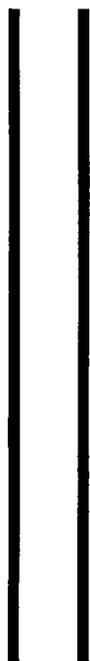


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CLOSURE REPORT LUBE OIL TANKS, FUELING PITS, AND FAST FUEL LINES LOCATED  
AT SITE 20B BARIN NAS WHITING FIELD FL  
5/1/1997  
ABB ENVIRONMENTAL



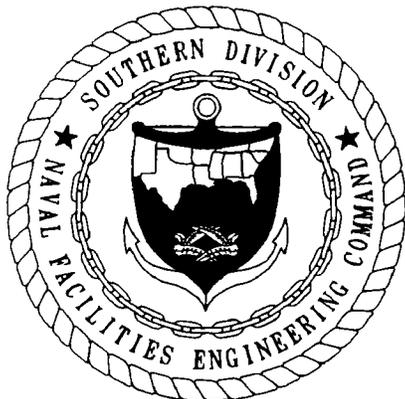
**CLOSURE REPORT**

**LUBE OIL TANKS, FUELING PITS, AND FAST FUEL LINES  
LOCATED AT SITE 20B,  
ABANDONED UNDERGROUND STORAGE TANKS AND  
FUEL PIT AREA**

**OUTLYING LANDING FIELD BARIN  
FOLEY, ALABAMA**

**UNIT IDENTIFICATION CODE: N60508  
CONTRACT NO. N62467-89-D-0317/031**

**MAY 1997**



**SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORTH CHARLESTON, SOUTH CAROLINA  
29419-9010**



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**CLOSURE REPORT**

**LUBE OIL TANKS, FUELING PITS, AND FAST FUEL LINES  
LOCATED AT SITE 20B,  
ABANDONED UNDERGROUND STORAGE TANKS AND  
FUEL PIT AREA**

**OUTLYING LANDING FIELD BARIN  
FOLEY, ALABAMA**

**Unit Identification Code: N60508**

**Contract No.: N62467-89-D-0317/031**

**Prepared by:**

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**Linda Martin, Code 1859, Engineer-in-Charge**

**May 1997**







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Outlying Landing Field Barin  
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Lube Oil Tanks, Fueling Pits, and Fast Fuel Lines at Site 20B  
Outlying Landing Field Barin  
Foley, Alabama

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## GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ADEM	Alabama Department of Environmental Management
ASTM	American Society for Testing and Materials
AVGAS	aviation gasoline
BFI	Browning Ferris Industries
bls	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CCR	Construction Completion Report
FID	flame ionization detector
IWS	Industrial Waste Services, Inc.
LEL	lower explosive limit
mg/kg	milligrams per kilogram
MK	Morrison Knudsen
NAS	Naval Air Station
OLF	Outlying Landing Field
OVA	organic vapor analyzer
PA	preliminary assessment
PAH	polynuclear aromatic hydrocarbon
ppm	parts per million
psi	pounds per square inch
TCLP	toxicity characteristic leachate procedure
TPH	total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
WWII	World War II
yd <sup>3</sup>	cubic yard



## 1.0 INTRODUCTION

The objective of this report is to document recent remedial activities performed at Site 20B, Abandoned Underground Storage Tanks and Fuel Pit Area, Outlying Landing Field (OLF) Barin, Foley, Alabama. The report is intended to meet the Navy's requirements for documenting remedial actions as well as the Alabama Department of Environmental Management's (ADEM's) requirements for underground storage tank (UST) closure reporting. The abandoned USTs at Site 20B were removed in 1992. The focus of this work was at the Fuel Pit Area and the fast fuel lines connecting the abandoned USTs to the Fuel Pit Area. Remedial activities consisted of the following:

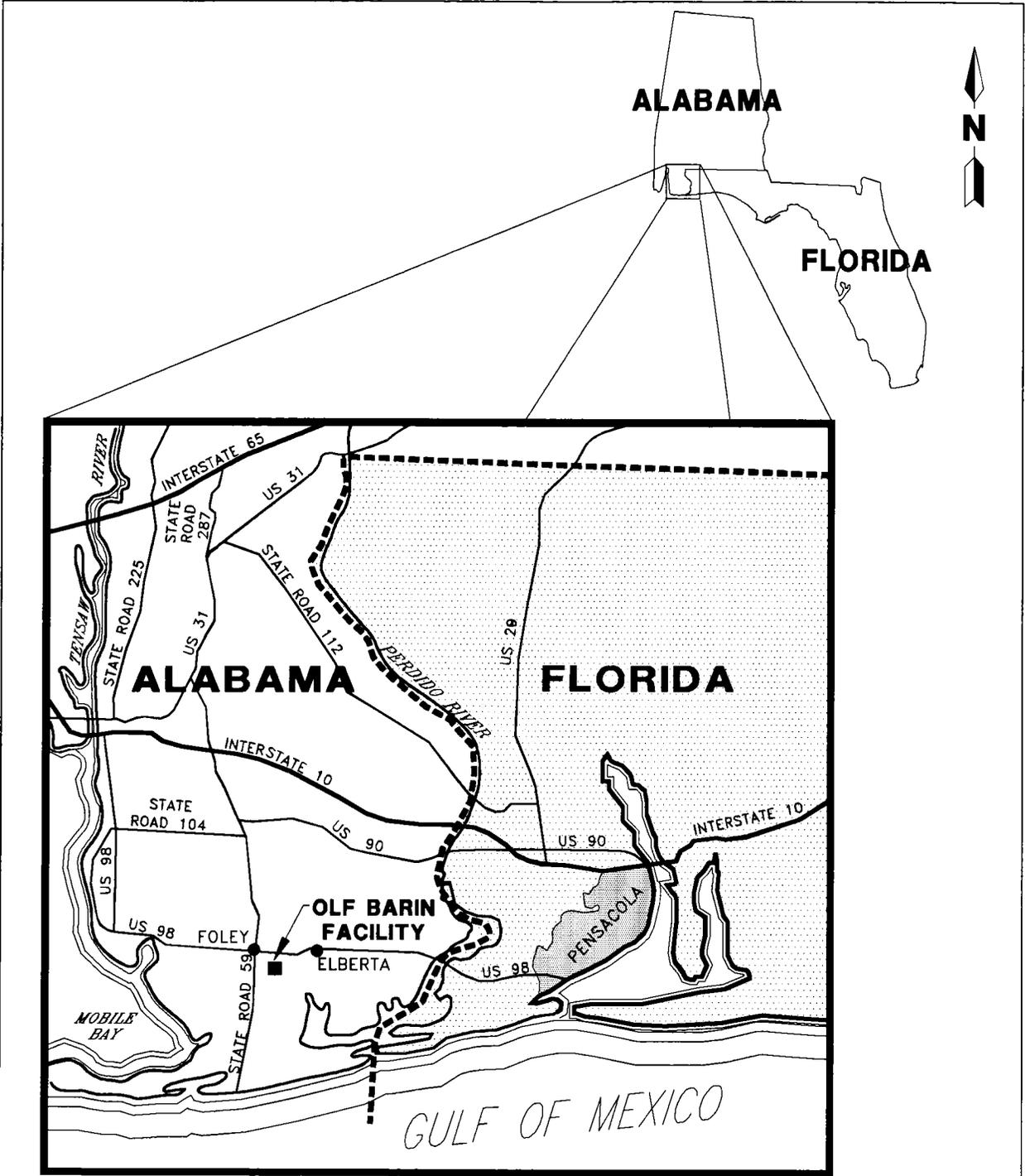
- flushing, removing, and disposing of residual petroleum products in approximately 1.7 miles of 6-inch and 4-inch steel pipe (fast fuel lines)
- flushing, removing, and disposing of residual petroleum products in 30 500-gallon steel underground storage tanks (lube oil tanks)
- closing the lube oil tanks in place by filling with concrete
- flushing, removing, and disposing of residual petroleum products in 60 below grade steel fueling pits
- closing the fueling pits by backfilling with clean fill

The contractor, Morrison Knudsen (MK), was already at OLF Barin completing remedial actions at Sites 19B and 24B. A complete ADEM UST Closure Site Assessment Report is included as Appendix A.

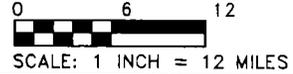
1.1 FACILITY AND SITE DESCRIPTION. OLF Barin is located 40 miles southeast of Mobile, Alabama, in Baldwin County, Alabama. It is approximately 2 miles east of Foley, Alabama, and 35 miles west of Pensacola, Florida (Figure 1-1). OLF Barin currently consists of approximately 490 acres, reduced from a maximum size of 1,000 acres. The major part of the facility is currently used for a single air field with two active aircraft landing strips. Figure 1-2 presents the current installation layout and location of recent remedial activities.

OLF Barin, under the command of Naval Air Station (NAS) Whiting Field in Milton, Florida, is used as an outlying landing strip for airplane pilots training at NAS Whiting Field. A single onsite building is used for base operations and training. Several smaller buildings are used for equipment storage. The only current activity at OLF Barin is a small contingent of firefighters stationed at the facility to respond to aircraft accidents. The remaining undeveloped acreage consists primarily of maintained recreational areas, open grasslands, and pine tree plantations.

1.2 SITE HISTORY. The Abandoned Storage Tank and Fuel Pit Area is approximately 19.8 acres in area. It is composed of an abandoned UST area (1 acre), 60 abandoned fuel pits (18.8 acres), and approximately 1.7 miles of underground fuel lines. The locations of the fuel pits and underground fuel lines are shown on



