from RECAP Table 2 to calculate an adjusted GW_{3NDW} value.

Three potential COCs were identified that do not have a groundwater Screening Standard (GW_SS) value listed in Table 2. Therefore, in accordance with the RECAP document, GW1 values were calculated for 1,2,4-Trimethylbenzene, n-Butyl Acetate and n-Butyl Alcohol using RECAP Screening Standard Spreadsheets provided by LDEQ. The lowest of the calculated GW1 value and constituent's water solubility was utilized as the Screening Standard for each of these compounds. None of the three compounds were detected at concentrations exceeding the calculated SO SS. The spreadsheet calculations and chemical-specific inputs utilized to perform the calculations are included in Appendix E.

6.2 ADJUSTMENT OF RISK BASED RS

Adjustments to the applicable soil RS values identified above ($Soil_i$) are required to account for additivity if more than one constituent present in the soil elicits non-carcinogenic effects on the same target organ/system. Additivity adjustments reflected in Table 4 were derived by dividing by the number of non-carcinogenic constituents ostensibly attacking the same target organ as presented in Table 5. Adjustments to groundwater RS for the additive effects are not necessary for RS based on groundwater classified as GW3.

6.3 IDENTIFICATION OF THE LIMITING RS

For soils in AOI-1 and AOI-4 present from ground surface to 3 feet bgs, the limiting Appendix I soil RS were determined to be the lowest of the adjusted $Soil_i$ and the $Soil_{SAT}$. Limiting RS for soils from ground surface to 15 feet bgs were determined for AOI-2 by selecting the lowest of the $Soil_i$, soil protective of groundwater (adjusted $Soil_{GW_{3NDW}}$ described in Section 6.1) and the $Soil_{SAT}$. The limiting RS for the soils in AOI-1, AOI-2 and AOI-4 are presented in Table 4A.

To determine the limiting MO-1 groundwater RS, the adjusted GW_{3NDW} described in Section 6.1 was compared to the constituent's water solubility ($Water_{SOL}$), and the lower of the two was selected as the limiting groundwater RS for AOI-3 and AOI-5. The values are listed in Table 4B.

7.0 COMPARISON OF THE LIMITING RS WITH THE EXPOSURE, SOURCE, AND/OR COMPLIANCE CONCENTRATIONS

A comparison of the Limiting MO-1 RS concentrations with the exposure/source/compliance concentrations for soil and groundwater in AOI-1, AOI-2, AOI-3, AOI-4 and AOI-5 indicates that none of the observed maximum COC concentrations exceed the Limiting RS. Therefore, in accordance with RECAP no further action should be required at the AOIs. In addition, the PAHs demonstrating elevated method detection limits were also eliminated from further consideration, either by not exceeding the Limiting MO-1 RS or by permission of LDEQ Toxicology staff.

The comparisons of these values are presented on Tables 6A and 6B.

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8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 IDENTIFICATION OF AREAS/MEDIA/COCs

Based on the results of Appendix I (MO-1) RECAP evaluation, VOC, metal and TPH-ORO constituent concentrations observed in soil and groundwater at the former Thinner Tank Pad and Drum Pad do not exceed risk-based standards for soil and groundwater. It does not appear that past operations of these HWMUs have significantly impacted soil and groundwater at the GM Shreveport Assembly Plant facility.

Therefore, with this submittal, GM respectfully requests No Further Action-At This Time (NFA-ATT) designation by LDEQ for each of the HWMUs.

8.2 PROPOSED PLAN OF ACTION FOR THE AOIs

As previously mentioned, GM intends to change from interim status storage to generator status. The Drum Pad will continue to be used for <90-day storage of hazardous waste.

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9.0 ECOLOGICAL CHECKLIST

9.1 ECOLOGICAL EVALUATION

In accordance with the RECAP document requirements, an Ecological Checklist was completed for the site in order to make an initial determination of whether an ecological risk assessment would be required. Based on site conditions and the checklist assessment criteria, no additional ecological assessment activities will be required at the site. A copy of the completed Ecological Checklist is included as Appendix F.

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10.0 CLOSURE CERTIFICATION

Pursuant to LAC 33:V.3517, I hereby certify that the Thinner Tank System Pad and the Drum Waste Management Pad closure at the General Motors Truck Assembly Plant in Shreveport, (Caddo Parish) Louisiana, was conducted in accordance with the specifications in the approved closure plan.



Michael D. Lockett - Professional Engineer

8/27/02
Date

Registration Number: 27189

State: Louisiana






David Burroughs - Environmental Supervisor, General Motors Corporation

8/28/02
Date

All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

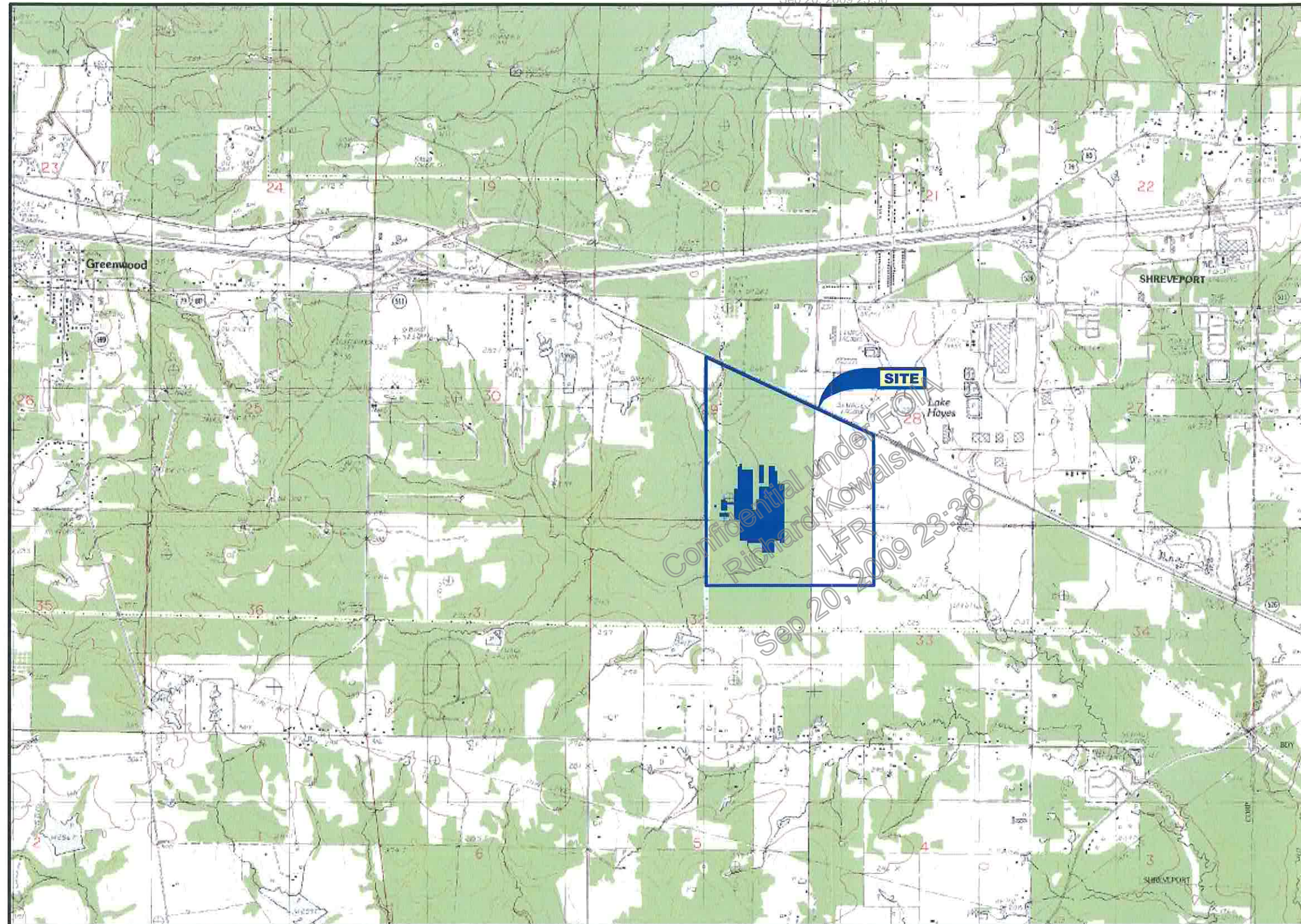


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Raymond J. Chadwick, P.G.
Project Manager

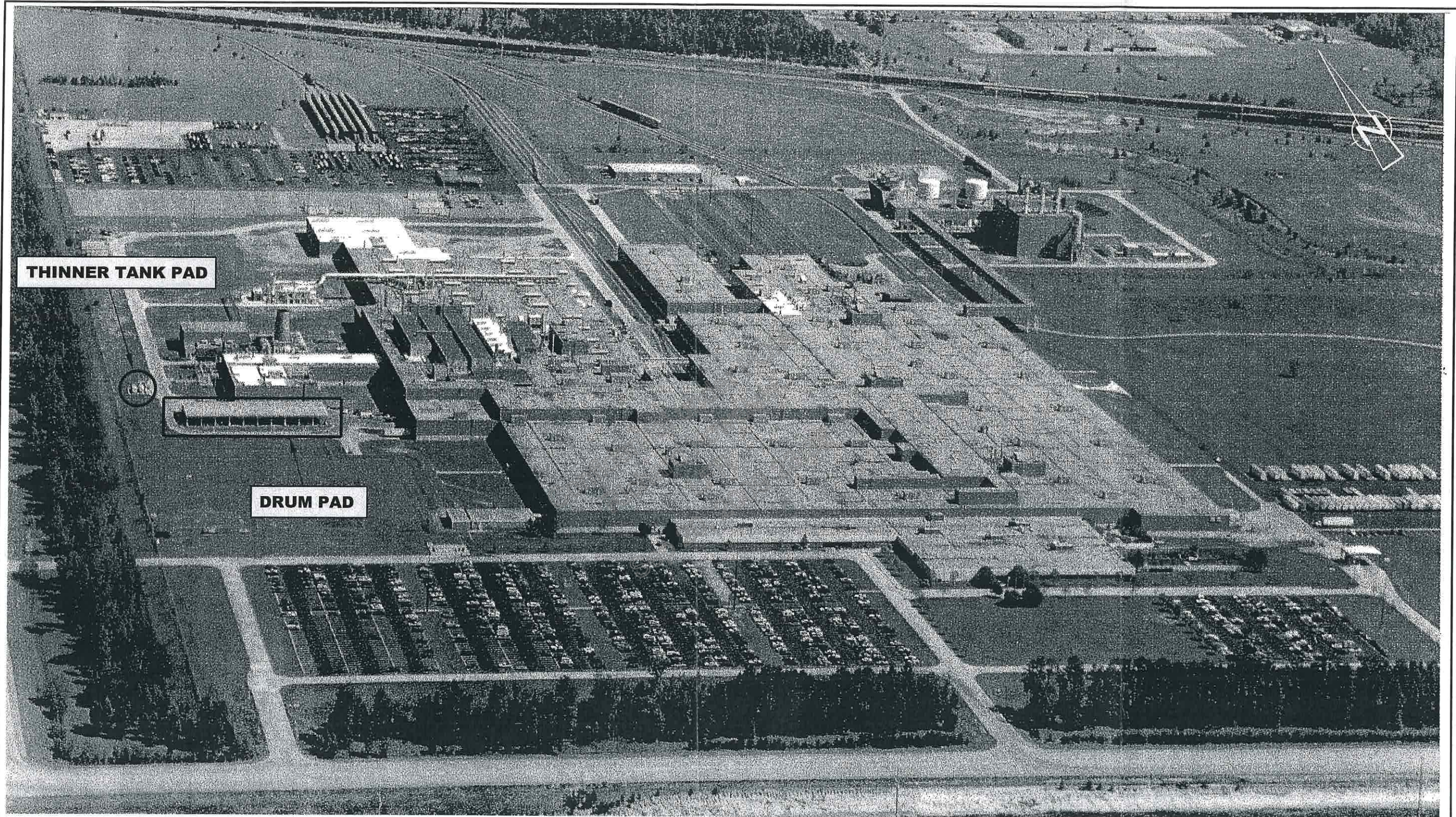
Confidential under FOIA
Richard Kowalski
LFR
Sep 20, 2009 23:36



RE: BASE MAP TAKEN FROM USGS 7.5 MINUTE TOPOGRAPHIC MAP, "GREENWOOD, LA".



Figure 1
VICINITY MAP
SHREVEPORT TRUCK ASSEMBLY PLANT
CADDO PARISH, LOUISIANA
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA



RE: AERIAL PHOTOGRAPH PROVIDED BY CLIENT.