..... State boundaries



**FIGURE 1-1  
FACILITY LOCATION MAP**



**CLOSURE REPORT  
SITE 20B**

**OUTLYING LANDING FIELD BARIN  
FOLEY, ALABAMA**

H:\BAR\LOCATION AND T:\8541-16\LOCATION\KHM\5-14-97

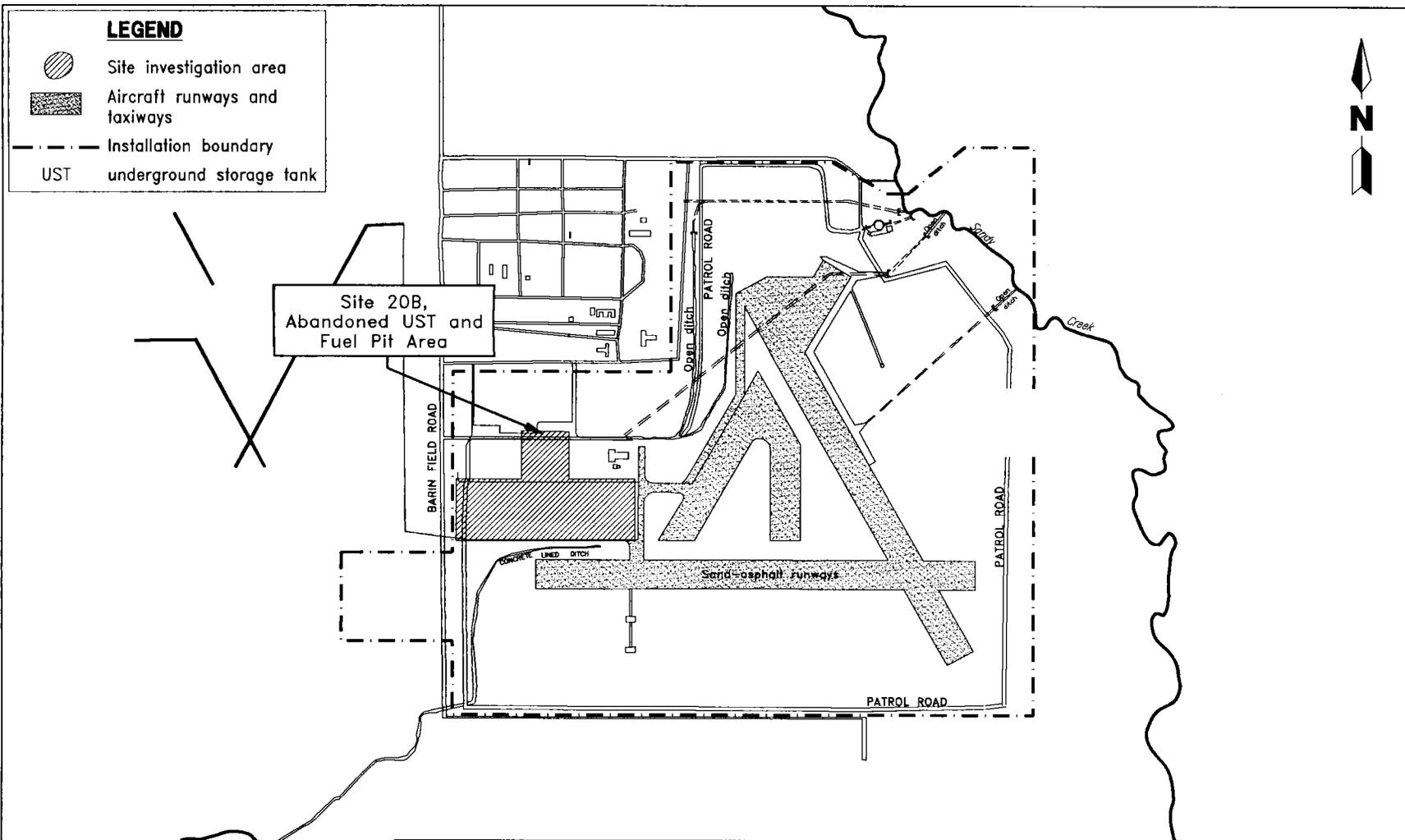


Figure 1-3. The site was used for aviation gasoline (AVGAS) storage during World War II (WWII) and the Korean Conflict. The fuel system consisted of an aquafarm-type system installed in the 1940s and operated during the WWII period until 1947 and again in the 1950s until the installation was placed on inactive status in 1959. In an aquafarm system, AVGAS is stored in underground tanks and dispensed by displacement with water. To pump fuel, water flows into the bottom of the tanks, displacing fuel, which flows out the top. When the tanks at Site 20B were refilled with AVGAS, water stored in the tanks was discharged to the stormwater sewer system along Guadalcanal Road. Unknown quantities of water were discharged via this route.

Nine underground tanks were used during facility operations as storage for AVGAS during WWII and later during the 1950s. There is no information available on the procedures followed to abandon these facilities when the field was deactivated in the 1959. In the mid-1980s, eight of the underground tanks (25,000-gallon capacity each) were used as water-storage reservoirs for fire protection. The remaining 15,000-gallon tank was left empty. During the tank reactivation for water storage in the mid-1980s and during the preliminary assessment (PA) visit, an oily sheen and residue were noted on the water in these tanks. According to the PA report, a 2,000-gallon aviation fuel spill occurred in 1954 when vandals opened a release valve on one of the 25,000-gallon fuel tanks. Most of the fuel reportedly migrated to an unlined drainage ditch along the north side of Guadalcanal Road. The eight 25,000-gallon USTs and one 15,000-gallon UST were removed in December 1991 and January 1992.

The organization of the remainder of this closure report is described below.

- Chronology of Events, summarizes the major events associated with this remedial action.
- Performance Standards and Construction Quality Control, describes the action levels and quality control used during remedial activities.
- Construction Activities, presents a detailed description of remedial activities.
- Final Inspection, describes the final inspection.
- Costs, provides an estimate of construction costs.
- Certification, certifies that the work was performed as described in this report.

Figure 1-3 Location of Fuel Pits and Lines at Site 20B

11 x 17



## 2.0 CHRONOLOGY OF EVENTS

This section provides a summary of the major events associated with this remedial action.

- Nov 14, 1996 Planning meeting held at OLF Barin to discuss scope of remedial action and assign responsibilities. Meeting attended by representatives from Southern Division, Naval Facilities Engineering Command, ADEM, MK, and ABB Environmental Services, Inc. (ABB-ES).
- Dec 30, 1996 MK and their subcontractor, Kemron Construction, began remedial activities.
- Jan, 1997 Draft Work Plan Addendum for Lube Oil Tanks and Fast Fuel Line submitted by MK (MK, 1997a). Workplan detailed remedial activities to be performed. Included health and safety plan, quality assurance plan, waste management plan, environmental protection plan, specifications, and drawings.
- Jan 8-13, 1997 Using the TerraProbe<sup>SM</sup>, ABB-ES collected five groundwater samples and 68 soil samples to characterize site conditions.
- Jan 15, 23, and 30 1997 Kemron collected samples of stockpiled soil.
- Feb 6, 1997 Kemron collected samples of liquids stored in frac tanks.
- Feb 20-21, 1997 Nonhazardous liquid wastes, 26,600 gallons total, were transported and disposed of at Industrial Waste Services, Inc., Mobile, Alabama.
- Feb 26-27, 1997 Nonhazardous soil, 169.07 tons total, were transported and disposed of at Browning Ferris Industries's (BFI's) Timberland Landfill, Brewton, Alabama.
- Feb 27, 1997 All remedial activities completed by MK and subcontractors.
- Mar 12, 1997 Final inspection conducted by ABB-ES.



### 3.0 PERFORMANCE STANDARDS AND CONSTRUCTION QUALITY CONTROL

During this remedial action, the USTs, fueling pits, and associated pipelines were closed in-place. These items and the following media were addressed during this remedial action: soil, groundwater, decontamination liquids, and construction debris.

Soil. It was agreed at the November 1996 meeting that the 30 lube oil tanks, the 60 fueling pits, and the associated fast fuel lines would be closed in-place. Meeting minutes and followup documentation are presented in Appendix B. ADEM regulations for tank closure without removal require soil samples to be collected from just outside the tank perimeter using soil borings. At least one sample is required from each side of the tank. Within each boring a sample is required at a depth corresponding to the lower one-third of the tank diameter and at a depth approximately 5 feet below the base of the tank. For piping, one sample per 10 lineal feet is required at a depth of 1 foot below the base of the piping.

Because of the number of tanks, length of fuel line, and the elapsed time since they were last used (1950s) it was agreed at the November 1996 meeting that an abbreviated sampling program designed to be representative of site conditions would be implemented. At each of the 30 lube oil tank locations one soil sample was collected from the bottom third of the tank diameter and one soil sample was collected approximately 5 feet below the bottom of the tank. Samples were collected on the east side of the tanks using direct push technology (TerraProbe<sup>SM</sup>). Soil sample locations are shown on Figure 3-1. Figure 3-2 shows typical plan and profile views of a lube oil tank and fueling pit.

Table 3-1 lists soil sample identifications and depths. Soil samples were analyzed for polynuclear aromatic hydrocarbons (PAHs) (U.S. Environmental Protection Agency [USEPA] Method 8310) and total petroleum hydrocarbons (TPH) (USEPA Method 418.1). A summary of detections is given in Table 3-2. Complete analytical results are presented in Appendix C.

The bottom of the USTs are located approximately 6 feet below land surface (bls). The water table was located at 12 feet bls as determined by the TerraProbe<sup>SM</sup>. Since the water table was greater than 5 feet below the bottom of the tanks, a soil action level of 100 milligrams per kilogram (mg/kg) TPH was used for this work.

ABB-ES collected headspace readings using an organic vapor analyzer (OVA) during soil sample collection activities. The majority of the readings were 0 parts per million (ppm) with the highest reading being 1 ppm.

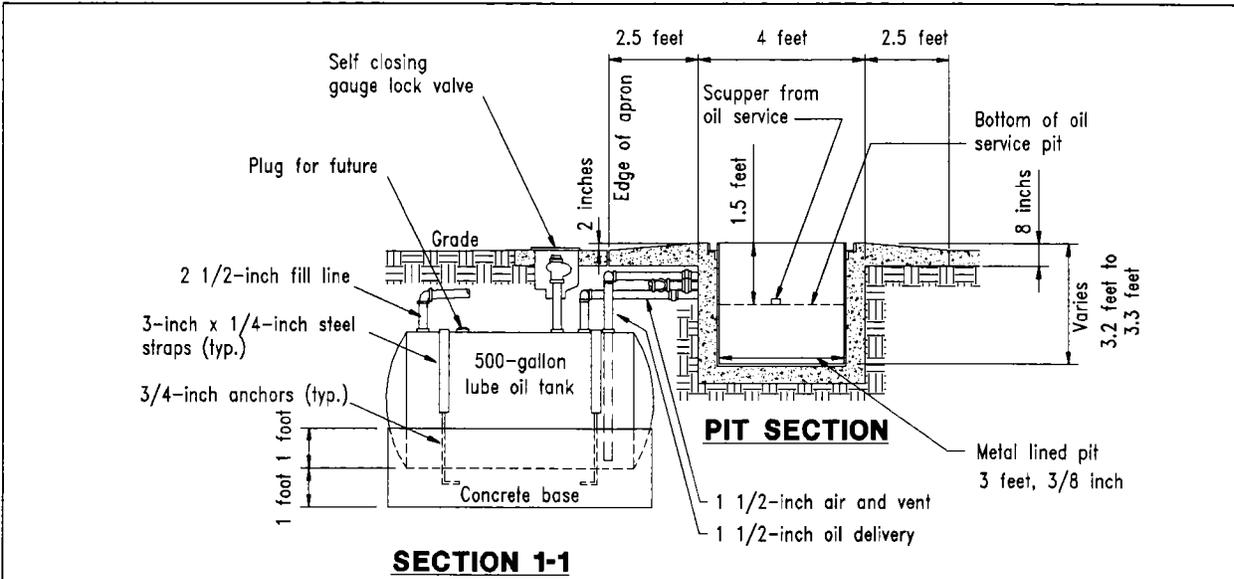
Soil that was excavated by Kemron to uncover the tanks and fueling pits was stockpiled into nine stockpiles of approximately 40 cubic yards (yd<sup>3</sup>) each. Kemron collected soil samples from stockpiled soil and Core Laboratories analyzed them for TPH (EPA 418.1). Three of nine soil stockpiles had TPH concentrations below 100 mg/kg and were used as backfill. Kemron collected a composite sample from the other six stockpiles and analyzed for TPH, full suite TCLP, reactivity, ignitability, and corrosivity. These soils were disposed of at BFI's Timberland Landfill. Analytical results from samples collected by Kemron are reported in the Draft Construction Completion Report (CCR) prepared by MK (MK, 1997b).



Figure 3-1 Soil and Groundwater Sample Locations

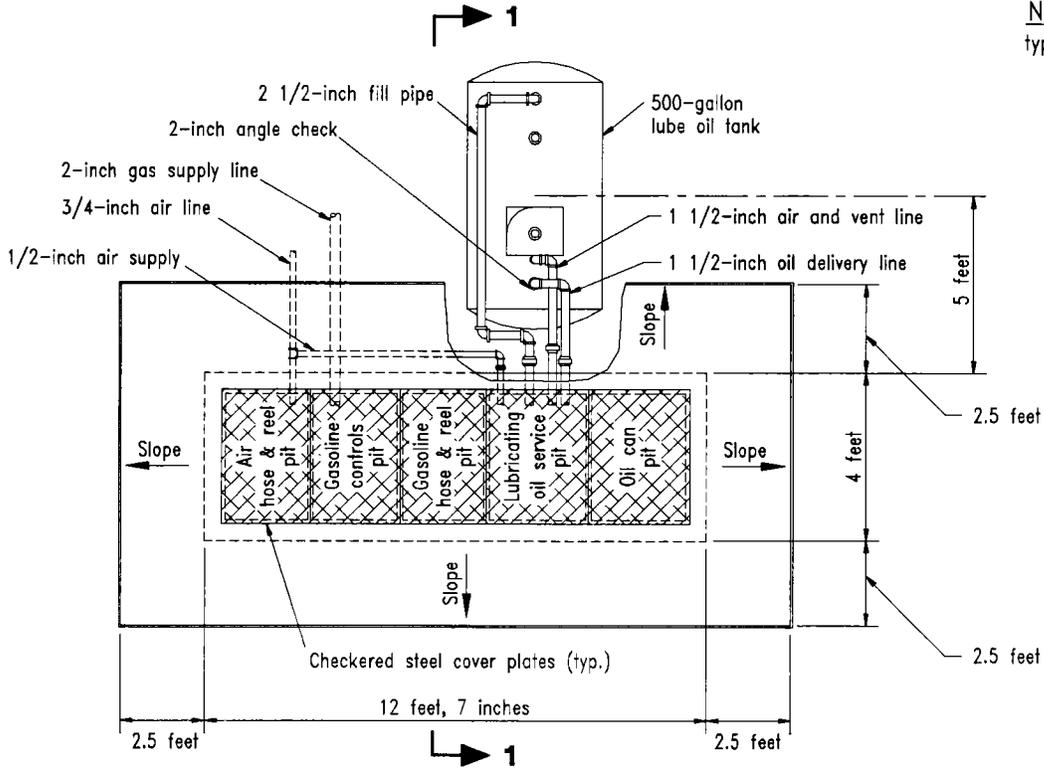






**SECTION 1-1**

**NOTES:**  
typ. = Typical



**PLAN OF FUELING PIT AND LUBE OIL TANK**

Not to scale

**FIGURE 3-2  
TYPICAL FUELING PIT AND LUBE OIL TANK**



**CLOSURE REPORT  
SITE 20B**

**OUTLYING LANDING FIELD BARIN  
FOLEY, ALABAMA**

H:\BAR\8541F001 AND T:\8541-16\8541F001\KHM-DEL\5-20-97

**Table 3-1  
Site 20B Soil Sampling Log**

Closure Report  
Lube Oil Tanks, Fueling Pits, and Fast Fuel Lines at Site 20B  
Outlying Landing Field Barin  
Foley, Alabama

Tank No.	Sample ID	Depth (ft bls)	Date/Time
2	20S00201	4 to 6	1/9/97 0915
	20S00202	9 to 11	1/9/97 0925
4	20S00401	7 to 9	1/9/97 1005
	20S00402	12 to 14	1/9/97 1017
6	20S00601	7 to 9	1/9/97 1050
	20S00602	12 to 14	1/9/97 1104
8	20S00801	5 to 7	1/9/97 1137
	20S00802	10 to 12	1/9/97 1146
10	20S01001	6 to 8	1/9/97 1210
	20S01002	11 to 13	1/9/97 1222
12	20S01201	7 to 9	1/9/97 1329
	20S01202	12 to 14	1/9/97 1338
14	20S01401	5 to 7	1/9/97 1355
	20S01402	10 to 14	1/9/97 1405
16	20S01601	6 to 8	1/9/97 1502
	20S01602	11 to 13	1/9/97 1510
18	20S01801	6 to 8	1/9/97 1430
	20S01802	11 to 13	1/9/97 1439
<sup>1</sup> 20	20S02001	6 to 8	1/9/97 1609
	20S02001D	6 to 8	1/9/97 1609
	20S02002	11 to 13	1/9/97 1627
	20S02002D	11 to 13	1/9/97 1627
<sup>2</sup> 22	NOT TAKEN		
24	20S02401	5 to 7	1/9/97 1652
	20S02402	10 to 12	1/9/97 1705
26	20S02601	6 to 8	1/9/97 1730
	20S02602	11 to 13	1/9/97 1742
28	20S02801	6 to 8	1/10/97 0723
	20S02802	11 to 13	1/10/97 0737
30	20S03001	6 to 8	1/10/97 0805
	20S03002	11 to 13	1/10/97 0823
32	20S03201	5 to 7	1/10/97 0842
	20S03202	10 to 12	1/10/97 0910
34	20S03401	5 to 7	1/10/97 0930
	20S03402	10 to 12	1/10/97 0940
36	20S03601	6 to 8	1/10/97 1028
	20S03602	11 to 13	1/10/97 1036
38	20S03801	5 to 7	1/10/97 1105
	20S03802	10 to 12	1/10/97 1115
40	20S04001	5 to 7	1/10/97 1134
	20S04002	10 to 12	1/10/97 1144
42	20S04201	5 to 7	1/10/97 1159
	20S04202	10 to 12	1/10/97 1210

See notes at end of table.

**Table 3-1 (Continued)  
Site 20B Soil Sampling Log**

Closure Report  
Lube Oil Tanks, Fueling Pits, and Fast Fuel Lines at Site 20B  
Outlying Landing Field Barin  
Foley, Alabama

Tank No.	Sample ID	Depth (ft bls)	Date/Time
44	20S04401	5 to 7	1/10/97 1220
	20S04402	10 to 12	1/10/97 1231
46	22S04601	5 to 7	1/10/97 1255
	22S04602	10 to 12	1/10/97 1305
48	22S04801	5 to 7	1/10/97 1339
	22S04802	10 to 12	1/10/97 1336
50	20S05001	5-7	1/13/97 0830
	20S05002	10-12	1/13/97 0840
52	20S052001	5-7	1/13/97 0855
	20S052002	10-12	1/13/97 0904
54	20S054001	5-7	1/13/97 0919
	20S054002	10-12	1/13/97 0924
<sup>3</sup> 56	20S056001	5-7	1/13/97 0941
	20S056002	9-11*	1/13/97 0949
58	20S0058001	5-7	1/13/97 1003
	20S0058002	9-11	1/13/97 1010
60	20S006001	5-7	1/13/97 1028
	20S006002	9-11	1/13/97 1034

<sup>1</sup> Duplicate/ms/msd.

<sup>2</sup> Due to standing surface water, soil samples not collected.

<sup>3</sup> The 10-12' interval at tank 56 was wet, may have been the result of standing water percolating down or it may have been depth of water at that location.

**Notes:** All samples analyzed for TPH (USEPA Method 418.1) and PAHs(USEPA Method 8310).  
All samples collected by ABB-ES using direct push technology.  
All borings grouted to surface with a mixture of Portland Type I cement and water.  
Sample containers: One 8 ounce glass jar used for both parameters per sample.

ID = identifier.

ft bls = feet below land surface.

MS/MSD = matrix spike and matrix spike duplicate.

TPH = total petroleum hydrocarbons.

USEPA = U.S. Environmental Protection Agency.

PAH = polynuclear aromatic hydrocarbons.

ABB-ES = ABB Environmental Services, Inc.

**Table 3-2  
20B Soil Sample Results**

Closure Report  
Lube Oil Tanks, Fueling Pits, and Fast Fuel Lines at Site 20B  
Outlying Landing Field Barin  
Foley, Alabama

Analyte	Sample ID Collect Date Depth bls	20S00401 09 Jan 97 7-9	20S00402 09 Jan 97 12-14	20S02001 09 Jan 97 6-8	20S05802 09 Jan 97 9-11	USEPA Region III Risk-Based Concentration
<b><u>Polynuclear Aromatic Hydrocarbons (µg/kg)</u></b>						
acenaphthylene				87		4,700,000
benzo (b) fluoranthene	4					880
benzo (g,h,i) perylene			22			--
indeno (1,2,3-cd) pyrene					9.5	8880
<b><u>Total Petroleum Hydrocarbons (mg/kg)</u></b>						
		59	106			--
Notes: ID = identification. bls = below land surface. USEPA = U.S. Environmental Protection Agency. µg/kg = micrograms per kilogram. -- = no value reported. mg/kg = milligrams per kilogram.						

Groundwater. ABB-ES collected five groundwater samples using the TerraProbe<sup>SM</sup>. Screen intervals for sample collection ranged from 12 to 18 feet bls. The groundwater sampling log is presented in Table 3-3.

Groundwater sample locations are shown on Figure 3-1. Samples were analyzed for PAHs (USEPA Method 8310) and benzene, toluene, ethylbenzene, and xylenes (USEPA Method 602). Total xylenes were present in sample 20GW056TP and its duplicate at an average concentration of 1.9 micrograms per liter. All other results were nondetect. Complete analytical results are presented in Appendix D.

USTs. The soil on top of each tank was excavated and residual oily liquids were pumped out of each tank. The tanks were then pressure washed and pumped out again. Concrete was then pumped into each tank until full.

Fueling Pits. The fueling pits were exposed by opening the steel covers and excavating soil from those pits that had been previously filled with soil. Valves were checked for integrity and closed. The pits were pressure washed, rinsed clean, and pumped out. Clean fill was placed into the pits and the steel covers closed.

Fast Fuel Lines. The fast fuel lines were air tested to check for leaks. Residual liquids were removed and the lines were flushed with a cleaning solution followed by water. The end of each line was then either valved closed or grouted closed.

Liquid. Initial pumping out of tanks, cleaning, and decontamination operations generated 26,600 gallons of liquids. The liquids were temporarily stored on site in frac tanks. The liquid was sampled for volatile organic compounds (VOCs), metals, flashpoint, and pH. Compounds detected were petroleum related. The liquids were disposed of as nonhazardous waste at Industrial Waste Services, Inc. (IWS), in Mobile, Alabama. Analytical results are included in the CCR.