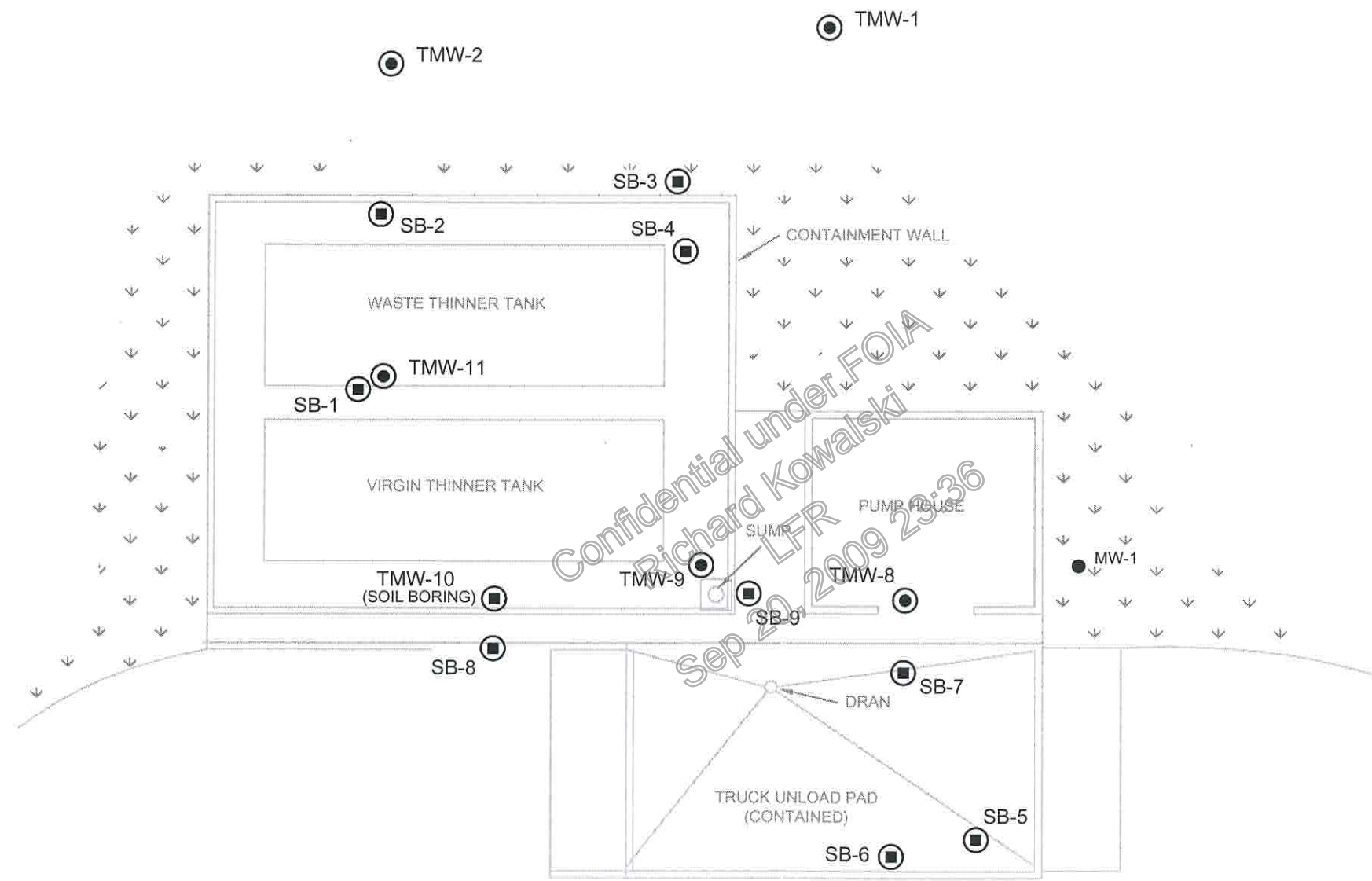
NOT TO SCALE

Figure 2

FACILITY MAP
SHREVEPORT TRUCK ASSEMBLY PLANT
CADDO PARISH, LOUISIANA

GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA





LEGEND

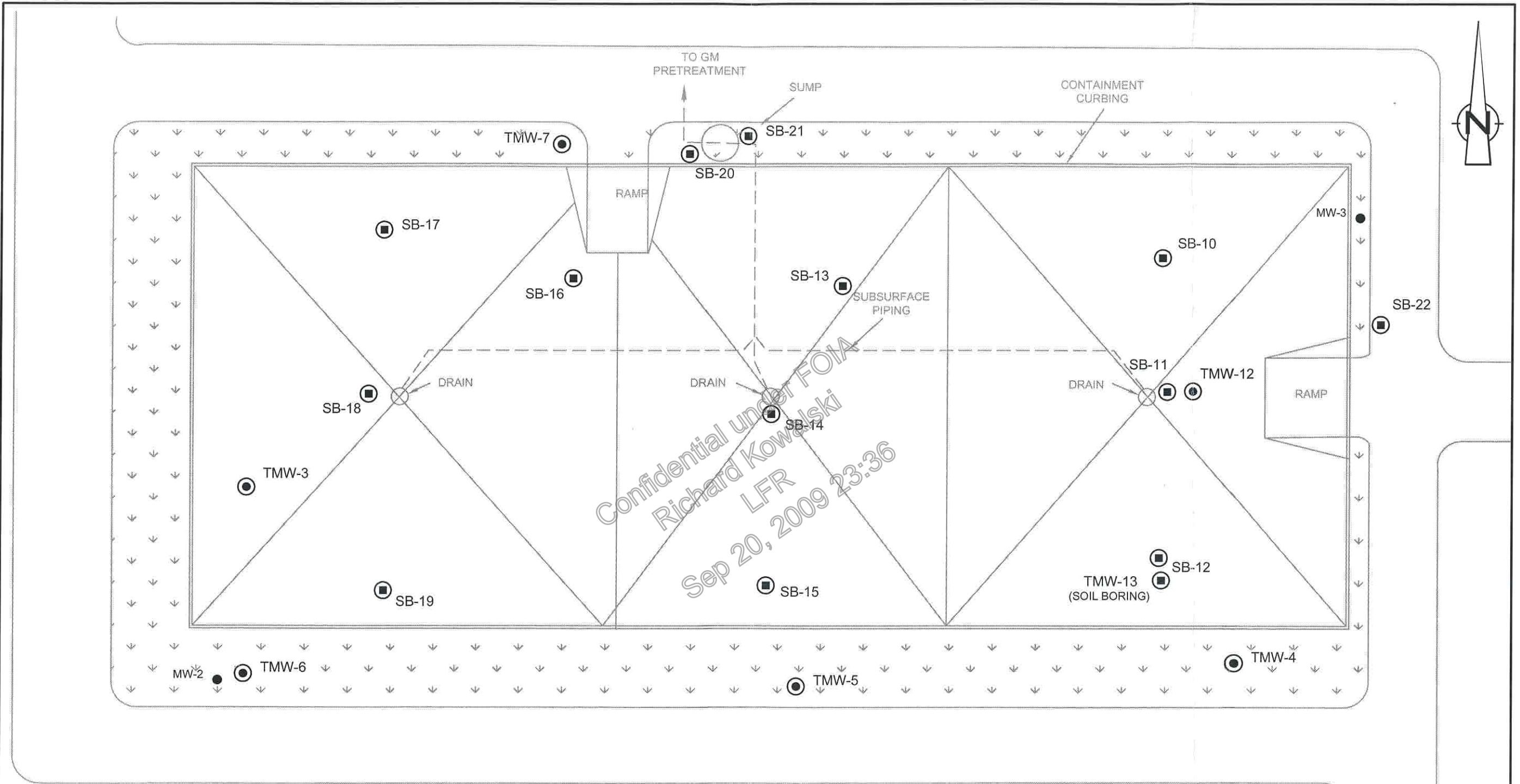
- SB-5 SOIL BORING SAMPLE LOCATION
- TMW-1 SOIL BORING/TEMPORARY MONITOR WELL SAMPLE LOCATION
- MW-1 MONITOR WELL LOCATION



Figure 3
SITE PLAN WITH SAMPLE LOCATIONS-THINNER TANK PAD
SHREVEPORT TRUCK ASSEMBLY PLANT
CADDO PARISH, LOUISIANA
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA



RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-08,
"SOLVENT TANK MANAGEMENT PAD SAMPLE LOCATIONS",
DATED JULY 30, 2001.



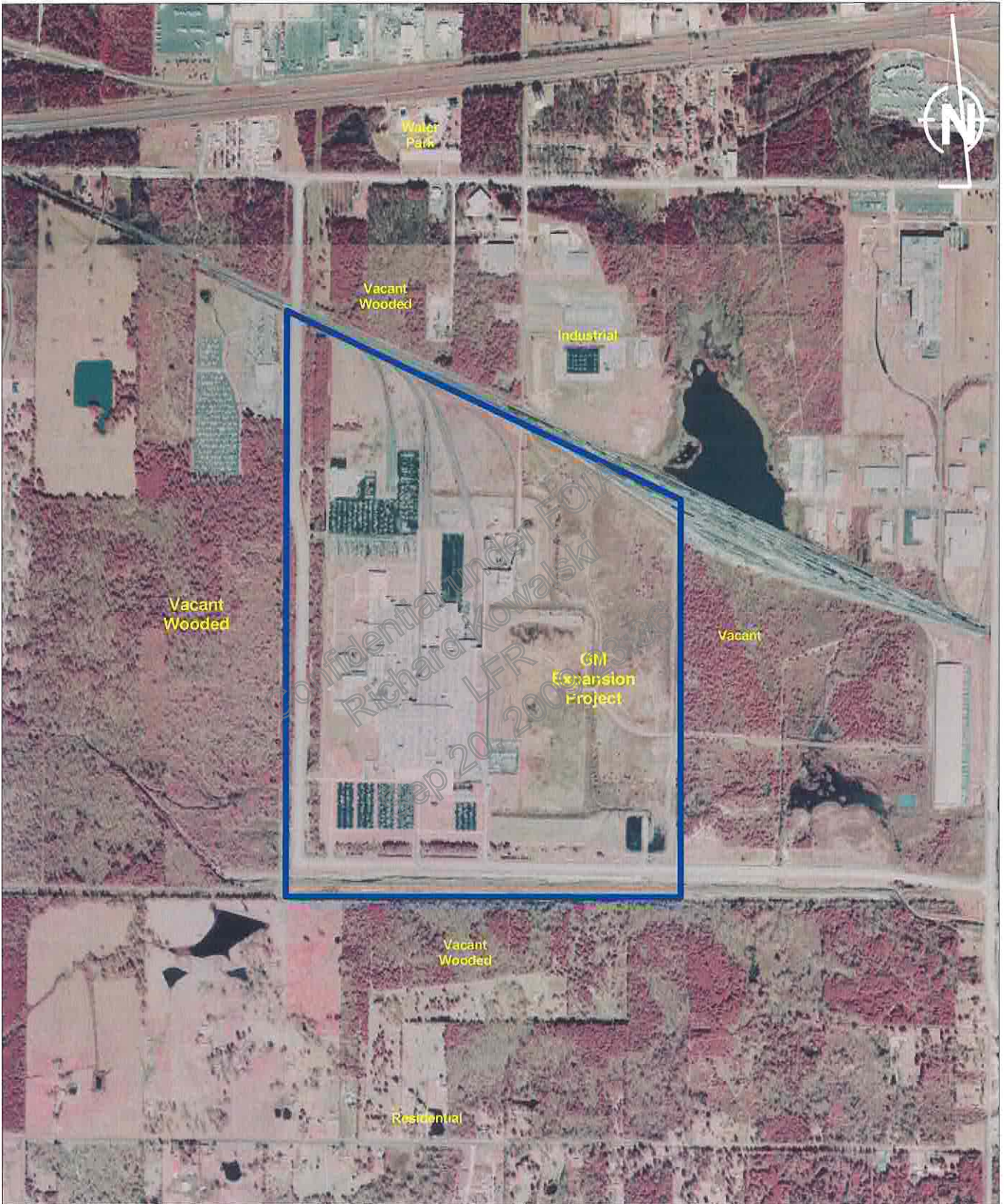
LEGEND

- SB-10 SOIL BORING SAMPLE LOCATION
- TMW-4 SOIL BORING/TEMPORARY MONITOR WELL SAMPLE LOCATION
- MW-1 MONITOR WELL LOCATION



Figure 4
 SITE PLAN WITH SAMPLE LOCATIONS-DRUM PAD
 SHREVEPORT TRUCK ASSEMBLY PLANT
 SHREVEPORT, LOUISIANA
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA

RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-07,
 "DRUM WASTE MANAGEMENT PAD", DATED JULY 30, 2001.

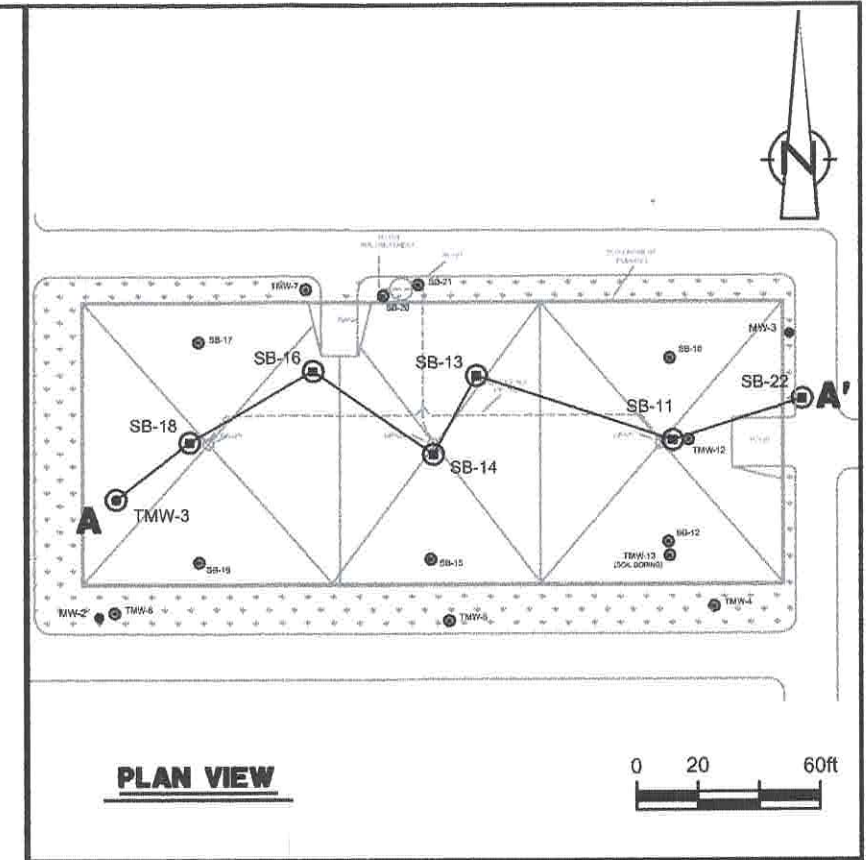
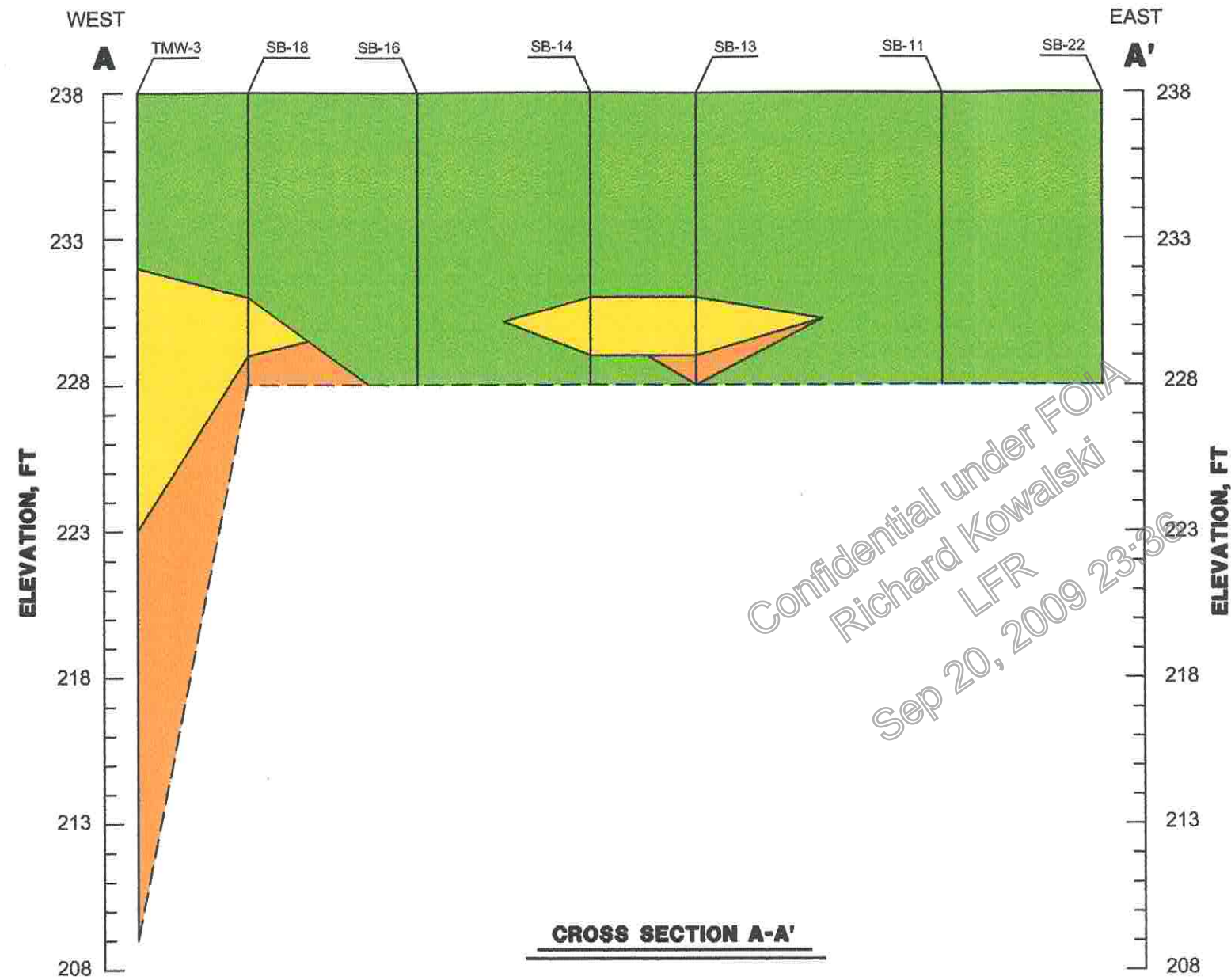


RE: 1998 COLOR INFRARED AERIAL PHOTOGRAPH FROM LOSCO.