Construction Debris. Asphalt and concrete was removed in places to gain access to the tanks and fuel lines. This material was crushed and used as road base material by Gene's Dozer Service, Lillian, Alabama.

**Table 3-3  
Site 20B Groundwater Sampling Log**

Closure Report  
Lube Oil Tanks, Fueling Pits, and Fast Fuel Lines at Site 20B  
Outlying Landing Field Barin  
Foley, Alabama

Tank No.	Sample ID	Depth (ft bls)	Date/Time
28	20GW028TP	12 to 16	1/08/97 1043
24	20GW024TP	15 to 17	1/08/97 1405
37	20GW037TP	13 to 16	1/08/97 1500
46	20GW046TP	12 to 14	1/08/97 1555
56	20GW056TP	14 to 18	1/08/97 1650
DUPLICATE	20GW056D	same	

Notes: All samples analyzed for BTEX (USEPA Method 602) and PAHs(USEPA Method 8310).  
All samples collected by ABB-ES using direct push technology.  
All borings grouted to surface with a mixture of Portland Type I cement and water.  
Sample containers: three 40mℓ VOA vials preserved with HCl for 602 samples, one 2.5 liter amber glass jar for 8310 samples.

ID = identifier.  
ft bls = feet below land surface.  
BTEX = benzene, toluene, ethylbenzene, and xylenes.  
USEPA = U.S. Environmental Protection Agency.  
PAH = polynuclear aromatic hydrocarbons.  
ABB-ES = ABB Environmental Services, Inc.  
mℓ = milliliter.  
VOA = volatile organic aromatic.  
HCl = hydrochloric acid.

#### 4.0 CONSTRUCTION ACTIVITIES

Remedial activities at OLF Barin included the closure of 30 USTs, 60 fueling pits, and associated piping. Table 4-1 lists the major participants in the remedial action.

ABB-ES was tasked to collect soil and groundwater samples prior to closure and restoration work. MK and their subcontractors performed closure activities.

UST Closure. The tops of the 30 lube oil tanks were initially uncovered. Soil was staged on visqueen. Residual liquid was removed from the tanks using a 3,000-gallon vacuum truck. The tanks were then pressure cleaned using a biodegradable detergent solution, Simple Green™. Rinse water was pumped from the tanks and transported to a 21,000-gallon frac tank. The lube oil tanks were then pumped full of concrete.

Fueling Pit Closure. The fueling pits were exposed by opening the steel covers and excavating soil from those pits that had been previously filled with soil. Soil was staged on visqueen adjacent to each pit. Valves were checked for integrity and closed. The valve in pit #1 was not operable and was replaced with a 2-inch pipe cap. The pits were pressure washed, rinsed clean, and pumped out. After cleaning, the pits were checked to insure a LEL of less than 10 percent, and oxygen level above 19.5 percent, and an OVA concentration less than 10 ppm. Clean fill was placed into the pits and compacted using the excavator buckets. The steel fueling pit covers were then closed.

Fast Fuel Lines. The location of the fast fuel lines was determined by Byers Engineering using a radio signal system and metal detector. Potential breaks in the line were identified and investigated by excavation. All line breaks were capped or used for the air test. The fuel lines were then air tested to check for leaks. Approximately 10 pounds per square inch (psi) of compressed air was pumped into the fast fuel line at header locations. Air pressure was measured over a 2-hour period on all sections of line tested. Pressure held during the test. Residual liquids were then removed and placed into the frac tanks. The lines were filled with a solution of water and Simple Green™ and allowed to soak overnight. The lines were then drained at the end of each fueling pit row (see Figure 4-1). The lines were then rinsed with water. All water was transported to the frac tanks. Over 9,100 linear feet of fuel lines were cleaned. The end of each line was then either valved closed or grouted closed.

Liquid Disposal. Liquids generated during this work included residual oily liquid from tanks and piping, cleaning solutions, rinse water, and decontamination water. All liquids were temporarily stored on site in 21,000-gallon frac tanks. Three samples were collected from the frac tanks and analyzed for parameters required by the disposal facility, IWS, Mobile, Alabama. Samples were analyzed for VOCs, Resource Conservation and Recovery Act metals, pH, and flashpoint. Results are presented in the CCR. Liquids were determined to be nonhazardous and transported and disposed of at IWS. A total of 26,600 gallons were disposed of properly.

**Table 4-1  
Remedial Action Participants**

Closure Report  
Lube Oil Tanks, Fueling Pits, and Fast Fuel Lines at Site 20B  
Outlying Landing Field Barin  
Foley, Alabama

Client	Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) North Charleston, South Carolina 29419-9010 Contact: Jeff Adams - SOUTHNAVFACENGCOM Engineer-in-Charge
Facility	NAS Whiting Field Public Works Department Contact: Jim Holland
RAC Contractor	Morrison Knudsen Corporation 2420 Mall Drive Corporate Square 1, Suite 211 North Charleston, South Carolina 29406 Contact: Dan Fuller - Project Manager Elise Allen, P.E. - Environmental Manager
Subcontractor	Kemron Construction 2987 Clairmont Road Atlanta, Georgia 30329 Contact: Allen Youngblade
CLEAN Contractor	ABB Environmental Services, Inc. 2590 Executive Center Circle, East Tallahassee, Florida 32301 Telephone: (904) 656-1293; Facsimile: (904) 877-0742 Contact: Kathy Hodak - Project Manager Robert C. Lunardini, Jr., P.E. - Engineer-of-Record
Analytical Laboratories	CH2M Hill Analytical Services (soil and groundwater samples) 5090 Caterpillar Road Redding, California 96003-1412 Telephone: (916) 244-5227; Facsimile: (916) 244-4109 Contact: Brian Geers  Core Laboratories, Inc. (soil and frac tank contents) 10703 East Bethany Drive Aurora, Colorado 80014 Telephone: (303) 751-1780; Facsimile: (303) 751-1784 Contact: Timothy Kellogg  Pope Engineering & Testing Laboratory, Inc. (soil density testing) 2463 Eslave Creek Parkway Mobile, Alabama 36606 Telephone: (334) 471-3458
Transporters	Liquid - McKenzie Tank Lines Soil - Gene's Dozer Service P.O. Box 509 Lillian, Alabama 36549 Telephone: (334) 962-2574

See notes at end of table.

**Table 4-1 (Continued)  
Remedial Action Participants**

Closure Report  
Lube Oil Tanks, Fueling Pits, and Fast Fuel Lines at Site 20B  
Outlying Landing Field Barin  
Foley, Alabama

Disposal Facilities	Liquid - IWS, Inc. 1980 Avenue A Mobile, Alabama 36615 Telephone: (334) 694-7500  Soil - BFI Timberland Landfill Highway 41 and I-65 Brewton, Alabama 36426 Telephone: (205) 867-8921
Restoration Contractors	Glen Owens Landscaping  Rainbow Pools (concrete repair)
Notes: NAS = Naval Air Station. RAC = Response Action Contract. CLEAN = Comprehensive Long-Term Environmental Action, Navy. IWS = Industrial Waste Services. BFI = Browning Ferris Industries.	



7  
Kupuri  
4-1



Soil Disposal. Soil was excavated and stockpiled in different areas of the site. Nine composite soil samples were collected by Kemron and analyzed for TPH by Core Laboratories. Three of the samples had concentrations less than 100 mg/kg TPH. Soil from these stockpiles was used for backfill. One additional composite sample was collected from the stockpiles greater than 100 mg/kg TPH and analyzed for full suite TCLP, ignitability, reactivity, corrosivity, and TPH. This soil was classified as nonhazardous. Disposal approval was received from ADEM. The soil was transported to and disposed of at BFI's Timberland Landfill, Brewton, Alabama. A total of 169.07 tons were disposed of properly.

Construction Debris Disposal. Asphalt and concrete were removed in places to gain access to the tanks and fuel lines. This material was crushed and used as road base material by Gene's Dozer Service, Lillian, Alabama.

Site Restoration. Excavated areas were backfilled with excavated soil containing less than 100 mg/kg TPH and imported clean fill. The imported soil was sampled and determined to contain less than 100 mg/kg TPH. Fill material was placed in 2-foot lifts and compacted with an excavator bucket. Backfill was compacted to 85 percent of maximum dry density in unimproved areas, 90 percent in areas adjacent to structures, and 95 percent in areas where roads or structures were constructed. Density was verified using a nuclear densimeter (American Society for Testing and Materials [ASTM] D2922 and ASTM D3017).

Six inches of topsoil were placed over backfill material to bring excavations up to grade. The topsoil was tested for organic content, pH, and TPH. The topsoil did not meet the minimum organic content of 5 percent. The topsoil was amended with peat moss at a ratio of 1.4 yd<sup>3</sup> of peat moss per 80 yd<sup>3</sup> of topsoil. The topsoil was graded to prevent ponding and seeded with a mixture of rye and Bahaia, fertilized, rolled, and covered with hay.

Areas of pavement and curbing that were removed during remedial activities were replaced with 4,000 psi concrete mix.



## 5.0 FINAL INSPECTION

On March 12, 1997, Robert Lunardini, P.E., and Kathleen M. Hodak of ABB-ES conducted a final inspection of the work. They determined that all work had been performed satisfactorily. There were no punch list items.



## 6.0 COSTS

Construction cost for this work was \$237,000.



## 7.0 CERTIFICATION

By signature, the signer certifies that the remedial activities conducted to close 30 500-gallon lube oil tanks, 60 fueling pits, and approximately 9,100 feet of 6- and 4-inch steel piping at Site 20B were completed as described in this report and in accordance with ADEM regulations as modified and agreed to at the November 14, 1996, planning meeting.

Robert C. Lunardini, Jr.  
Professional Engineer No. 21135  
Expires December 31, 1997



## REFERENCES

- Morrison Knudsen Corporation (MK). 1997a. *Draft Workplan Addendum for Lube Oil Tanks and Fast Fuel Line, Outlying Landing Field (OLF) Barin, Foley, Alabama*. Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina (January).
- MK. 1997b. *Draft Completion Report, Site 20B, Fast Fuel Line Remediation, OLF Barin, Foley, Alabama*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (April).



**APPENDIX A**

**ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
UNDERGROUND STORAGE TANK CLOSURE SITE ASSESSMENT REPORT**



## ADEM UST CLOSURE SITE ASSESSMENT REPORT

(Use a Separate form for a group of tanks in each tank pit)

FACILITY I.D. NO.: \_\_\_\_\_ DATE OF THIS REPORT: 5/20/97

INCIDENT NO. UST \_\_\_\_\_ UST OWNER: \_\_\_\_\_  
(If applicable)

FACILITY COUNTY: Baldwin ADDRESS: US Navy  
PO Box 190010  
North Charleston, SC 29419-9010

FACILITY NAME: 20B CONTACT NAME: Linda Martin  
LOCATION: OLF Barin CONTACT PHONE #: (803) 820-5574

ADDRESS: Foley, AL

NAME OF CONTRACTOR USED TO CLOSE (REMOVE) TANK: Morrison Knudsen Corp.  
NAME OF CONSULTANT CONDUCTING ASSESSMENT: ABB Environmental Services, Inc  
NAME OF LABORATORY USED: QAL, Inc.

PRIOR TO BEGINNING CLOSURE, THE CONTRACTOR SHOULD BECOME FAMILIAR WITH ALL CLOSURE PROCEDURES IN AMERICAN PETROLEUM INSTITUTE (API) BULLETIN 1604, "REMOVAL AND DISPOSAL OF USED UNDERGROUND PETROLEUM STORAGE TANKS" AND API BULLETIN 2015 "CLEANING PETROLEUM STORAGE TANKS" THESE API BULLETINS ARE AVAILABLE FROM ADEM UPON REQUEST.

NUMBER OF TANKS CLOSED: 30  
NUMBER OF TANKS REMAINING AT SITE: 30  
CLOSURE DATE: Feb 1997

UNIQUE TANK #:	1 (typical of 30)				
TANK SIZE:	3.5' $\phi$ x 7'				
TANK CAPACITY:	500 gal				
TANK AGE:	40 yrs $\pm$				
DATE TANK LAST USED:	1950's				
SUBSTANCE STORED:	lube oil				
TYPE OF PRODUCT PIPING:	steel				
(Pressurized/Suction)	pressure				
FARM TANK:	<input type="checkbox"/>				
HEATING OIL TANK:	<input type="checkbox"/>				

COMPLETE THE FOLLOWING SECTIONS AS APPROPRIATE BASED ON THE TYPE OF CLOSURE CONDUCTED:

1. TANK CLOSURE BY REMOVAL: *N/A*

- a. Attach site maps showing the general location of the facility.
- b. Attach plan and sectional views of the excavation and include the following:
  - 1. All appropriate excavation dimensions.
  - 2. All soil sample locations and depths using an appropriate method of identification.
  - 3. Location of areas of visible contamination.
  - 4. Former location of tank(s), including depth, with tank Identification Number.

c. Is the groundwater more than 5 feet below the bottom of the excavation? YES      NO  
     

If no, provide the depth from the ground surface to the groundwater table. Feet: \_\_\_\_\_

Indicate method used to determine water table depth: YES      NO

- 1. Excavation extended 5 feet below base of pit:
- 2. Boring or monitoring well:
- 3. Topographic features (Method must be approved by ADEM prior to use):

d. Was there a notable odor found in the excavation? YES      NO  
     

If yes,

(1) The odor strength was (mild) (strong) (other) describe: \_\_\_\_\_

(2) The odor indicates what type of product: (gasoline)(diesel) (waste oil) (kerosene) (other) describe: \_\_\_\_\_

e. Was there water in the excavation? YES      NO  
     

If yes, how was it handled?

- 1. One time discharge to sanitary sewer with local approval? YES      NO
- 2. Hauled to facility capable of treating constituents of petroleum products in water?
- 3. Hauled to local POTW with local approval?
- 4. Treated on-site with NPDES approved discharge?
- 5. Other? Explain: \_\_\_\_\_

f. Was free product found in the excavation? YES      NO  
     

If yes,

1. How was free product handled? Describe: \_\_\_\_\_

2. What was the measured thickness of free product? \_\_\_\_\_

- g. Were visible holes noted in the tank(s)? YES  NO

If yes,  
Indicate which tanks(s) by the Unique Tank Number: \_\_\_\_\_

Also, describe the location(s) and provide general description as to the size and number of holes for above noted tanks, (Example: 3 square feet of pinholes or 3 inch diameter hole):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- h. Describe the soil type and thickness of all soil layers encountered in the excavation:
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- i. Was the excavation backfilled? YES  NO

If yes, provide the date of backfilling: \_\_\_\_\_

**DO NOT BACKFILL WITH MATERIAL THAT HAS OR POTENTIALLY HAS A TPH OF GREATER THAN 100 PPM!**

**2. TANK CLOSURE WITHOUT REMOVAL:**

- a. Attach site maps showing the general location of the facility. *See Fig 1-1 of Closure Report*
- b. Attach plan and sectional views of the site and include the following:
1. Location of the tank(s) including depth,
  2. Location of tank(s) with respect to other tanks, if applicable,
  3. Soil boring locations and depth at which soil samples were taken,
  4. Boring logs. *N/A*
- See Fig's 1-2, 1-3, 3-1, and 3-2*

- c. Is the groundwater more than 5 feet below the bottom of the tank? YES  NO

If no, provide the depth from the ground surface to the groundwater table. Feet: \_\_\_\_\_

Indicate method used to determine water table depth:

1. Boring or monitoring well: YES  NO
2. Topographic features (Method must be approved by ADEM prior to use): YES  NO

d. Was there a notable odor found in the bore holes? YES  NO

If yes,

(1) The odor strength was (mild) (strong) (other) describe: \_\_\_\_\_

(2) The odor indicates what type of product: (gasoline) (diesel) (waste oil) (kerosene) (other) describe: \_\_\_\_\_

e. Was free product found in the bore holes? YES  NO

If yes,

1. How was free product handled? Describe: \_\_\_\_\_

2. What was the measured thickness of free product? \_\_\_\_\_

f. Describe the soil type and thickness of all soil layers encountered in the bore holes and provide boring logs:

0-18 ft bls. Dark yellowish orange to light brown, fine to very fine, poorly graded, moderately dense, silty sand. No boring logs were generated for this work. All samples collected with direct push technology.

g. Specify the inert solid material used to fill the tank(s):  
Concrete, 4000 psi

h. Provide the date the tank(s) were filled: Jan - Feb, 1997

i. Were the bore holes properly sealed with bentonite/soil? YES  NO   
If yes, provide the date: Jan 8-13, 1997  
*Portland Type I cement + water*

3. PRODUCT PIPING CLOSURE BY REMOVAL: N/A

a. Attach site maps showing the general location of the facility.

b. If the piping was longer than 10 feet, attach plan and sectional views of the piping trench and include the following:

1. All appropriate excavation dimensions and length of piping,
2. All soil sample locations and depths using an appropriate method of identification.
3. Location of areas of visible contamination.

c. Was the piping purged of product prior to closure? YES  NO   
If yes, was the product properly disposed of?

ADEM UST CLOSURE SITE ASSESSMENT FORM

- |   |                          |                          |
|---|--------------------------|--------------------------|
|   | YES                      | NO                       |
| d. Is the groundwater more than 5 feet below the bottom of the piping trench? | <input type="checkbox"/> | <input type="checkbox"/> |

If no, provide the depth from the ground surface to the groundwater table. Feet: \_\_\_\_\_

- |  |                          |                          |
|--|--------------------------|--------------------------|
| Indicate method used to determine water table depth:                     | YES                      | NO                       |
| 1. Excavation extended 5 feet below base of trench:                      | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Boring or monitoring well:  | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Topographic features ( Method must be approved by ADEM prior to use): | <input type="checkbox"/> | <input type="checkbox"/> |

- |   |                          |                          |
|---|--------------------------|--------------------------|
|   | YES                      | NO                       |
| e. Was there a notable odor found in the piping trench? | <input type="checkbox"/> | <input type="checkbox"/> |

If yes,

- (1) The odor strength was (mild) (strong) (other) describe: \_\_\_\_\_
- (2) The odor indicates what type of product: (gasoline) (diesel) (waste oil) (kerosene) (other) describe: \_\_\_\_\_

- |  |                          |                          |
|--|--------------------------|--------------------------|
|  | YES                      | NO                       |
| f. Was there water in the piping trench? | <input type="checkbox"/> | <input type="checkbox"/> |

If yes, how was it handled?

- |  |                          |                          |
|--|--------------------------|--------------------------|
|  | YES                      | NO                       |
| 1. One time discharge to sanitary sewer with local approval?                           | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Hauled to facility capable of treating constituents of petroleum products in water? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Hauled to local POTW with local approval?   | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Treated on-site with NPDES approved discharge?                                      | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Other? Explain:   |                          |                          |

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- |   |                          |                          |
|---|--------------------------|--------------------------|
|   | YES                      | NO                       |
| g. Was free product found in the piping trench? | <input type="checkbox"/> | <input type="checkbox"/> |

If yes,

1. How was free product handled? Describe: \_\_\_\_\_
2. What was the measured thickness of free product? \_\_\_\_\_

- |  |                          |                          |
|--|--------------------------|--------------------------|
|  | YES                      | NO                       |
| h. Were visible holes noted in the piping? | <input type="checkbox"/> | <input type="checkbox"/> |

If yes, indicate the location(s) and provide a general description as to the size and number of holes:

\_\_\_\_\_  
 \_\_\_\_\_

ADEM UST CLOSURE SITE ASSESSMENT FORM

i. Describe the soil type and thickness of all soil layers encountered in the piping trench:

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j. Was the piping trench backfilled? YES      NO

If yes, provide the date of backfilling: \_\_\_\_\_

**DO NOT BACKFILL WITH MATERIAL THAT HAS OR POTENTIALLY HAS A TPH OF GREATER THAN 100 PPM!**

**4. PRODUCT PIPING CLOSURE WITHOUT REMOVAL**

a. Attach site maps showing the general location of the facility. *see Fig 1-1*

b. Attach plan and sectional views of the site and include the following:

1. Location of the piping including depth,
2. Location of piping with respect to tank(s), if applicable.
3. Soil boring locations and depth at which soil samples were taken,
4. Boring logs. *N/A*

*See Fig's 1-2, 1-3, 3-1, + 3-2.*

c. Was the piping purged of product prior to closure? YES      NO  
 If yes, was product properly disposed of?         
     

d. Was the piping capped? YES      NO  
     

e. Is the groundwater more than 5 feet below the bottom of the excavation? YES      NO  
     

If no, provide the depth from the ground surface to the groundwater table. Feet: \_\_\_\_\_

Indicate method used to determine water table depth: YES      NO  
 1. Boring or monitoring well:         
 2. Topographic features ( Method must be approved by Dept. prior to use):

f. Was there a notable odor found in the bore holes? YES  NO

If yes, (1) The odor strength was (mild) (strong) (other) describe:

(2) The odor indicates what type of product: (gasoline) (diesel) (waste oil) (kerosene) (other) describe:

g. Was free product found in the bore holes? YES  NO

If yes, 1. How was free product handled? Describe:

2. What was the measured thickness of free product?

h. Describe the soil type and thickness of all soil layers encountered in the bore holes and provide boring logs: Same as 2 f.

i. Were the bore holes properly sealed with <sup>Portland Type I cement + water</sup> bentonite/soil? YES  NO  If yes, provide the date: Jan 8-13, 1997

5. GROUNDWATER SAMPLING (If required by attached closure guidelines):

a. Indicate the following on the plan and section views required by Section 1.b., 2.b, 3.b, or 4.b. above:

1. The location and depth of the 1 up-gradient and 3 down-gradient borings or monitoring wells. (Monitoring wells in lieu of borings are not required, but may be desirable in certain situations.) See Fig 3-1

2. The most probable direction of groundwater flow. State basis for determining direction: Northeast, Aug 1993 site assessment

b. Was a monitoring well used? YES  NO

If yes, attach a schematic drawing of the well(s) and all boring logs.