1500 0 1500 Feet

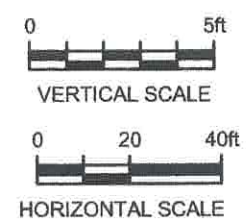


Figure 5
**SURROUNDING LAND USE MAP
SHREVEPORT TRUCK ASSEMBLY PLANT
CADDO PARISH, LOUISIANA**
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA



- LEGEND**
- SB-10 (square symbol) SOIL BORING SAMPLE LOCATION
 - TMW-3 (circle symbol) SOIL BORING/TEMPORARY MONITOR WELL SAMPLE LOCATION
 - (orange box) CLAYEY SAND (SC)
 - (yellow box) CLAYEY SILT (ML)
 - (green box) CLAY TO SILTY CLAY (CH-CL)

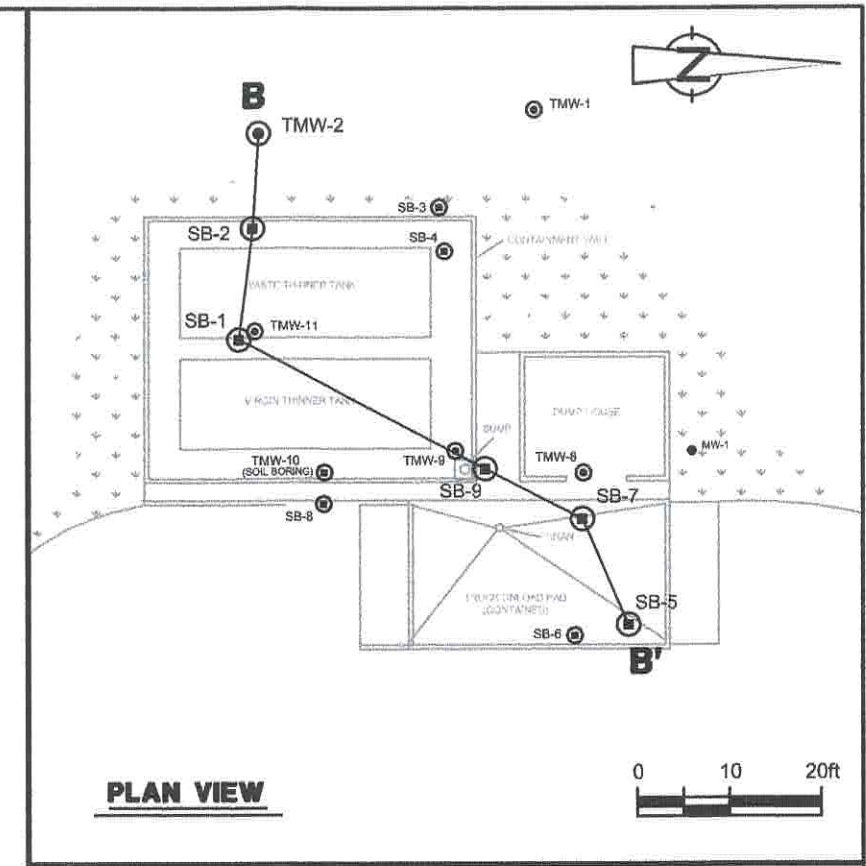
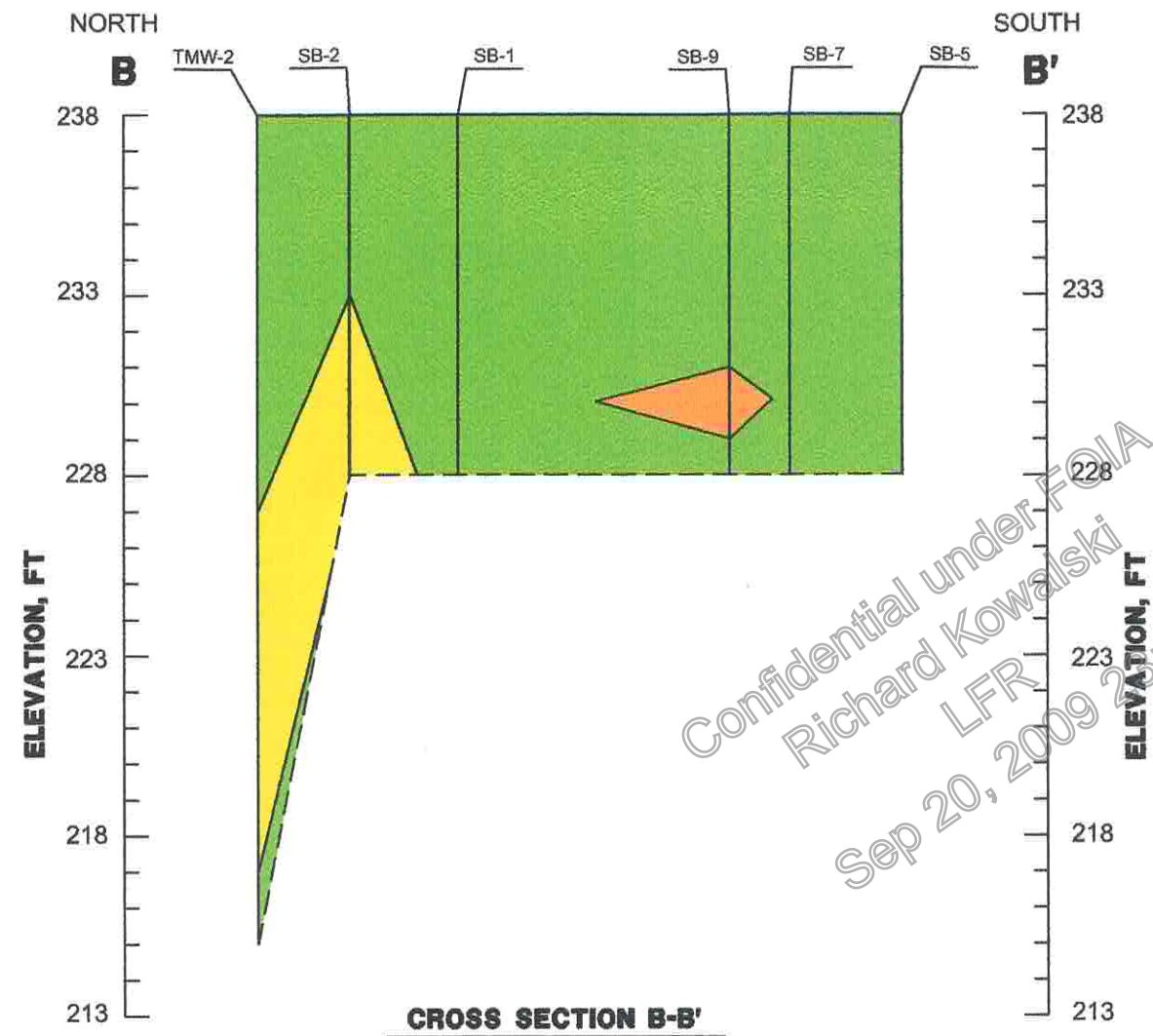
NOTES: 1.) SOIL STRATIFICATION IS SIMPLIFIED AND INFERRED BETWEEN BOREHOLES. ACTUAL CONDITIONS MAY VARY.
 2.) REFER TO INDIVIDUAL BORING LOGS FOR DETAILS.



RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-07,
 "DRUM WASTE MANAGEMENT PAD", DATED JULY 30, 2001.



Figure 6A
 SOIL PROFILE CROSS SECTION A-A'
 SHREVEPORT TRUCK ASSEMBLY PLANT
 SHREVEPORT, LOUISIANA
 GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA



NOTES: 1.) SOIL STRATIFICATION IS SIMPLIFIED AND INFERRED BETWEEN BOREHOLES. ACTUAL CONDITIONS MAY VARY.
 2.) REFER TO INDIVIDUAL BORING LOGS FOR DETAILS.

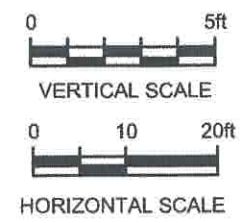
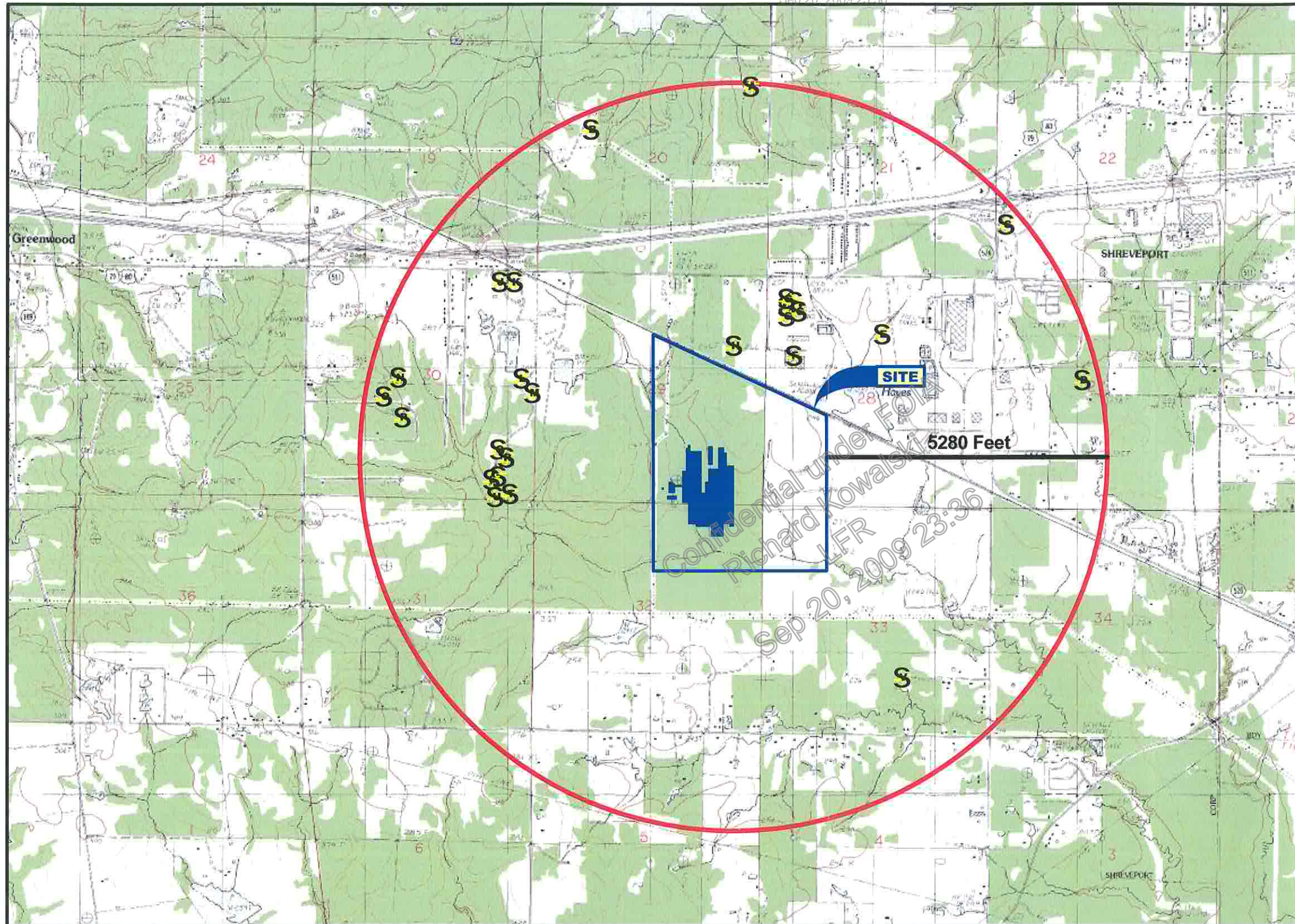


Figure 6B
SOIL PROFILE CROSS SECTION B-B'
SHREVEPORT TRUCK ASSEMBLY PLANT
SHREVEPORT, LOUISIANA
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA

RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-07,
 "DRUM WASTE MANAGEMENT PAD", DATED JULY 30, 2001.





Well	Owner Name	DOTD No.	Depth(ft)	Well Type
A	THRENTS, GLENN		180	DOMESTIC
B	GAYLE, EDWIN		175	DOMESTIC
C	FOODMAKER		18	MONITOR
C	FOODMAKER		20	MONITOR
C	FOODMAKER		20	MONITOR
D	HOOD, RICKY		200	DOMESTIC
E	CADDO PARISH FM	-110	165	DOMESTIC
F	ROADWAY EXPRESS		34	MONITOR
F	ROADWAY EXPRESS		62	MONITOR
F	ROADWAY EXPRESS		32	MONITOR
G	VOITH FABRICS		30	MONITOR
G	VOITH FABRICS		58	MONITOR
G	VOITH FABRICS		29	MONITOR
G	VOITH FABRICS		26	MONITOR
G	VOITH FABRICS		22	MONITOR
G	VOITH FABRICS		28	MONITOR
H	INTERSTATE CONC	-672	209	INDUSTRIAL
J	INTERNAT MACHIN	-680	190	PUBLIC SUPPLY
K	INTERNAT MACHIN	-702	170	PUBLIC SUPPLY
L	LAMPKINS, ERNES		240	DOMESTIC
M	CHANDLER, BOB		220	DOMESTIC
N	GREENWOOD WTR	-545	222	PUBLIC SUPPLY
O	HEFNER, S P		270	DOMESTIC
P	TILLER, BOBBY		210	DOMESTIC
Q	EBLING, BILLY W		224	DOMESTIC
R	MCKINNON, HARRY		227	DOMESTIC
S	FLOWERS, RAY		200	DOMESTIC
S	TURK, ROBERT		233	DOMESTIC
T	LUBAS, DAVID		210	DOMESTIC
U	GRAVES, TONY		190	DOMESTIC
V	BYRD, LULA		180	DOMESTIC