Direct push technology used to collect gw samples.

6. LABORATORY DATA

a. Attach the original chain of custody record (copies are not acceptable) for each sample which includes at least the following:

1. Sample identification number,
2. Date and time sample was taken,
3. Name and title of person collecting sample (see certification requirement on page 10 of this form),
4. Type of sample (soil or water),
5. Type of sample container,
6. Method of preservation,
7. Date and time sample was relinquished,
8. Person relinquishing sample,
9. Date and time sample was received by lab,
10. Person receiving sample at lab.

See Appendix B and C and D

b. Attach the original laboratory data sheet (copies are not acceptable) which includes at least the following:

- A sample identification number which can be cross referenced with the soil sample locations indicated on the plan and sectional views required by Section 1.b., 2.b., 3.b., or 4.b. above,
- The sample analytical results with appropriate units,
- The method used to analyze each sample,
- The date and time the sample was analyzed,
- The person analyzing the sample.

7. EXCAVATED SOIL

ALL EXCAVATED SOIL REQUIRES ANALYSIS PRIOR TO DISPOSAL. TANK CLOSURE SAMPLES FROM THE EXCAVATION MAY NOT BE REPRESENTATIVE OF THE LEVEL OF CONTAMINATION IN THE EXCAVATED SOIL.

For safety and other considerations, it is recommended that open pits and piping trenches should be backfilled as soon as possible with clean backfill. Soils which have TPH levels greater than 100 ppm or soils for which the level of contamination has not been determined shall not be returned to the excavation pit(s) or piping trenches. Soils having TPH levels between 10 and 100 ppm can only be returned to the excavation pit or piping trench if the groundwater is greater than 5 feet from the base of the pit or piping trench.

- a. If tank was closed by ~~removal~~, provide an estimate of the <sup>MASS</sup> ~~volume~~ of soil removed: 169.07 ~~cubic yds~~ tons
- b. Attach the "Total Potential VOC Emissions Calculations" for soil removed.
- c. Indicate current method and location of soil management and/or treatment prior to final disposal:

Soil with TPH < 100 ppm was used as backfill. Soil with TPH > 100 ppm  
was disposed at BEI's Tinabalan Landfill.

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d. Check the method of soil disposal used or to be used:

- Return to the excavation pit only when TPH is less than or equal to 100 ppm and depth of groundwater is greater than 5 feet from the base of the pit.
- Spread in a thin layer (6" or less) on site only when TPH is less than or equal to 100 ppm
- Disposal in a landfill ( See attached "Guidelines for the Disposal of Non-Hazardous Petroleum Contaminated Wastes").
- Incineration.
- Thermal volatilization.
- Recycling facility
- Other \_\_\_\_\_

e. If soil was disposed of prior to the submittal of this form, indicate the final destination and attach copies of invoices, receipts, and "certificate of burn" (if soil was incinerated):

See CCR prepared by MK for disposal log.  
Soil disposed at BFI's Timberland Landfill.

8. TANK CLEANING

- a. The tank(s) were cleaned in accordance with American Petroleum Institute (API) Bulletin 2015 "Cleaning Petroleum Storage Tanks"? YES  NO   
 If no, describe how tank(s) were cleaned:

\_\_\_\_\_  
 \_\_\_\_\_

b. Provide an estimate of the volume of <sup>initial liquids</sup> ~~sludge~~ removed from the tank: 30 ≈ 15,000 Gallons

c. Indicate the final destination of the <sup>liquids</sup> ~~sludge~~ and attach invoices or receipts:  
Tanks were pumped out using a vacuum truck. Liquids were temporarily stored in a 21,000 gallon frac tanks. All liquids (26,600 gallons) disposed of at IWS, Mobile, AL. See CCR for disposal log.

ADEM UST CLOSURE SITE ASSESSMENT FORM

This form should be completed and returned, along with any other pertinent information, to the following address:

The Alabama Department of Environmental Management  
Groundwater Branch  
Post Office Box 301463  
Montgomery, AL 36130-1463  
(334) 270-5655

INCOMPLETE FORMS WILL BE RETURNED FOR CORRECTION.

Name of person taking soil and/or groundwater samples: Kathleen M. Hodak  
Company: ABB Environmental Services, Inc.  
Telephone Number: (904) 656-1293

*I certify under penalty of law that I have obtained representative soil and/or groundwater samples using accepted sampling procedures.*

Signature: Kathleen M. Hodak Date: 5-22-97

*I certify under penalty of law that I have performed this closure site assessment in accordance with accepted geological practices; I am either a geologist or an Alabama registered professional engineer; I am experienced in hydrogeological investigations; and the information I have submitted, to the best of my knowledge and belief, is true, accurate, and complete.*

Signature of Geologist: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Alabama Registered Professional Engineer: Robert C. Lemardini Jr.

Date: 5/21/97

Alabama P.E. Registration Number: 21135

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents and that based on those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.*

Signature of Tank Owner: \_\_\_\_\_ Date: \_\_\_\_\_



FOR ADEM OFFICE USE ONLY

TO: Air Division FROM: UST Compliance Section

MEMORANDUM

January 28, 1991

**ADEM UST CLOSURE  
TOTAL POTENTIAL VOC EMISSIONS CALCULATIONS**

FACILITY I.D. NO.: \_\_\_\_\_ DATE OF THIS REPORT: 5/22/97

INCIDENT NO. UST \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ UST OWNER: US Navy  
(If applicable).  
FACILITY COUNTY: Baldwin ADDRESS: PO Box 190010  
North Charleston, SC 29419-9010  
FACILITY NAME: Site 20B CONTACT NAME: Linda Martin  
LOCATION: OLF Barin CONTACT PHONE #: (803) 820-5574  
ADDRESS: Foley, AL

Name of Consultant who performed calculations: Robert C. Lunardini, Jr., P.E.  
Consultant's Phone Number: (904) 656-1293

	a	ppm x	b	cyds x .002 =	c	lbs. VOC emissions
Sample 1	<u>62</u>	ppm x	<u>40</u>	cyds x .002 =	<u>5</u>	lbs. VOC emissions
Sample 2	<u>210</u>	ppm x	<u>40</u>	cyds x .002 =	<u>17</u>	lbs. VOC emissions
Sample 3	<u>130</u>	ppm x	<u>40</u>	cyds x .002 =	<u>10</u>	lbs. VOC emissions
Sample 4	<u>320</u>	ppm x	<u>40</u>	cyds x .002 =	<u>26</u>	lbs. VOC emissions
Sample 5	<u>360</u>	ppm x	<u>40</u>	cyds x .002 =	<u>29</u>	lbs. VOC emissions
Sample 6	<u>1190</u>	ppm x	<u>40</u>	cyds x .002 =	<u>95</u>	lbs. VOC emissions
Sample 7	<u>39</u>	ppm x	<u>40</u>	cyds x .002 =	<u>3</u>	lbs. VOC emissions
Sample 8	<u>34,000</u>	ppm x	<u>40</u>	cyds x .002 =	<u>2720</u>	lbs. VOC emissions
Sample 9	<u>27</u>	ppm x	<u>40</u>	cyds x .002 =	<u>2</u>	lbs. VOC emissions
Sample 10	_____	ppm x	_____	cyds x .002 =	_____	lbs. VOC emissions
Sample 11	_____	ppm x	_____	cyds x .002 =	_____	lbs. VOC emissions
Sample 12	_____	ppm x	_____	cyds x .002 =	_____	lbs. VOC emissions
Sample 13	_____	ppm x	_____	cyds x .002 =	_____	lbs. VOC emissions
Sample 14	_____	ppm x	_____	cyds x .002 =	_____	lbs. VOC emissions
Sample 15	_____	ppm x	_____	cyds x .002 =	_____	lbs. VOC emissions

TOTAL POTENTIAL EMISSIONS = **2907** lbs. VOC emissions

\* NOTE - If more samples are taken than indicated on this form, please attach additional pages as necessary. This form must be completed and submitted with the ADEM UST Closure Site Assessment Report Form.

Sample results were obtained from MK's Construction Completion Report, April 1997. Soil from stockpiles # 2, 3, 4, 5, 6, and 8 was resampled by collecting one composite sample. TPH concentration of the composite sample was 210 ppm.

**APPENDIX B**

**NOVEMBER 1996 MEETING MINUTES**



**OLF BARIN  
MEETING MINUTES MEMO**

**TO:** Jeff Adams. SDIV  
David Thompson. ADEM  
Dan Fuller. M.K.

**FROM:** Kathy Hodak. ABB

**DATE:** November 15, 1996

**SUBJECT:** Discussions concerning the pipeline and lube oil tanks at Site 19B/20B during a site visit on November 14, 1996

**The following discussions and agreements took place during the Site Visit.**

**Dan Fuller** (MK) will provide Jeff Adams (SDIV) with a cost estimate for the following work by Monday 11/18/96 in order to get technical direction to do the work.

- Locate and flush the pipelines running under the old hangers out to the distribution system.
- Analyze and dispose of accordingly any fluid acquired from these lines.
- Lock the valves and cap the lines.

- Excavate to locate the top of each lube oil tank.
- Pump out contents of lube oil tank and abandon in place by filling with sand, so as to prevent reuse.
- Sample liquids taken out of tank and take 1 sample per 20 yards of excavate soil in order to determine proper disposal.

**Kathy Hodak** (ABB) will provide a short letter report describing confirmatory sampling actions needed to support the aforementioned work. This letter will be delivered to ADEM and SDIV by November 22, 1996, for their consideration and agreement and then follow-up contracting actions. All parties are working toward getting this work on-line by December 6th.

**The letter will further describe:**

- The number and type of samples that will be taken at each lube oil tank.
- How this sampling information will be used in the risk assessment.
- How this work will impact the delivery of reports. (Closure report will be delayed to include this information, as will the 19B/20B Decision Document).
- How MK and ABB will work together to get this job done quickly and cost effectively.

**Kathy committed to find out the following information:**

- Would a drill rig or hydropunch be more cost effective for taking samples?
- What kind of samples from the lube oil tanks would be most useful for risk assessment purposes?  
Get information concerning lube oil, its constituents, sampling and characteristics.
- Who exactly is responsible for installation of monitoring wells at the east and west wash racks?
- How can the same drilling subcontractor be used to do work for MK and ABB in order to save on mob/demob costs?
- Check to see how much allocated PCAS money is available to help fund this effort? How much more money is needed to complete the work?
- Ask Eric Blomberg about RBCA closure as it pertains to the lube oil tanks.

**David Thompson committed to finding out this information:**

- Does ADEM UST require that the pipelines and the lube oil tanks be capped off?
- Exactly how many samples per lube oil tank will be required? What type? and What analyses are required?
- Can the background well for sites 19B and 20B be used as the upgradient well for the east and west tank excavations?
- How many downgradient wells will be required and their locations? Will check to see if existing wells can be used?