LEGEND

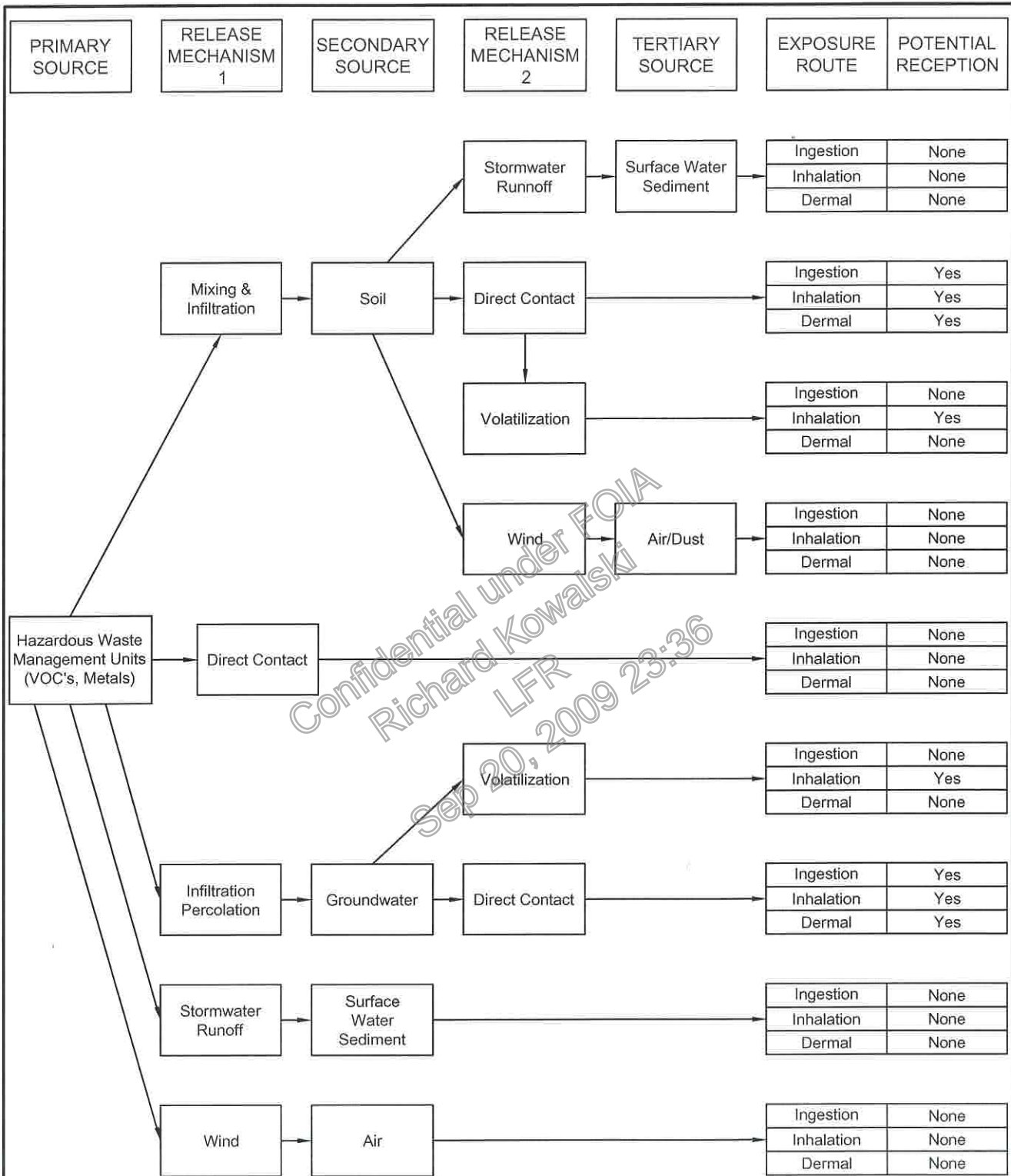
S WELL LOCATION



RE: BASE MAP TAKEN FROM USGS 7.5 MINUTE TOPOGRAPHIC MAP, "GREENWOOD, LA".



Figure 7
WATER WELL MAP
SHREVEPORT TRUCK ASSEMBLY PLANT
CADDO PARISH, LOUISIANA
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA

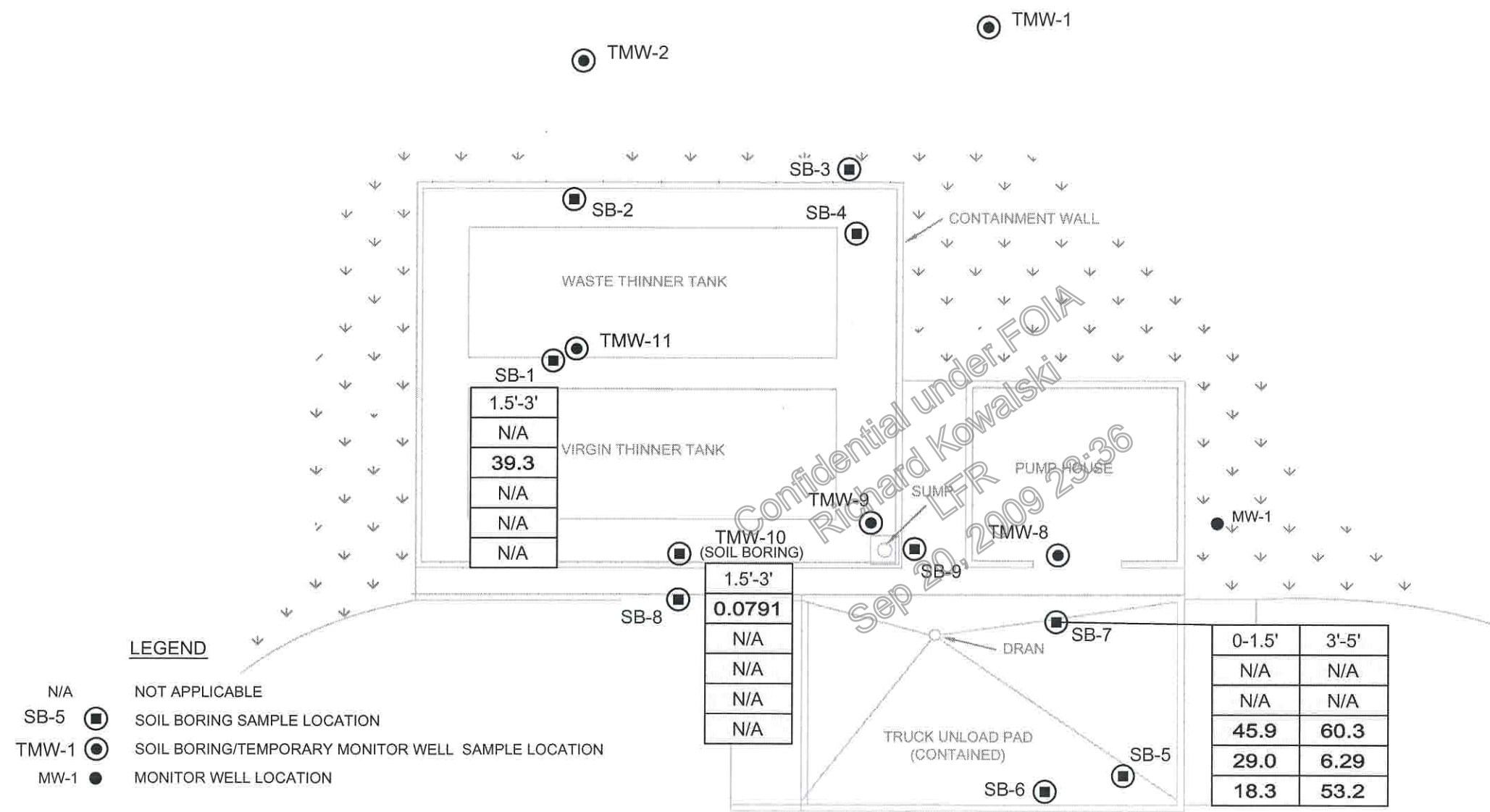


Note: Potential exposures include construction workers only.

Figure 8

CONCEPTUAL SITE MODEL
 THINNER TANK PAD AND DRUM PAD
 SHREVEPORT TRUCK ASSEMBLY PLANT
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA





DEPTH OF SAMPLE, FT	BENZENE CONCENTRATION, mg/kg	ETHYLBENZENE CONCENTRATION, mg/kg	2-BUTANONE (MEL) CONCENTRATION, mg/kg	4-METHYL-2-PENTANONE (MIK) CONCENTRATION, mg/kg	ACETONE CONCENTRATION, mg/kg
1.5'-3'	N/A	39.3	N/A	N/A	N/A
1.5'-3'	0.0791	N/A	N/A	N/A	N/A
0-1.5'	N/A	N/A	N/A	45.9	60.3
3'-5'	N/A	N/A	N/A	29.0	6.29
				18.3	53.2

NOTE: ONLY THOSE CONSTITUENTS DETECTED ABOVE RECAP SCREENING STANDARDS ARE DEPICTED.

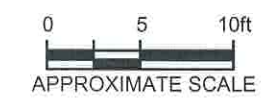
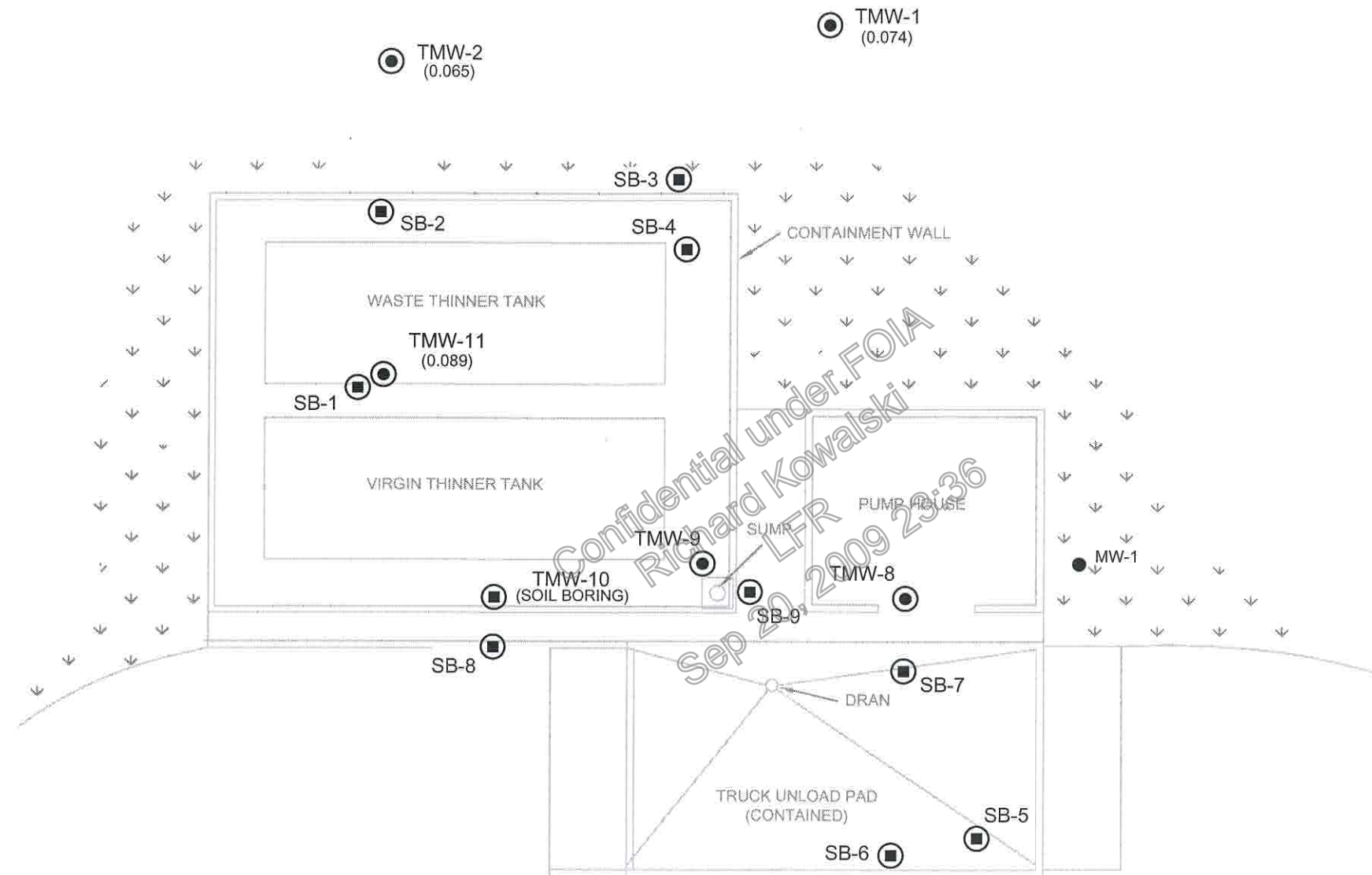


Figure 9
 SOIL CONSTITUENT CONCENTRATIONS - THINNER TANK PAD
 SHREVEPORT TRUCK ASSEMBLY PLANT
 CADDO PARISH, LOUISIANA
 GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA

RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-08,
 "SOLVENT TANK MANAGEMENT PAD SAMPLE LOCATIONS",
 DATED JULY 30, 2001.





LEGEND

- SB-5 SOIL BORING SAMPLE LOCATION
- TMW-1 SOIL BORING/TEMPORARY MONITOR WELL SAMPLE LOCATION
- MW-1 MONITOR WELL LOCATION
- (0.065) ARSENIC CONCENTRATION, mg/L

NOTE: ONLY THOSE CONSTITUENTS DETECTED ABOVE RECAP SCREENING STANDARDS ARE DEPICTED.

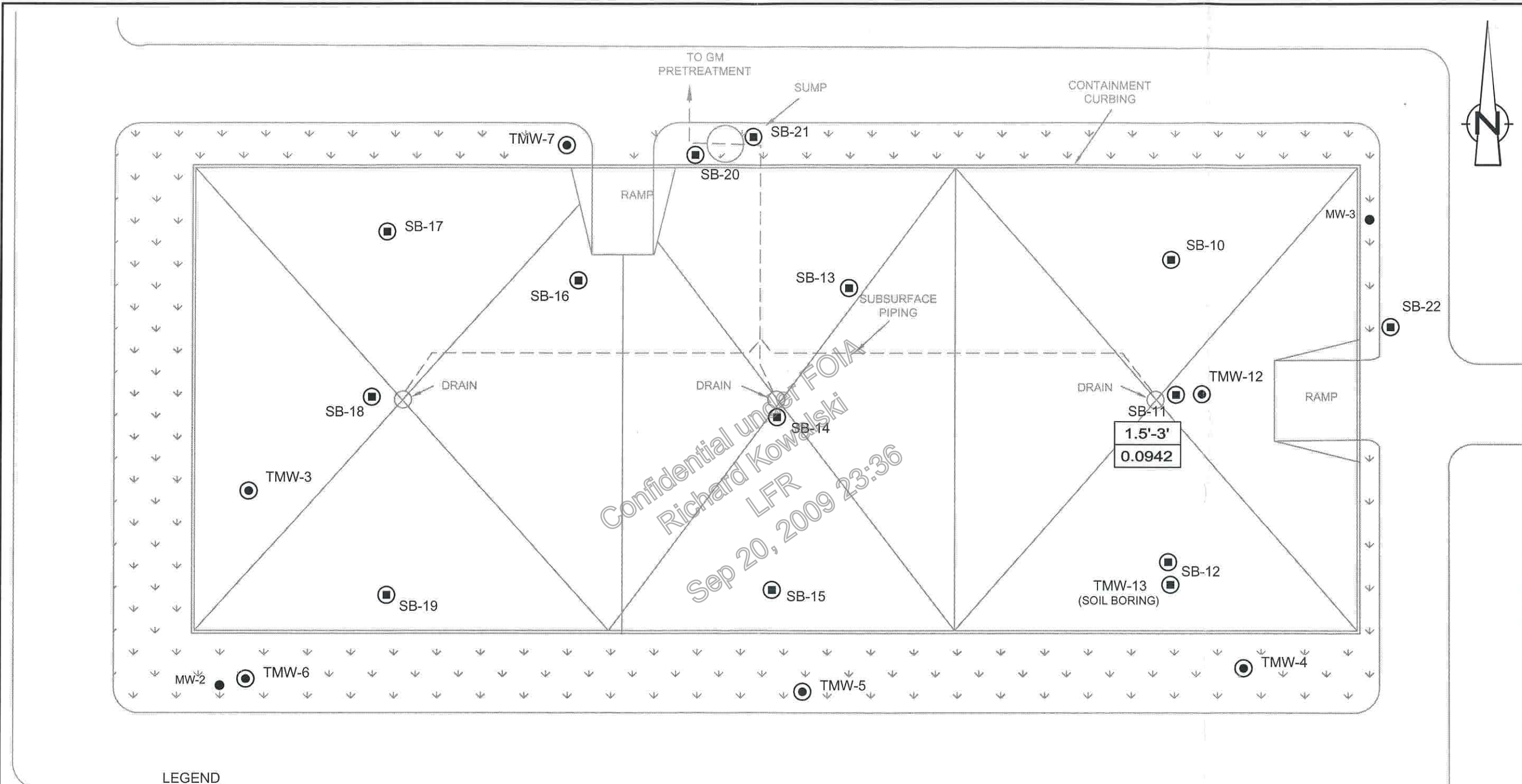
RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-08,
"SOLVENT TANK MANAGEMENT PAD SAMPLE LOCATIONS",
DATED JULY 30, 2001.