David will be in the office on Monday, but out on Tues, Wed, Thurs, Fri. He committed to review of the letter report the following week.

INVESTIGATION OF UNDERGROUND LUBE OIL TANKS  
OLF BARIN, FOLEY, ALABAMA  
NOVEMBER 20, 1996

Thirty underground lube oil tanks were identified within Site 20B, adjacent to the fueling pits at OLF Barin in Foley, Alabama. The lube oil tanks have a capacity of 500 gallons and it is not known if they still contain lube oil. The area where the lube oil tanks are located is completely surrounded by a monitoring well network and no risk from exposure to petroleum products was identified in the Baseline Risk Assessment conducted for Sites 19B and 20B.

The current plan is to remove all the existing fluid in the tanks and abandon them in-place by filling them with sand. Once this is completed, a soil investigation will be conducted to assess the presence or absence of petroleum products.

Based on the review of some literature supplied by an analytical laboratory, it appears that lube oil does not contain VOCs or lead and few PAHs, compounds that are typically focused on during petroleum investigations or used in risk assessments or Risk Based Corrective Action (RBCA). The constituent that would primarily be associated with petroleum investigations and lube oil would be TPH. Therefore, it is recommended that TPH and PAHs be the contaminants of concern during the investigation of the lube oil tanks at OLF Barin.

The proposed investigation of the lube oil tanks would include:

1. Collection of two soil samples; one from the bottom third of the tank and one five feet below that sample and analyze for TPH (USEPA Method 418.1) and PAH (SW-846 8100 or 8310).
2. If the TPH results are greater than 100 ppm and/or PAH concentrations exceed RBCA risk based screening levels, an evaluation will be made on whether to remove the lube oil tank following ADEM UST closure guidance or collect additional soil and groundwater samples and conduct a risk-based closure following state or ASTM RBCA standards.



**APPENDIX C**

**SOIL SAMPLE ANALYTICAL RESULTS**



OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC773001		RC773002		RC773003		RC773005		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S00201		20S00202		20S00401		20S00402		
Collect Date:	09-JAN-97		09-JAN-97		09-JAN-97		09-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	74 U	ug/Kg	74	76 U	ug/Kg	76	77 U	ug/Kg	77	75 U	ug/Kg	75
Acenaphthylene	74 U	ug/Kg	74	76 U	ug/Kg	76	77 U	ug/Kg	77	75 U	ug/Kg	75
Anthracene	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7	7.5 U	ug/Kg	7.5
Benzo (a) anthracene	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7	7.5 U	ug/Kg	7.5
Benzo (a) pyrene	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.8 U	ug/Kg	3.8	3.7 U	ug/Kg	3.7
Benzo (b) fluoranthene	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	4	ug/Kg	3.8	3.7 U	ug/Kg	3.7
Benzo (g,h,i) perylene	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7	22	ug/Kg	7.5
Benzo (k) fluoranthene	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.8 U	ug/Kg	3.8	3.7 U	ug/Kg	3.7
Chrysene	74 U	ug/Kg	74	76 U	ug/Kg	76	77 U	ug/Kg	77	75 U	ug/Kg	75
Dibenzo (a,h) anthracene	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7	7.5 U	ug/Kg	7.5
Fluoranthene	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7	7.5 U	ug/Kg	7.5
Fluorene	36 U	ug/Kg	36	38 U	ug/Kg	38	38 U	ug/Kg	38	37 U	ug/Kg	37
Indeno (1,2,3-cd) pyrene	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7	7.5 U	ug/Kg	7.5
Naphthalene	74 U	ug/Kg	74	76 U	ug/Kg	76	77 U	ug/Kg	77	75 U	ug/Kg	75
Phenanthrene	36 U	ug/Kg	36	38 U	ug/Kg	38	38 U	ug/Kg	38	37 U	ug/Kg	37
Pyrene	74 U	ug/Kg	74	76 U	ug/Kg	76	77 U	ug/Kg	77	75 U	ug/Kg	75

TPH

Total petroleum hydrocarbons	28 U	mg/kg	28	28 U	mg/kg	28	59	mg/kg	29	106	mg/kg	28
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC773004		RC773006		RC773008		RC773007		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S00601		20S00602		20S00801		20S00802		
Collect Date:	09-JAN-97		09-JAN-97		09-JAN-97		09-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	79 U	ug/Kg	79	76 U	ug/Kg	76	75 U	ug/Kg	75	74 U	ug/Kg	74
Acenaphthylene	79 U	ug/Kg	79	76 U	ug/Kg	76	75 U	ug/Kg	75	74 U	ug/Kg	74
Anthracene	7.9 U	ug/Kg	7.9	7.6 U	ug/Kg	7.6	7.5 U	ug/Kg	7.5	7.4 U	ug/Kg	7.4
Benzo (a) anthracene	7.9 U	ug/Kg	7.9	7.6 U	ug/Kg	7.6	7.5 U	ug/Kg	7.5	7.4 U	ug/Kg	7.4
Benzo (a) pyrene	3.9 U	ug/Kg	3.9	3.8 U	ug/Kg	3.8	3.7 U	ug/Kg	3.7	3.7 U	ug/Kg	3.7
Benzo (b) fluoranthene	3.9 U	ug/Kg	3.9	3.8 U	ug/Kg	3.8	3.7 U	ug/Kg	3.7	3.7 U	ug/Kg	3.7
Benzo (g,h,i) perylene	7.9 U	ug/Kg	7.9	7.6 U	ug/Kg	7.6	7.5 U	ug/Kg	7.5	7.4 U	ug/Kg	7.4
Benzo (k) fluoranthene	3.9 U	ug/Kg	3.9	3.8 U	ug/Kg	3.8	3.7 U	ug/Kg	3.7	3.7 U	ug/Kg	3.7
Chrysene	79 U	ug/Kg	79	76 U	ug/Kg	76	75 U	ug/Kg	75	74 U	ug/Kg	74
Dibenzo (a,h) anthracene	7.9 U	ug/Kg	7.9	7.6 U	ug/Kg	7.6	7.5 U	ug/Kg	7.5	7.4 U	ug/Kg	7.4
Fluoranthene	7.9 U	ug/Kg	7.9	7.6 U	ug/Kg	7.6	7.5 U	ug/Kg	7.5	7.4 U	ug/Kg	7.4
Fluorene	39 U	ug/Kg	39	38 U	ug/Kg	38	37 U	ug/Kg	37	37 U	ug/Kg	37
Indeno (1,2,3-cd) pyrene	7.9 U	ug/Kg	7.9	7.6 U	ug/Kg	7.6	7.5 U	ug/Kg	7.5	7.4 U	ug/Kg	7.4
Naphthalene	79 U	ug/Kg	79	76 U	ug/Kg	76	75 U	ug/Kg	75	74 U	ug/Kg	74
Phenanthrene	39 U	ug/Kg	39	38 U	ug/Kg	38	37 U	ug/Kg	37	37 U	ug/Kg	37
Pyrene	79 U	ug/Kg	79	76 U	ug/Kg	76	75 U	ug/Kg	75	74 U	ug/Kg	74

TPH

Total petroleum hydrocarbons	29 U	mg/kg	29	28 U	mg/kg	28	28 U	mg/kg	28	28 U	mg/kg	28
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC781013		RC773010		RC773011		RC774001		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S01001		20S01002		20S01201		20S01202		
Collect Date:	09-JAN-97		09-JAN-97		09-JAN-97		09-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	76 U	ug/kg	76	77 U	ug/Kg	77	74 U	ug/Kg	74	77 U	ug/Kg	77
Acenaphthylene	76 U	ug/kg	76	77 U	ug/Kg	77	74 U	ug/Kg	74	77 U	ug/Kg	77
Anthracene	7.6 U	ug/kg	7.6	7.7 U	ug/Kg	7.7	7.4 U	ug/Kg	7.4	7.7 U	ug/Kg	7.7
Benzo (a) anthracene	7.6 U	ug/kg	7.6	7.7 U	ug/Kg	7.7	7.4 U	ug/Kg	7.4	7.7 U	ug/Kg	7.7
Benzo (a) pyrene	3.8 U	ug/kg	3.8	3.8 U	ug/Kg	3.8	3.7 U	ug/Kg	3.7	3.8 U	ug/Kg	3.8
Benzo (b) fluoranthene	3.8 U	ug/kg	3.8	3.8 U	ug/Kg	3.8	3.7 U	ug/Kg	3.7	3.8 U	ug/Kg	3.8
Benzo (g,h,i) perylene	7.6 U	ug/kg	7.6	7.7 U	ug/Kg	7.7	7.4 U	ug/Kg	7.4	7.7 U	ug/Kg	7.7
Benzo (k) fluoranthene	3.8 U	ug/kg	3.8	3.8 U	ug/Kg	3.8	3.7 U	ug/Kg	3.7	3.8 U	ug/Kg	3.8
Chrysene	76 U	ug/kg	76	77 U	ug/Kg	77	74 U	ug/Kg	74	77 U	ug/Kg	77
Dibenzo (a,h) anthracene	7.6 U	ug/kg	7.6	7.7 U	ug/Kg	7.7	7.4 U	ug/Kg	7.4	7.7 U	ug/Kg	7.7
Fluoranthene	7.6 U	ug/kg	7.6	7.7 U	ug/Kg	7.7	7.4 U	ug/Kg	7.4	7.7 U	ug/Kg	7.7
Fluorene	38 U	ug/kg	38	38 U	ug/Kg	38	37 U	ug/Kg	37	38 U	ug/Kg	38
Indeno (1,2,3-cd) pyrene	7.6 U	ug/kg	7.6	7.7 U	ug/Kg	7.7	7.4 U	ug/Kg	7.4	7.7 U	ug/Kg	7.7
Naphthalene	76 U	ug/kg	76	77 U	ug/Kg	77	74 U	ug/Kg	74	77 U	ug/Kg	77
Phenanthrene	38 U	ug/kg	38	38 U	ug/Kg	38	37 U	ug/Kg	37	38 U	ug/Kg	38
Pyrene	76 U	ug/kg	76	77 U	ug/Kg	77	74 U	ug/Kg	74	77 U	ug/Kg	77