Figure 10

GROUNDWATER CONSTITUENT CONCENTRATIONS-THINNER TANK PAD
SHREVEPORT TRUCK ASSEMBLY PLANT
CADDO PARISH, LOUISIANA
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA





LEGEND

- SB-10 SOIL BORING SAMPLE LOCATION
- TMW-4 SOIL BORING/TEMPORARY MONITOR WELL SAMPLE LOCATION
- MW-1 MONITOR WELL LOCATION

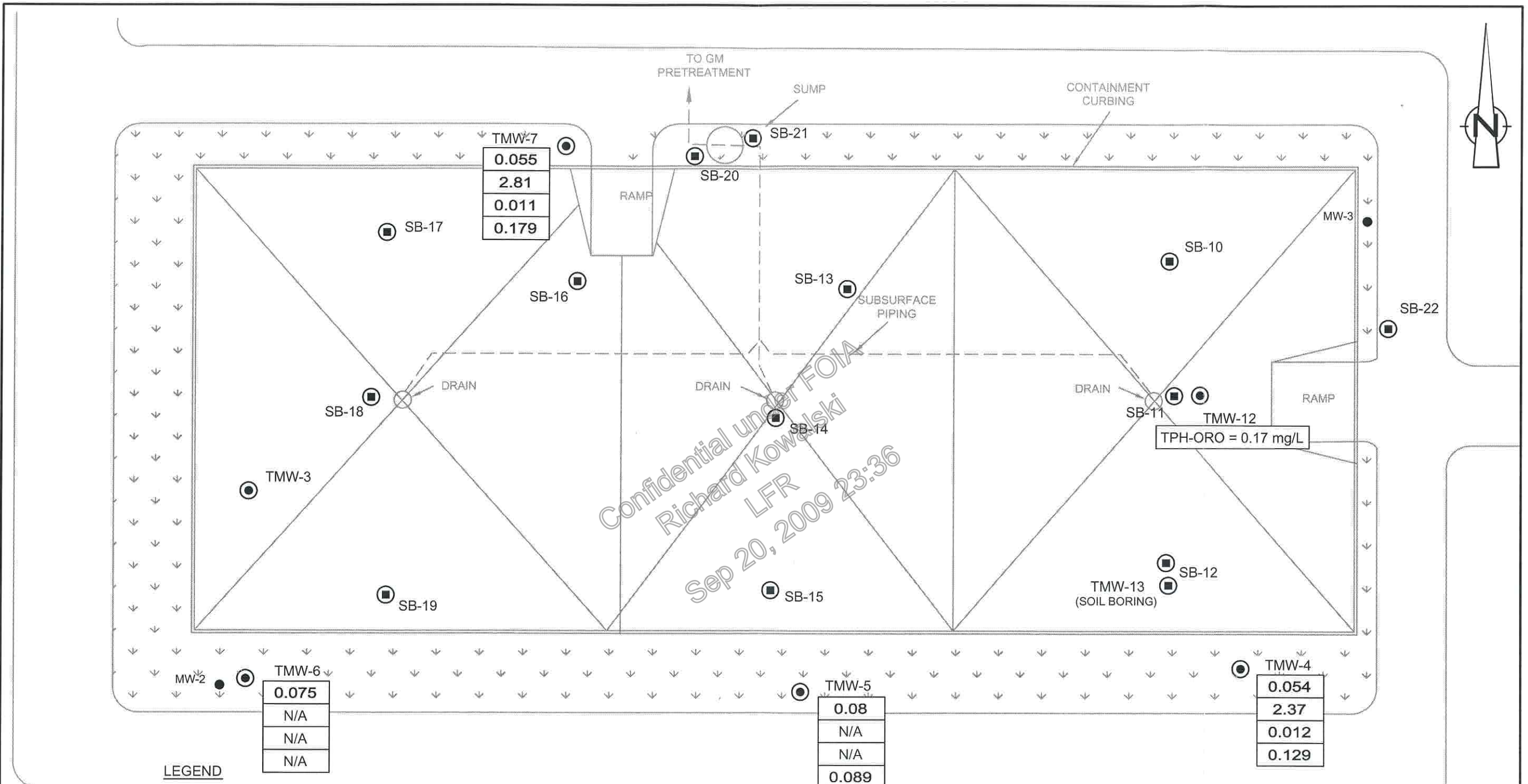
DEPTH OF SAMPLE, FT.	TRICHLOROETHENE CONCENTRATION, mg/kg
1.5'-3'	0.0942

NOTE: ONLY THOSE CONSTITUENTS DETECTED ABOVE RECAP SCREENING STANDARDS ARE DEPICTED.

RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-07.
 "DRUM WASTE MANAGEMENT PAD", DATED JULY 30, 2001.



Figure 11
 SOIL CONSTITUENT CONCENTRATIONS-DRUM PAD
 SHREVEPORT TRUCK ASSEMBLY PLANT
 SHREVEPORT, LOUISIANA
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA



LEGEND

- SB-10 SOIL BORING SAMPLE LOCATION
- TMW-4 SOIL BORING/TEMPORARY MONITOR WELL SAMPLE LOCATION
- MW-1 MONITOR WELL LOCATION
- N/A NOT APPLICABLE

ARSENIC CONCENTRATION, mg/L
BARIUM CONCENTRATION, mg/L
CADMIUM CONCENTRATION, mg/L
LEAD CONCENTRATION, mg/L

NOTE: ONLY THOSE CONSTITUENTS DETECTED ABOVE RECAP SCREENING STANDARDS ARE DEPICTED.

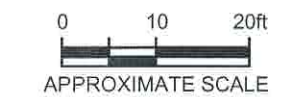
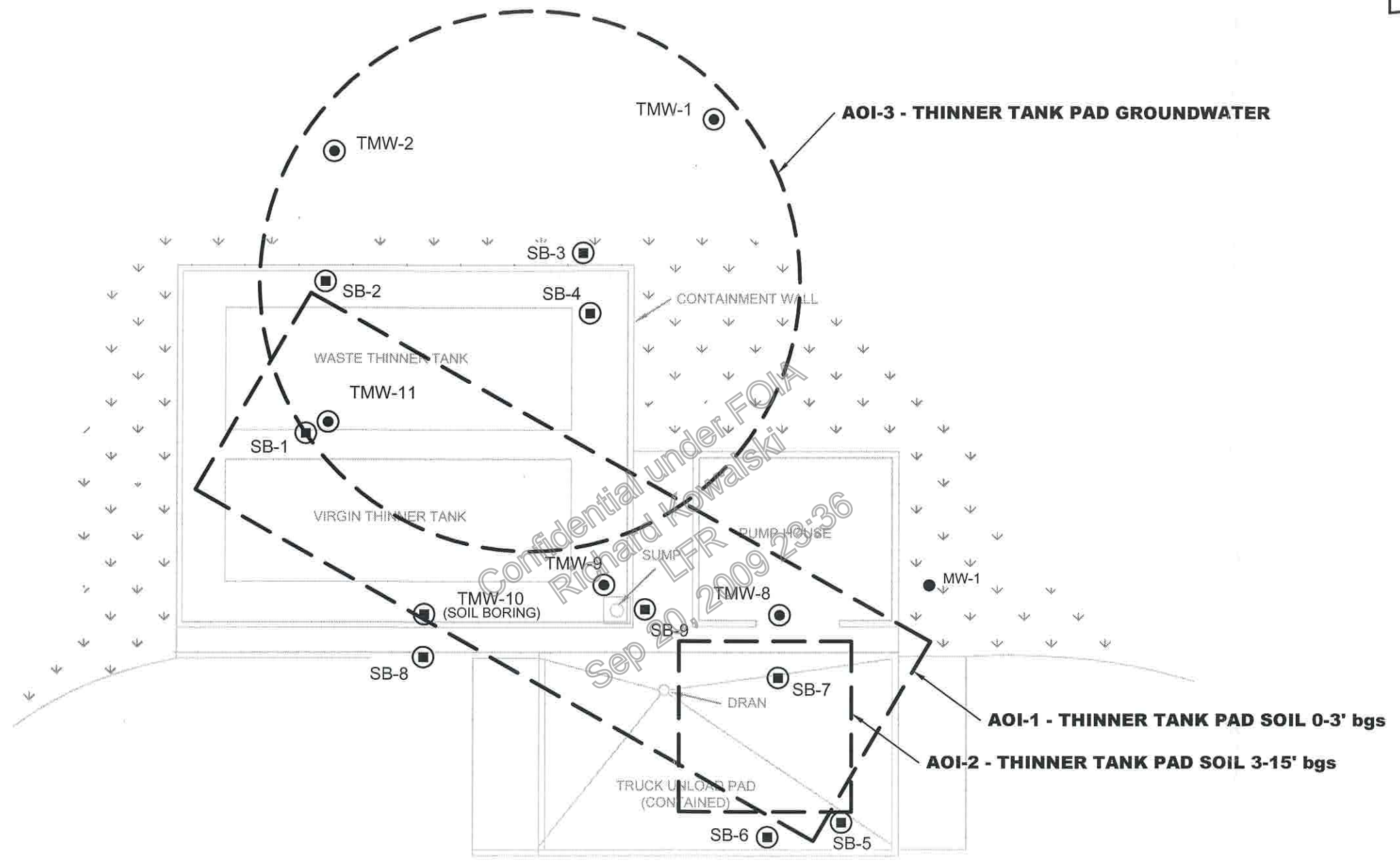


Figure 12

**GROUNDWATER CONSTITUENT CONCENTRATIONS-DRUM PAD
 SHREVEPORT TRUCK ASSEMBLY PLANT
 SHREVEPORT, LOUISIANA
 GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA**

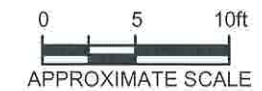
RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-07,
 "DRUM WASTE MANAGEMENT PAD", DATED JULY 30, 2001.





LEGEND

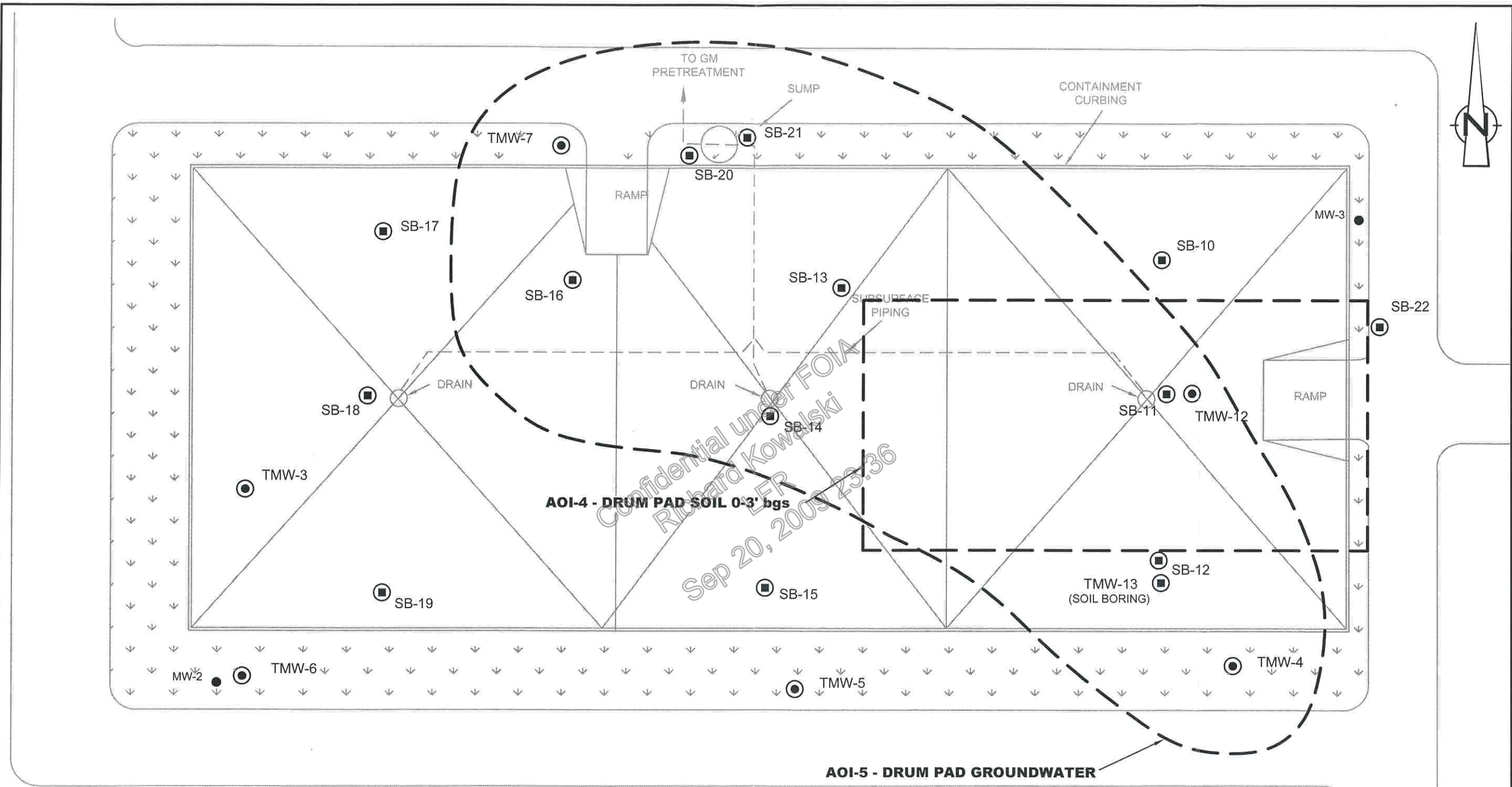
- SB-5 SOIL BORING SAMPLE LOCATION
- TMW-1 SOIL BORING/TEMPORARY MONITOR WELL SAMPLE LOCATION
- MW-1 MONITOR WELL LOCATION



RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-08,
"SOLVENT TANK MANAGEMENT PAD SAMPLE LOCATIONS",
DATED JULY 30, 2001.

Figure 13
 AOI LOCATIONS - THINNER TANK PAD
 SHREVEPORT TRUCK ASSEMBLY PLANT
 CADDO PARISH, LOUISIANA
 GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA





LEGEND

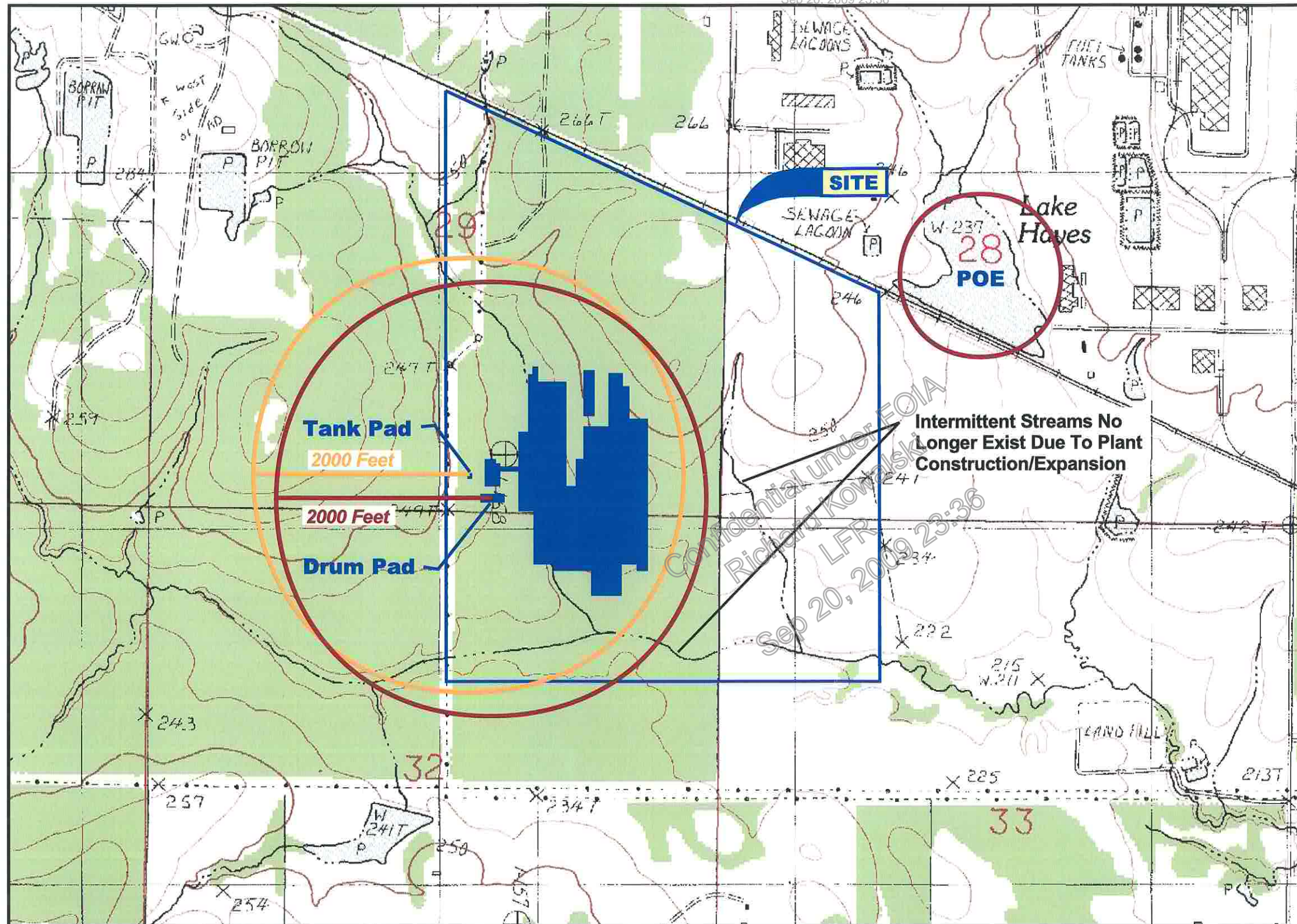
- SB-10 SOIL BORING SAMPLE LOCATION
- TMW-4 SOIL BORING/TEMPORARY MONITOR WELL SAMPLE LOCATION
- MW-1 MONITOR WELL LOCATION



Figure 14

AOI LOCATIONS - DRUM PAD
 SHREVEPORT TRUCK ASSEMBLY PLANT
 SHREVEPORT, LOUISIANA
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA

RE: C-K ASSOCIATES, INC. FIGURE, 840-0142-07,
 "DRUM WASTE MANAGEMENT PAD", DATED JULY 30, 2001.



RE: BASE MAP TAKEN FROM USGS 7.5 MINUTE TOPOGRAPHIC MAP, "GREENWOOD, LA".



Figure 16
POINT OF EXPOSURE (POE) MAP
SHREVEPORT TRUCK ASSEMBLY PLANT
CADDO PARISH, LOUISIANA
GENERAL MOTORS CORPORATION, SHREVEPORT, LOUISIANA

TABLE 1A
 SUMMARY OF SITE INVESTIGATION DATA FOR EACH IMPACTED MEDIUM - SOIL
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA
 DRUM WASTE PAD

Lab ID	Sample ID	Date	Parameters																												Comments								
			Metals						TPH		Polycyclic Aromatic Hydrocarbons (SW846 Method 8270)												Volatile Organic Compounds (SW846 Method 8260B)																
			Arsenic (SW846 3050/6010)	Barium (SW846 3010/6110)	Cadmium (SW846 3050/6010)	Lead (SW846 3010/6110)	Chromium (VI) - Method 3500	TPH-DRO	TPH-ORO	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Pyrene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene (1)	2-Butanone (MEK)	4-Methyl-2-Pentanone (MIX)	Acetone	Benzene	Ethylbenzene	M-,P-,O-Xylene(s)		Methylene Chloride	Naphthalene	Toluene	Trichloroethene	n-Butyl Acetate (2)	n-Butyl Alcohol (2)		
	RECAP SS (mg/kg)		7	2,000	20	100	100	65	2,100	220	120	3.6	0.36	3.6	35	76	0.36	1,200	230	3.6	1,100	4	0.058	2.2	5	0.45	1.5	0.051	19	150	0.017	1.5	20	0.073	3.95	2.23			
-004	6845-SB-10 (0-1.5')	04/24/02	0.0204	0.1540	<0.002	0.0049	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-005	6845-SB-10 (9-10')	04/24/02	0.0153	0.0933	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-006	6845-SB-11 (1.5-3')	04/24/02	0.0226	0.2230	<0.002	0.0070	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-007	6845-SB-11 (7-9')	04/24/02	0.0184	0.0592	<0.002	0.0044	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-008	6845-SB-12 (1.5-3')	04/24/02	0.0281	0.1160	<0.002	0.0042	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-024	6845-SB-12 (3-5')	04/24/02	0.0166	0.0696	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-009	6845-SB-12 (9-10')	04/24/02	0.0175	0.1590	<0.002	0.0055	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-025	6845-SB-13 (1.5-3')	04/24/02	0.0251	0.1500	<0.002	0.0050	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-026	6845-SB-13 (9-10')	04/24/02	0.0230	0.2160	0.0020	0.0061	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-002	6845-SB-14 (1.5-3')	04/24/02	0.0240	0.2560	0.0022	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-003	6845-SB-14 (9-10')	04/24/02	0.0174	0.0580	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-018	6845-SB-15 (0-1.5')	04/24/02	0.0195	0.1340	<0.002	0.0051	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-019	6845-SB-15 (9-10')	04/24/02	0.0101	0.0701	<0.002	0.0077	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-001	6845-SB-15 (DUP)	04/24/02	0.0231	0.1710	<0.002	0.0068	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-016	6845-SB-16 (1.5-3')	04/24/02	0.0264	0.2000	<0.002	0.0081	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-017	6845-SB-16 (9-10')	04/24/02	0.0256	0.0731	<0.002	0.0073	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-012	6845-SB-17 (1.5-3')	04/24/02	0.0299	0.1200	<0.002	0.0050	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-013	6845-SB-17 (9-10')	04/24/02	0.0121	0.0448	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-010	6845-SB-18 (0-2')	04/24/02	0.0282	0.1740	<0.002	0.0059	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-011	6845-SB-18 (9-10')	04/24/02	0.0123	0.0502	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-014	6845-SB-19 (0-1.5')	04/24/02	0.0284	0.1220	<0.002	0.0044	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-015	6845-SB-19 (9-10')	04/24/02	0.0092	0.0351	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-003	6845-SB-20 (1.5-3')	04/26/02	0.0108	0.0713	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-004	6845-SB-20 (9-10')	04/26/02	0.0067	0.0757	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-001	6845-SB-21 (0-1.5')	04/26/02	0.0198	0.1700	<0.002	0.0084	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-002	6845-SB-21 (9-10')	04/26/02	0.0112	0.0669	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-034	6845-SB-22 (1.5-3')	04/26/02	0.0197	0.2720	<0.002	0.0042	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-035	6845-SB-22 (9-10')	04/26/02	0.0140	0.2050	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

TABLE 1A
 SUMMARY OF SITE INVESTIGATION DATA FOR EACH IMPACTED MEDIUM - SOIL
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA
 DRUM WASTE PAD

Lab ID	Sample ID	Date	Parameters																														Comments						
			Metals					TPH		Polycyclic Aromatic Hydrocarbons (SW846 Method 8270)										Volatile Organic Compounds (SW846 Method 8260B)																			
			Arsenic (SW846 3050/6010)	Barium (SW846 3010/6110)	Cadmium (SW846 3050/6010)	Lead (SW846 3010/6110)	Chromium (VI) - Method 3500	TPH-DRO	TPH-ORO	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Pyrene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene ⁽¹⁾	2-Butanone (MEK)	4-Methyl-2-Pentanone (MIBK)	Acetone	Benzene	Ethylbenzene	M-,P-,O-Xylene(s)	Methylene Chloride	Naphthalene		Toluene	Trichloroethene	n-Butyl Acetate ⁽¹⁾	n-Butyl Alcohol ⁽¹⁾		
	RECAP SS (mg/kg)		7	2,000	20	100	100	65	2,100	220	120	3.6	0.36	3.6	35	76	0.36	1,200	230	3.6	1,100	4	0.058	2.2	5	0.45	1.5	0.051	19	150	0.017	1.5	20	0.073	3.95	2.23			
-001	6845-TMW-3 (0-2')	04/25/02	0.0236	0.1350	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
-002	6845-TMW-3 (8-10')	04/25/02	0.0098	0.0610	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-003	6845-TMW-3 (28-30')	04/25/02	0.0198	0.0900	<0.001	0.0052	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-004	6845-TMW-4 (1.5-3')	04/25/02	0.0240	0.2720	0.0021	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
-005	6845-TMW-4 (19-21')	04/25/02	0.0105	0.0788	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-006	6845-TMW-4 (21-23')	04/25/02	0.0097	0.9370	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-007	6845-TMW-5 (0-1.5')	04/25/02	0.0207	0.2040	<0.002	0.0048	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-008	6845-TMW-5 (15-17')	04/25/02	0.0073	0.0410	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-009	6845-TMW-5 (21-23')	04/25/02	0.0167	0.0997	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-010	6845-TMW-6 (1.5-3')	04/25/02	0.0220	0.1470	<0.002	0.0044	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-011	6845-TMW-6 (15-17')	04/25/02	0.0109	0.0827	<0.002	<0.004	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-012	6845-TMW-6 (21-23')	04/25/02	0.0189	0.1430	<0.002	0.0054	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-013	6845-TMW-7 (0-1.5') M	04/25/02	0.0228	0.3270	<0.002	0.0058	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-014	6845-TMW-7 (0-1.5') D	04/25/02	0.0201	0.2790	<0.002	0.0061	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-015	6845-TMW-7 (3-5')	04/25/02	0.0165	0.1450	<0.002	0.0044	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-016	6845-TMW-7 (21-23')	04/25/02	0.0161	0.0783	<0.002	0.0047	<100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-010	6845-TMW-12 (0-1.5')	08/21/03	0.0581	0.1240	0.0050	<0.020	<100	49.0	132.0	<0.42	<0.356	<0.316	<0.296	<0.289	<0.339	<0.293	<0.432	<0.19	<0.322	<0.502	<0.653	<0.0115	0.0394	2.030	0.0102	<0.0010	0.0428	0.0014	0.0248	0.1748	<0.0002	0.1660	0.0106	0.0030	<0.010	0.0775			
-011	6845-TMW-12 (11-13')	08/21/03	0.0343	0.0411	0.0024	<0.020	<100	<10.0	6.0	<0.42	<0.356	<0.316	<0.296	<0.289	<0.339	<0.293	<0.432	<0.19	<0.322	<0.502	<0.653	<0.0115	<0.0010	0.0145	<0.0009	<0.0010	0.0227	0.0009	0.0029	0.0057	<0.0002	0.0188	0.0017	<0.0003	<0.010	<0.010			
-012	6845-TMW-12 (13-15')	08/21/03	0.0320	0.0179	0.0024	<0.020	<100	<10.0	2.0	<0.42	<0.356	<0.316	<0.296	<0.289	<0.339	<0.293	<0.432	<0.19	<0.322	<0.502	<0.653	<0.0115	<0.0010	0.0038	<0.0009	<0.0010	0.0150	0.0009	0.0023	0.0053	<0.0002	0.0054	0.0017	<0.010	<0.010	<0.010			
-013	6845-TMW-13 (13-15')	08/21/03	0.0376	0.0629	0.0023	<0.020	<100	<10.0	7.0	<0.42	<0.356	<0.316	<0.296	<0.289	<0.339	<0.293	<0.432	<0.19	<0.322	<0.502	<0.653	<0.0115	<0.0010	0.0029	0.0070	<0.0010	0.0210	0.0010	0.0021	0.0053	<0.0002	0.0038	0.0026	0.0043	<0.010	<0.010			

Notes: Bold, shaded values exceeded LDEQ RECAP Screening Standards. These constituents were noted for further consideration under a higher tier of RECAP evaluation (Management Option).
 mg/kg = Milligrams per kilogram, which is equivalent to parts per million (ppm).
 N/A = Not Applicable.

⁽¹⁾Screening Standards for 1,2,4-Trimethylbenzene, n-Butyl Acetate and n-Butyl Alcohol are not included in the RECAP document. Therefore, LDEQ Spreadsheets were utilized to calculate Screening Standards for these compounds.

TABLE 1B
SUMMARY OF SITE INVESTIGATION DATA FOR EACH IMPACTED MEDIUM - GROUNDWATER
GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
7600 GENERAL MOTORS BOULEVARD
SHREVEPORT, LOUISIANA
DRUM WASTE PAD

Lab ID	Sample ID	Date	Parameters																																	Comments			
			Metals						TPH		Polycyclic Aromatic Hydrocarbons (SW846 Method 8270)														Volatile Organic Compounds (SW846 Method 8260B)														
			Arsenic (SW846 3050/6010)	Barium (SW846 3010/6110)	Cadmium (SW846 3050/6010)	Lead (SW846 3010/6110)	Chromium (VI) - Method 3500	TPH-DRO	TPH-ORO	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Pyrene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene (1)	2-Butanone (MEK)	4-Methyl-2-Pentanone (MIBK)	Acetone	Benzene	Ethylbenzene	M-,P-,O-Xylenes(s)	Methylene Chloride	Naphthalene	Toluene	Trichloroethene	n-Butyl Acetate (1)		n-Butyl Alcohol (1)		
RECAP Groundwater SS (mg/L)			0.05	2	0.005	0.015	0.011	0.15	0.15	0.037	0.043	0.0002	0.0002	0.0002	0.0008	0.0016	0.01	0.15	0.024	0.0004	0.018	0.2	0.005	0.03	0.19	0.05	0.061	0.005	0.7	10	0.005	0.01	1	0.005	0.085	0.061			
-024	6845-TMW-3-W	04/25/02	<0.05	0.3250	<0.005	<0.015	<0.011	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
-021	6845-TMW-4-W	04/25/02	0.054	2.37	0.012	0.129	<0.011	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
-022	6845-TMW-5-W	04/25/02	0.08	0.7990	0.005	0.089	<0.011	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
-038	6845-TMW-6-W	04/26/02	0.064	0.8490	<0.005	<0.015	<0.011	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
-030	6845-TMW-6-W DUP	04/26/02	0.075	0.4440	<0.005	<0.015	<0.011	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
-023	6845-TMW-7-W	04/25/02	0.055	2.81	0.011	0.179	<0.011	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
-001	6845-TMW-12	08/21/03	<0.0164	0.103	<0.001	<0.0048	<0.011	<0.14	<0.14	<0.0039	<0.0025	<0.0025	<0.002	<0.0024	<0.0031	<0.0023	<0.0037	<0.0036	<0.0033	<0.0040	<0.0028	<0.0004	<0.0009	0.0047	<0.0019	<0.0004	0.0023	<0.0007	<0.0006	<0.0021	<0.0013	0.0066	<0.0012	<0.0006	<0.005	<0.005			
-005	6845-TMW-Dup	08/21/03	<0.0164	0.119	<0.001	<0.0048	<0.011	<0.14	0.17	<0.0039	<0.0025	<0.0025	<0.002	<0.0024	<0.0031	<0.0023	<0.0037	<0.0036	<0.0033	<0.0040	<0.0028	<0.0004	<0.0009	0.0051	<0.0019	<0.0004	0.0027	<0.0007	0.0016	0.0017	<0.0013	0.0062	<0.0012	<0.0006	<0.005	<0.005	Duplicate for TMW-12		

Notes:
 Bold, shaded values exceeded LDEQ RECAP Screening Standards. These constituents were noted for further consideration under a higher tier of RECAP evaluation (Management Option).
 mg/L = Milligrams per Liter, which is equivalent to parts per million (ppm).
 N/A = Not Applicable.
 (1) A Screening Standard for this compound is not included in the RECAP document. Therefore, LDEQ Spreadsheets were utilized to calculate a Screening Standard for this compound.

TABLE 1C
 SUMMARY OF SITE INVESTIGATION DATA FOR EACH IMPACTED MEDIUM - SOIL
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA
 THINNER TANK PAD

Lab ID	Sample ID	Date	Parameters																			Comments		
			Metals							Volatile Organic Compounds (SW846 Method 8260B)														
			Arsenic (SW846 3050/6010)	Barium (SW846 3010/6110)	Cadmium (SW846 3050/6010)	Lead (SW846 3010/6110)	Chromium (VI) - Method 3500	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene (T)	2-Butanone (MEK)	4-Methyl-2-Pentanone (MIBK)	Acetone	Benzene	Ethylbenzene	M-,P-,O-Xylene(s)	Methylene Chloride	Naphthalene	Toluene	Trichloroethene	n-Butyl Acetate (n)		n-Butyl Alcohol (n)	
RECAP Soil Screening Standards (mg/kg)			7	2,000	20	100	100	4	0.058	2.2	5	0.45	1.5	0.051	19	150	0.017	1.5	20	0.073	3.95	2.23		
-028	6845-SB-1 (1.5-3')	04/26/02	0.0192	0.1810	<0.002	0.0111	<100	<0.010	<0.010	0.0914	0.0116	<0.010	0.0497	<0.010	39.30	53.02	<0.010	<0.010	0.8350	<0.010	<0.010	<0.010		
-029	6845-SB-1 (9-10')	04/26/02	0.0137	0.0457	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0255	<0.010	0.9350	0.0185	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-018	6845-SB-2 (1.5-3')	04/26/02	0.0148	0.1580	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0124	<0.010	0.0202	0.0869	<0.010	0.0433	<0.010	<0.010	<0.010	<0.010		
-019	6845-SB-2 (3-5')	04/26/02	0.0121	0.0901	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0144	<0.010	0.1140	0.0106	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-020	6845-SB-2 (9-10')	04/26/02	0.0164	0.0514	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-021	6845-SB-2 (9-10') DUP	04/26/02	0.0134	0.0519	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0242	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-017	6845-SB-3 (9-10')	04/26/02	0.0067	0.0435	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-014	6845-SB-4 (1.5-3')	04/26/02	0.0190	0.1890	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0467	<0.010	0.1050	0.1640	<0.010	0.0254	<0.010	<0.010	<0.010	<0.010		
-015	6845-SB-4 (7-9')	04/26/02	0.0153	0.0923	<0.002	0.0111	<100	<0.010	<0.010	<0.010	0.0124	<0.010	0.0773	<0.010	0.0712	0.0115	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-016	6845-SB-4 (9-10')	04/26/02	0.0165	0.0591	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0338	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-025	6845-SB-5 (1.5-3')	04/26/02	0.0220	0.2420	<0.002	0.0073	<100	<0.010	<0.010	<0.010	0.0239	<0.010	0.0307	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-026	6845-SB-5 (9-10') MS/MSD	04/26/02	0.0138	0.0485	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0744	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-027	6845-SB-5 (9-10') DUP	04/26/02	0.0192	0.0559	<0.002	0.0047	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0593	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-042	6845-SB-6 (0-1.5')	04/26/02	0.0249	0.1490	<0.002	0.0069	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0361	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-043	6845-SB-6 (9-10')	04/26/02	0.0193	0.0686	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0445	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-022	6845-SB-7 (0-1.5')	04/26/02	0.0234	0.1410	<0.002	0.0053	<100	<0.010	<0.010	<0.010	<0.010	45.90	29.00	18.30	<0.010	1.6000	8.5500	<0.010	<0.010	1.10	<0.010	<0.010	<0.010	
-023	6845-SB-7 (3-5')	04/26/02	0.0227	0.1950	<0.002	0.0052	<100	<0.010	<0.010	<0.010	<0.010	60.30	6.29	53.20	<0.010	1.2500	3.8200	<0.010	<0.010	0.3400	<0.010	<0.010	<0.010	
-024	6845-SB-7 (9-10')	04/26/02	0.0148	0.0602	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	0.0605	0.0333	0.0587	<0.010	0.2180	0.7110	<0.010	<0.010	<0.010	<0.010	<0.010		
-031	6845-SB-8 (0-1.5')	04/26/02	0.0229	0.1830	<0.002	0.0044	<100	<0.010	<0.010	<0.010	<0.010	0.0199	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-032	6845-SB-8 (5-7')	04/26/02	0.0154	0.1690	<0.002	0.0043	<100	<0.010	<0.010	<0.010	0.0125	<0.010	0.0838	<0.010	0.0747	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-033	6845-SB-8 (9-10')	04/26/02	0.0257	0.0927	<0.002	0.0052	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0568	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-011	6845-SB-9 (1.5-3')	04/26/02	0.0200	0.2460	<0.002	0.0056	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.1500	<0.010	0.0330	0.1260	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-012	6845-SB-9 (3-5')	04/26/02	0.0192	0.2410	<0.002	0.0051	<100	<0.010	<0.010	<0.010	<0.010	0.0330	0.0621	0.2820	<0.010	0.0594	0.2595	<0.010	<0.010	0.0246	<0.010	<0.010		
-013	6845-SB-9 (9-10')	04/26/02	0.0133	0.0508	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0430	<0.010	<0.010	0.0190	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-008	6845-TMW-1 (1.5-3')	04/26/02	0.0139	0.1160	<0.002	0.0052	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0186	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-009	6845-TMW-1 (9-11')	04/26/02	0.0195	0.2460	<0.002	0.0053	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0203	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-010	6845-TMW-1 (21-23')	04/26/02	0.0244	0.0559	0.0029	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0184	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-005	6845-TMW-2 (0-1.5')	04/26/02	0.0223	0.2090	<0.002	<0.0095	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0197	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-006	6845-TMW-2 (17-19')	04/26/02	0.0067	0.0495	<0.002	<0.004	<100	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-007	6845-TMW-2 (21-23')	04/26/02	0.0192	0.0570	<0.002	0.0041	<100	<0.010	<0.010	<0.010	<0.010	<0.010	0.0413	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
-001	6845-TMW-8 (5-7')	08/21/03	0.0306	0.1310	0.0022	<0.020	<100	<0.012	<0.0010	<0.0003	<0.0009	<0.0010	0.0384	0.0006	0.0013	0.0043	<0.0002	0.0025	0.0012	<0.0003	<0.010	<0.010		
-002	6845-TMW-8 (15-17')	08/21/03	0.0448	0.2220	0.0040	0.0210	<100	<0.012	<0.0010	<0.0003	<0.0009	<0.0010	0.0040	0.0014	0.0432	0.1671	<0.0002	0.0040	0.0065	<0.0003	<0.010	<0.010		
-003	6845-TMW-8 (19-21')	08/21/03	0.0305	0.0869	0.0026	<0.020	<100	<0.012	<0.0010	<0.0003	<0.0009	<0.0010	0.0089	0.0010	0.0025	0.0108	<0.0002	0.0027	0.0020	<0.0003	<0.010	<0.010		

TABLE 1C
 SUMMARY OF SITE INVESTIGATION DATA FOR EACH IMPACTED MEDIUM - SOIL
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA
 THINNER TANK PAD

Lab ID	Sample ID	Date	Parameters																			Comments	
			Metals							Volatile Organic Compounds (SW846 Method 8260B)													
			Arsenic (SW846 3050/6010)	Barium (SW846 3010/6110)	Cadmium (SW846 3050/6010)	Lead (SW846 3010/6110)	Chromium (VI) - Method 3500	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene ⁽¹⁾	2-Butanone (MEK)	4-Methyl-2-Pentanone (MIBK)	Acetone	Benzene	Ethylbenzene	M-,P-,O-Xylene(s)	Methylene Chloride	Naphthalene	Toluene	Trichloroethene	n-Butyl Acetate ⁽¹⁾		n-Butyl Alcohol ⁽¹⁾
RECAP Soil Screening Standards (mg/kg)			7	2,000	20	100	100	4	0.058	2.2	5	0.45	1.5	0.051	19	150	0.017	1.5	20	0.073	3.95	2.23	
-004	6845-TMW-9 (7-9')	08/21/03	0.0184	0.0396	<0.002	<0.020	<100	<0.012	<0.0010	<0.0003	<0.0009	<0.0010	0.0235	0.0149	0.4280	0.9350	0.0005	<0.010	<0.0002	<0.0003	<0.010	<0.010	
-005	6845-TMW-9 (13-15')	08/21/03	0.0424	0.1470	0.0039	0.0210	<100	<0.012	<0.0010	0.0021	<0.0009	<0.0010	<0.010	0.0278	0.0039	0.0111	<0.0002	0.0035	0.0025	<0.0003	<0.010	<0.010	
-006	6845-TMW-10 (1.5-3')	08/21/03	0.0654	0.4500	0.0081	0.0330	<100	<0.012	<0.0010	0.5630	<0.0009	<0.0010	0.0282	0.0791	11.7	44.9	<0.0002	0.873	5.0	<0.0003	<0.010	<0.010	
-007	6845-TMW-10 (13-15')	08/21/03	0.0441	0.0508	0.0047	0.0240	<100	<0.012	<0.0010	0.0040	<0.0009	<0.0010	0.0133	0.0018	0.0914	0.1143	<0.0002	0.0080	0.0122	<0.0003	<0.010	<0.010	
-008	6845-TMW-11 (1.5-3')	08/21/03	0.0454	0.1420	0.0042	<0.020	<100	<0.012	0.0424	0.0673	0.0130	<0.0010	0.0265	0.0164	3.44	0.8827	<0.0002	0.9570	0.0102	<0.0003	<0.010	0.1280	
-009	6845-TMW-11 (17-19')	08/21/03	0.0138	0.0308	<0.002	<0.020	<100	<0.012	<0.0010	0.0038	<0.0009	<0.0010	0.0112	0.0018	0.0208	0.0148	<0.0002	0.0569	0.0038	<0.0003	<0.010	<0.010	

Notes:

Bold, shaded values exceeded LDEQ RECAP Screening Standards. These constituents were noted for further consideration under a higher tier of RECAP evaluation (Management Option).
 mg/kg = Milligrams per kilogram, which is equivalent to parts per million (ppm).
 N/A = Not Applicable.

⁽¹⁾Screening Standards for 1,2,4-Trimethylbenzene, n-Butyl Acetate and n-Butyl Alcohol are not included in the RECAP document. Therefore, LDEQ Spreadsheets were utilized to calculate Screening Standards for these compounds.

TABLE 1D
 SUMMARY OF SITE INVESTIGATION DATA FOR EACH IMPACTED MEDIUM - GROUNDWATER
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA
 THINNER TANK PAD

Lab ID	Sample ID	Date	Parameters																			Comments	
			Metals						Volatile Organic Compounds (SW846 Method 8260B)														
			Arsenic (SW846 3050/6010)	Barium (SW846 3010/6110)	Cadmium (SW846 3050/6010)	Lead (SW846 3010/6110)	Chromium (VI) - Method 3500	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,2,4-Trimethylbenzene (1)	2-Butanone (MEK)	4-Methyl-2-Pentanone (MIBK)	Acetone	Benzene	Ethylbenzene	M-,P-,O-Xylene(s)	Methylene Chloride	Naphthalene	Toluene	Trichloroethene	n-Butyl Acetate (1)	n-Butyl Alcohol (1)	
RECAP Groundwater Screening Standards (mg/L)			0.05	2	0.005	0.015	0.011	0.2	0.005	0.03	0.19	0.05	0.061	0.005	0.7	10	0.005	0.01	1	0.005	0.085	0.06	
-036	6845-TMW-1-W	04/26/02	0.074	0.1270	<0.005	<0.015	<0.011	<0.001	<0.001	<0.001	<0.005	0.0055	<0.005	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	
-037	6845-TMW-2-W	04/26/02	0.065	0.0840	<0.005	<0.015	<0.011	<0.001	<0.001	<0.001	<0.005	0.0055	<0.005	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	
-003	6845-TMW-8	08/22/03	<0.0164	0.2580	<0.001	<0.0048	<0.011	<0.0004	<0.0009	<0.001	<0.005	<0.0004	0.0065	0.0036	0.2580	0.9200	<0.0013	0.0069	0.0263	<0.0006	<0.005	<0.005	
-002	6845-TMW-9	08/22/03	<0.0164	0.3820	<0.001	<0.0048	<0.011	<0.0004	<0.0009	0.0126	<0.005	<0.0004	0.0034	<0.0007	0.2110	0.2176	<0.0013	0.0093	0.0100	<0.0006	<0.005	0.0031	
-004	6845-TMW-11	08/22/03	0.089	0.1430	<0.001	<0.0048	<0.011	<0.0004	<0.0009	0.0034	<0.005	<0.0004	0.0043	<0.0007	0.3860	1.18	<0.0013	0.0070	0.0355	<0.0006	<0.005	<0.005	

Notes:

Bold, shaded values exceeded LDEQ RECAP Screening Standards. These constituents were noted for further consideration under a higher tier of RECAP evaluation (Management Option).

mg/L = Milligrams per Liter, which is equivalent to parts per million (ppm).

N/A = Not Applicable.

(1) Screening Standards for 1,2,4-Trimethylbenzene, n-Butyl Acetate and n-Butyl Alcohol are not included in the RECAP document. Therefore, LDEQ Spreadsheets were utilized to calculate Screening Standards for these compounds.

TABLE 2
LIST OF POTENTIAL CONSTITUENTS OF CONCERN
FOR EACH EXPOSURE/SOURCE MEDIUM
THINNER TANK PAD AND DRUM PAD
GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
7600 GENERAL MOTORS BOULEVARD
SHREVEPORT, LOUISIANA

<i>Potential Constituents of Concern</i>	<i>CAS Number</i>
<i>Metals</i>	
Arsenic	7440-38-2
Barium	7440-39-3
Cadmium	7440-43-9
Chromium VI	7440-47-3
Lead (inorganic)	7439-92-1
<i>Volatile Organic Compounds (VOCs)</i>	
Acetone	67-64-1
Benzene	71-43-2
Ethylbenzene	100-41-4
Methylene Chloride	75-09-2
2-Butanone or Methyl Ethyl Ketone (MEK)	78-93-3
4-Methyl-2-Pentanone or Methyl Isobutyl Ketone (MIK)	108-10-1
Naphthalene	91-20-3
n-Butyl Acetate	123-86-4
n-Butyl Alcohol	71-63-3
Toluene	100-88-3
1,1,1-Trichloroethane	71-55-6
1,1,2-Trichloroethane	79-00-5
1,2,4-Trimethylbenzene	95-63-6
Trichloroethene	79-01-6
Xylene (mixed)	1330-20-7
<i>Total Petroleum Hydrocarbons (TPH)*</i>	
TPH-DRO	N/A
TPH-ORO	N/A
<i>Polycyclic Aromatic Hydrocarbons (PAHs)*</i>	
Acenaphthene	83-32-9
Anthracene	120-12-7
Benzo(a)pyrene	50-32-8
Chrysene	218-01-9
Dibenz(a,h)anthracene	53-70-3
Indeno(1,2,3-cd)pyrene	193-39-5
Benzo(k)fluoranthene	207-08-9
Benzo(b)fluoranthene	205-99-2
Benz(a)anthracene	56-55-3
Fluoranthene	206-44-0
Fluorene	86-73-7
Naphthalene	91-20-3
Pyrene	129-00-0

* Potential Constituents of Concern in Drum Pad only.

N/A = Not Applicable; Not Available.

TABLE 3A
 EXPOSURE/SOURCE CONCENTRATIONS FOR SOIL
 CLOSURE OF THINNER TANK PAD AND DRUM WASTE MANAGEMENT PAD
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA

Constituent of Concern	LDEQ RECAP Screening Option Standard	Soil Exposure/Source Concentrations (mg/kg)			
		AOI-1	AOI-2	AOI-4	
		Thinner Tank Pad 0 - 3 feet bgs Exposure	Thinner Tank Pad 3 - 15 feet bgs Exposure/Source	Drum Pad 0 - 3 feet bgs Exposure	
Acetone	1.5	18.30	53.20	N/A	
Benzene	0.051	0.0791	N/A	N/A	
Ethylbenzene	19	39.30	N/A	N/A	
2-Butanone (MEK)	5	45.90	60.30	N/A	
4-Methyl-2-Pentanone (MIK)	65	29.00	6.29	N/A	
Trichloroethene	0.073	N/A	N/A	0.0942	

Notes:
 mg/kg = Milligrams per kilogram, which is equivalent to parts per million (ppm).
 bgs = Below ground surface.
 N/A = Not Applicable.
 Constituent concentrations that exceed the RECAP Screening Standard are shown in bold print and shaded.

TABLE 3B
 EXPOSURE/COMPLIANCE CONCENTRATIONS FOR GROUNDWATER
 CLOSURE OF THINNER TANK PAD AND DRUM WASTE MANAGEMENT PAD
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA

Constituent of Concern	LDEQ/RECAP Limiting SO SS	Groundwater Exposure/Compliance Concentrations (mg/L)	
		AOI-3 Thinner Tank Pad	AOI-5 Drum Pad
Arsenic	0.05	0.089	0.08
Barium	2	N/A	2.81
Cadmium	0.005	N/A	0.012
Lead	0.015	N/A	0.1790
Benzo(a)anthracene ⁽¹⁾	0.0002	N/A	<0.001
Benzo(a)pyrene ⁽¹⁾	0.0002	N/A	<0.0012
Benzo(b)fluoranthene ⁽¹⁾	0.0002	N/A	<0.0012
Benzo(k)fluoranthene ⁽¹⁾	0.0008	N/A	<0.0016
Indeno(1,2,3-cd)pyrene ⁽¹⁾	0.0004	N/A	<0.002
TPH-ORO	0.15	N/A	0.17

Notes:

SO SS = Screening Option Screening Standard.
 Constituent concentrations that exceed the RECAP Screening Standard are shown in **bold** print.
 mg/L = Milligrams per liter, which is equivalent to parts per million (ppm).
 N/A = Not Applicable.
⁽¹⁾ At the direction of LDEQ toxicology staff, one-half the method detection limit was utilized as the exposure/compliance concentration for this compound.

TABLE 4A
 LIST OF LIMITING RS FOR EACH COC FOR EACH EXPOSURE/SOURCE MEDIUM
 SURFACE SOIL AND POTENTIAL SURFACE SOIL
 CLOSURE OF THINNER TANK PAD AND DRUM WASTE MANAGEMENT PAD
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA

Constituents ⁽¹⁾ of Concern	Soil RECAP Standards (mg/kg)							Limiting RS 0-3ft bgs
	Soil _i A	Additivity Adjustment B	Adjusted Soil _i C = A/B	Soil GW3NDW D	Dilution Factor E	Adjusted Soil GW3NDW F = D*E	Soil _{SAT} G	
Acetone	14,000	2	7,000	180	440	79,200	130,000	7,000
Benzene	3.2	1	3.2	0.18	440	57	900	3.2
Ethylbenzene	13,000	2	6,500	190	440	83,600	230	230
2-Butanone (MEK)	44,000	2	22,000	1,000	440	440,000	29,000	22,000
4-Methyl-2-Pentanone (MIBK)	2,400	1	2,400	97	440	42,680	3,100	2,400
Trichloroethene	14	1	14	0.30	440	132	800	14

Notes:

mg/kg = Milligrams per kilogram, which is approximately equivalent to parts per million (ppm).

⁽¹⁾ Only the constituents that exceeded the RECAP SO SS in Table 3A are listed as constituents of concern.

⁽²⁾ When the depth of impact is greater than 3 feet below ground surface (bgs), but less than 15 feet bgs, the Limiting MO-1 RS for surface soils (0-3 feet bgs) is equal to the lower of the Soil_i and Soil_{SAT} (Columns C & G), and the Limiting MO-1 RS for potential surface soils (0-15 feet bgs) is equal to the lowest of the Soil_i, the Soil_{GW3NDW}, and the Soil_{SAT} (Columns C, F, & G).

TABLE 4B
LIST OF LIMITING RS FOR EACH COC FOR EACH EXPOSURE/SOURCE MEDIUM
GROUNDWATER
CLOSURE OF THINNER TANK PAD AND DRUM WASTE MANAGEMENT PAD
GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
7600 GENERAL MOTORS BOULEVARD
SHREVEPORT, LOUISIANA

Constituents ⁽¹⁾ of Concern	Groundwater RECAP Standards (mg/L)				Limiting RS
	GW3NDW	Dilution Factor	Adjusted GW2/3 _{NDW}	Solubility	
	A	B	C = A*B	D	Note ⁽²⁾
Arsenic	100	N/A ⁽³⁾	100	N/A	100
Barium	45	440	19,800	N/A	19,800
Cadmium	20	N/A ⁽³⁾	20	N/A	20
Lead	0.05	440	22	N/A	22
Benzo(a)anthracene	0.000091	440	0.0400	0.0094	0.0094
Benzo(a)pyrene	0.0002	440	0.0880	0.0016	0.0016
Benzo(b)fluoranthene	0.000091	440 ⁽⁴⁾	0.0400 ⁽⁴⁾	0.0015	0.0015
Benzo(k)fluoranthene	0.000091	440 ⁽⁴⁾	0.4004 ⁽⁴⁾	0.0008	0.0008
Indeno(1,2,3-cd)pyrene	0.000091	440 ⁽⁴⁾	0.0400 ⁽⁴⁾	0.00022	0.0004
TPH-ORO	24	440	10,000 ⁽⁶⁾	10,000 ⁽⁶⁾	10,000 ⁽⁶⁾

Notes:
 mg/L = All values are in milligrams per liter, which is approximately equivalent to parts per million (ppm).
 N/A = Not Applicable.
⁽¹⁾ Only the constituents that exceeded the RECAP SO SS are listed as constituents of concern.
⁽²⁾ The Limiting RS for groundwater is the lower of the adjusted GW2/3_{NDW} and the constituent's water solubility (columns C and D).
⁽³⁾ Soil level protective of groundwater for inorganic constituents is based on leachability by Toxicity Characteristic Leachate Procedure (TCLP).
⁽⁴⁾ GW3 multiplied by maximum DF is less than GW2 thus default to GW2 and multiply by DF2.
⁽⁵⁾ Due to technical impracticability of detecting the solubility limit, default to quantitation limit.
⁽⁶⁾ TPH shall not exceed 10,000 ppm.

TABLE 5
LIST OF TARGET ORGANS
CLOSURE OF THINNER TANK PAD AND DRUM WASTE MANAGEMENT PAD
GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
7600 GENERAL MOTORS BOULEVARD
SHREVEPORT, LOUISIANA

LIST OF COMPOUNDS & AFFECTING TARGET ORGANS

<i>Compound</i>	<i>Target Organ/System</i>
Acetone	Liver Effects (increased weight), Kidney Toxicity
Ethylbenzene	Kidney, Fetal Toxicity, Liver
2-Butanone (MEK)	Fetal Toxicity
4-Methyl-2-Pentanone (MIK)	Not Available
Trichloroethene	Carcinogen
Arsenic	Skin/Vascular Effects
Barium	Kidney (increased weight)
Cadmium	Kidney Effects
Lead	Developmental Effects
Chromium VI	Nasal/Respiratory Effects
TPH-ORO	Kidney, Liver Toxicity
Acenaphthene	Liver Toxicity
Benzo(a)anthracene	Carcinogen
Benzo(a)pyrene	Carcinogen
Benzo(b)fluoranthene	Carcinogen
Benzo(k)fluoranthene	Carcinogen
Indeno(1,2,3-cd)pyrene	Carcinogen

LIST OF TARGET ORGANS & AFFECTING COMPOUNDS

<i>Target Organ/System</i>	<i>Compound</i>
Kidney	Acetone, Ethylbenzene, Barium, Cadmium, TPH-ORO
Liver	Acetone, Ethylbenzene, Acenaphthene
Fetal Toxicity	Ethylbenzene, 2-Butanone (MEK)
Skin/Vascular	Arsenic
Nasal Respiratory	Chromium VI
Carcinogen	Trichloroethene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene

Notes:

Toxicity information taken from LDEQ Table "Target Organ(s)/Critical Effect(s) for the Assessment of Additivity for Noncarcinogenic Health Effects" and EPA Integrated Risk Information System (IRIS).

TABLE 6A
 COMPARISON OF LIMITING RS AND EXPOSURE/SOURCE/COMPLIANCE CONCENTRATIONS - SOIL
 CLOSURE OF THINNER TANK PAD AND DRUM WASTE MANAGEMENT PAD
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA

Constituents of Concern	Surface Soil and Potential Surface Soil Limiting RS (mg/kg)	Soil Exposure/Source Concentrations (mg/kg)			Exceeds RS?
		AOI-1 (0-3 feet bgs)	AOI-2 (3-15 feet bgs)	AOI-4 (0-3 feet bgs)	
Acetone	7,000	18.20	53.20	N/A	No
Benzene	3.2	0.0791	N/A	N/A	No
Ethylbenzene	230	99.30	N/A	N/A	No
2-Butanone (MEK)	22,000	45.90	60.30	N/A	No
4-Methyl-1-2-Pentanone (MIK)	2,400	29.00	6.29	N/A	No
Trichloroethene	14	N/A	N/A	0.0942	No

Notes:
 mg/kg = Milligrams per kilogram which is equivalent to parts per million (ppm).
 bgs = Below ground surface.
 N/A = Not Applicable.
 For AOIs where the depth of impact is greater than 3 feet bgs, but less than 15 feet bgs, the lowest of the Soil_i, Soil_{GW3NDW}, and Soil_{SAT} is used as the Limiting MO-1 RS to 15 feet bgs (See Table 4A).

TABLE 6B
 COMPARISON OF LIMITING RS AND EXPOSURE/SOURCE/COMPLIANCE CONCENTRATIONS - GROUNDWATER
 CLOSURE OF THINNER TANK PAD AND DRUM WASTE MANAGEMENT PAD
 GENERAL MOTORS - SHREVEPORT TRUCK ASSEMBLY PLANT
 7600 GENERAL MOTORS BOULEVARD
 SHREVEPORT, LOUISIANA

Constituents of Concern	Groundwater Limiting RS (mg/L)	Groundwater Exposure/Compliance Concentrations (mg/L)			Exceeds RS?
		AOI-3	AOI-5		
Arsenic	100	0.089	0.08		No
Barium	19,800	N/A	2.81		No
Cadmium	20	N/A	0.012		No
Lead	22	N/A	0.179		No
Benzo(a)anthracene	0.0094	N/A	<0.001 ⁽¹⁾		No
Benzo(a)pyrene	0.0016	N/A	<0.0012 ⁽¹⁾		No
Benzo(b)fluoranthene	0.0015	N/A	<0.0012 ⁽¹⁾		No
Benzo(k)fluoranthene	0.0008	N/A	<0.0016 ⁽¹⁾		No ⁽²⁾
Indeno(1,2,3-cd)pyrene	0.0004	N/A	<0.002 ⁽¹⁾		No ⁽²⁾
TPH-ORO	10,000	N/A	0.17		No

Notes:
 mg/L = Milligrams per liter which is equivalent to parts per million (ppm).
 N/A = Not Applicable.
⁽¹⁾ At the request of LDEQ Toxicology staff, since there were no PAHs detected, one-half the method detection limit was utilized as the exposure/compliance concentration for this compound.
⁽²⁾ The detection limit exceeded the Limiting RS. However, according to LDEQ since the extent of contamination is well defined and there were no PAHs detected, this constituent can be removed from further consideration.