TPH

Total petroleum hydrocarbons	28 U	mg/kg	28	29 U	mg/kg	29	28 U	mg/kg	28	29 U	mg/kg	29
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC774003		RC774002		RC774006		RC774007		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S01401		20S01402		20S01601		20S01602		
Collect Date:	09-JAN-97		09-JAN-97		09-JAN-97		09-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	74 U	ug/Kg	74	75 U	ug/Kg	75	75 U	ug/Kg	75	75 U	ug/Kg	75
Acenaphthylene	74 U	ug/Kg	74	75 U	ug/Kg	75	75 U	ug/Kg	75	75 U	ug/Kg	75
Anthracene	7.4 U	ug/Kg	7.4	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5
Benzo (a) anthracene	7.4 U	ug/Kg	7.4	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5
Benzo (a) pyrene	3.7 U	ug/Kg	3.7									
Benzo (b) fluoranthene	3.7 U	ug/Kg	3.7									
Benzo (g,h,i) perylene	7.4 U	ug/Kg	7.4	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5
Benzo (k) fluoranthene	3.7 U	ug/Kg	3.7									
Chrysene	74 U	ug/Kg	74	75 U	ug/Kg	75	75 U	ug/Kg	75	75 U	ug/Kg	75
Dibenzo (a,h) anthracene	7.4 U	ug/Kg	7.4	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5
Fluoranthene	7.4 U	ug/Kg	7.4	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5
Fluorene	37 U	ug/Kg	37									
Indeno (1,2,3-cd) pyrene	7.4 U	ug/Kg	7.4	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5	7.5 U	ug/Kg	7.5
Naphthalene	74 U	ug/Kg	74	75 U	ug/Kg	75	75 U	ug/Kg	75	75 U	ug/Kg	75
Phenanthrene	37 U	ug/Kg	37									
Pyrene	74 U	ug/Kg	74	75 U	ug/Kg	75	75 U	ug/Kg	75	75 U	ug/Kg	75

TPH

Total petroleum hydrocarbons	28 U	mg/kg	28									
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC774004	RC774005	RC774008	RC774009				
Site	OLFBARIN	OLFBARIN	OLFBARIN	OLFBARIN				
Locator	20S01801	20S01802	20S02001	20S02001D				
Collect Date:	09-JAN-97	09-JAN-97	09-JAN-97	09-JAN-97				
	VALUE	DL	VALUE	DL	VALUE	DL	VALUE	DL

8310

Acenaphthene	76 U	ug/Kg	76	72 U	ug/Kg	72	76 U	ug/Kg	76	77 U	ug/Kg	77
Acenaphthylene	76 U	ug/Kg	76	72 U	ug/Kg	72	87 U	ug/Kg	76	77 U	ug/Kg	77
Anthracene	7.6 U	ug/Kg	7.6	7.2 U	ug/Kg	7.2	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7
Benzo (a) anthracene	7.6 U	ug/Kg	7.6	7.2 U	ug/Kg	7.2	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7
Benzo (a) pyrene	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.8 U	ug/Kg	3.8
Benzo (b) fluoranthene	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.8 U	ug/Kg	3.8
Benzo (g,h,i) perylene	7.6 U	ug/Kg	7.6	7.2 U	ug/Kg	7.2	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7
Benzo (k) fluoranthene	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.8 U	ug/Kg	3.8
Chrysene	76 U	ug/Kg	76	72 U	ug/Kg	72	76 U	ug/Kg	76	77 U	ug/Kg	77
Dibenzo (a,h) anthracene	7.6 U	ug/Kg	7.6	7.2 U	ug/Kg	7.2	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7
Fluoranthene	7.6 U	ug/Kg	7.6	7.2 U	ug/Kg	7.2	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7
Fluorene	38 U	ug/Kg	38	36 U	ug/Kg	36	38 U	ug/Kg	38	38 U	ug/Kg	38
Indeno (1,2,3-cd) pyrene	7.6 U	ug/Kg	7.6	7.2 U	ug/Kg	7.2	7.6 U	ug/Kg	7.6	7.7 U	ug/Kg	7.7
Naphthalene	76 U	ug/Kg	76	72 U	ug/Kg	72	76 U	ug/Kg	76	77 U	ug/Kg	77
Phenanthrene	38 U	ug/Kg	38	36 U	ug/Kg	36	38 U	ug/Kg	38	38 U	ug/Kg	38
Pyrene	76 U	ug/Kg	76	72 U	ug/Kg	72	76 U	ug/Kg	76	77 U	ug/Kg	77

TPH

Total petroleum hydrocarbons	28 U	mg/kg	28	27 U	mg/kg	27	28 U	mg/kg	28	29 U	mg/kg	29
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC774010		RC774011		RC774013		RC774012		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S02002		20S02002D		20S02401		20S02402		
Collect Date:	09-JAN-97		09-JAN-97		09-JAN-97		09-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	71 U	ug/Kg	71	71 U	ug/Kg	71	77 U	ug/Kg	77	72 U	ug/Kg	72
Acenaphthylene	71 U	ug/Kg	71	71 U	ug/Kg	71	77 U	ug/Kg	77	72 U	ug/Kg	72
Anthracene	7.1 U	ug/Kg	7.1	7.1 U	ug/Kg	7.1	7.7 U	ug/Kg	7.7	7.2 U	ug/Kg	7.2
Benzo (a) anthracene	7.1 U	ug/Kg	7.1	7.1 U	ug/Kg	7.1	7.7 U	ug/Kg	7.7	7.2 U	ug/Kg	7.2
Benzo (a) pyrene	3.5 U	ug/Kg	3.5	3.5 U	ug/Kg	3.5	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Benzo (b) fluoranthene	3.5 U	ug/Kg	3.5	3.5 U	ug/Kg	3.5	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Benzo (g,h,i) perylene	7.1 U	ug/Kg	7.1	7.1 U	ug/Kg	7.1	7.7 U	ug/Kg	7.7	7.2 U	ug/Kg	7.2
Benzo (k) fluoranthene	3.5 U	ug/Kg	3.5	3.5 U	ug/Kg	3.5	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Chrysene	71 U	ug/Kg	71	71 U	ug/Kg	71	77 U	ug/Kg	77	72 U	ug/Kg	72
Dibenzo (a,h) anthracene	7.1 U	ug/Kg	7.1	7.1 U	ug/Kg	7.1	7.7 U	ug/Kg	7.7	7.2 U	ug/Kg	7.2
Fluoranthene	7.1 U	ug/Kg	7.1	7.1 U	ug/Kg	7.1	7.7 U	ug/Kg	7.7	7.2 U	ug/Kg	7.2
Fluorene	35 U	ug/Kg	35	35 U	ug/Kg	35	38 U	ug/Kg	38	36 U	ug/Kg	36
Indeno (1,2,3-cd) pyrene	7.1 U	ug/Kg	7.1	7.1 U	ug/Kg	7.1	7.7 U	ug/Kg	7.7	7.2 U	ug/Kg	7.2
Naphthalene	71 U	ug/Kg	71	71 U	ug/Kg	71	77 U	ug/Kg	77	72 U	ug/Kg	72
Phenanthrene	35 U	ug/Kg	35	35 U	ug/Kg	35	38 U	ug/Kg	38	36 U	ug/Kg	36
Pyrene	71 U	ug/Kg	71	71 U	ug/Kg	71	77 U	ug/Kg	77	72 U	ug/Kg	72

TPH

Total petroleum hydrocarbons	26 U	mg/kg	26	26 U	mg/kg	26	29 U	mg/kg	29	27 U	mg/kg	27
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC774014		RC774015		RC775001		RC775002		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S02601		20S02602		20S02801		20S02802		
Collect Date:	09-JAN-97		09-JAN-97		10-JAN-97		10-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	73 U	ug/Kg	73	74 U	ug/Kg	74	74 U	ug/Kg	74	76 U	ug/Kg	76
Acenaphthylene	73 U	ug/Kg	73	74 U	ug/Kg	74	74 U	ug/Kg	74	76 U	ug/Kg	76
Anthracene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6
Benzo (a) anthracene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6
Benzo (a) pyrene	3.6 U	ug/Kg	3.6	3.7 U	ug/Kg	3.7	3.7 U	ug/Kg	3.7	3.8 U	ug/Kg	3.8
Benzo (b) fluoranthene	3.6 U	ug/Kg	3.6	3.7 U	ug/Kg	3.7	3.7 U	ug/Kg	3.7	3.8 U	ug/Kg	3.8
Benzo (g,h,i) perylene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6
Benzo (k) fluoranthene	3.6 U	ug/Kg	3.6	3.7 U	ug/Kg	3.7	3.7 U	ug/Kg	3.7	3.8 U	ug/Kg	3.8
Chrysene	73 U	ug/Kg	73	74 U	ug/Kg	74	74 U	ug/Kg	74	76 U	ug/Kg	76
Dibenzo (a,h) anthracene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6
Fluoranthene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6
Fluorene	36 U	ug/Kg	36	37 U	ug/Kg	37	37 U	ug/Kg	37	38 U	ug/Kg	38
Indeno (1,2,3-cd) pyrene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6
Naphthalene	73 U	ug/Kg	73	74 U	ug/Kg	74	74 U	ug/Kg	74	76 U	ug/Kg	76
Phenanthrene	36 U	ug/Kg	36	37 U	ug/Kg	37	37 U	ug/Kg	37	38 U	ug/Kg	38
Pyrene	73 U	ug/Kg	73	74 U	ug/Kg	74	74 U	ug/Kg	74	76 U	ug/Kg	76

TPH

Total petroleum hydrocarbons	27 U	mg/kg	27	28 U	mg/kg	28	28 U	mg/kg	28	28 U	mg/kg	28
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC775003		RC775004		RC775005		RC775006		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S03001		20S03002		20S03101		20S03202		
Collect Date:	10-JAN-97		10-JAN-97		10-JAN-97		10-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	73 U	ug/Kg	73	74 U	ug/Kg	74	79 U	ug/Kg	79	77 U	ug/Kg	77
Acenaphthylene	73 U	ug/Kg	73	74 U	ug/Kg	74	79 U	ug/Kg	79	77 U	ug/Kg	77
Anthracene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.9 U	ug/Kg	7.9	7.7 U	ug/Kg	7.7
Benzo (a) anthracene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.9 U	ug/Kg	7.9	7.7 U	ug/Kg	7.7
Benzo (a) pyrene	3.6 U	ug/Kg	3.6	3.7 U	ug/Kg	3.7	3.9 U	ug/Kg	3.9	3.8 U	ug/Kg	3.8
Benzo (b) fluoranthene	3.6 U	ug/Kg	3.6	3.7 U	ug/Kg	3.7	3.9 U	ug/Kg	3.9	3.8 U	ug/Kg	3.8
Benzo (g,h,i) perylene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.9 U	ug/Kg	7.9	7.7 U	ug/Kg	7.7
Benzo (k) fluoranthene	3.6 U	ug/Kg	3.6	3.7 U	ug/Kg	3.7	3.9 U	ug/Kg	3.9	3.8 U	ug/Kg	3.8
Chrysene	73 U	ug/Kg	73	74 U	ug/Kg	74	79 U	ug/Kg	79	77 U	ug/Kg	77
Dibenzo (a,h) anthracene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.9 U	ug/Kg	7.9	7.7 U	ug/Kg	7.7
Fluoranthene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.9 U	ug/Kg	7.9	7.7 U	ug/Kg	7.7
Fluorene	36 U	ug/Kg	36	37 U	ug/Kg	37	39 U	ug/Kg	39	38 U	ug/Kg	38
Indeno (1,2,3-cd) pyrene	7.3 U	ug/Kg	7.3	7.4 U	ug/Kg	7.4	7.9 U	ug/Kg	7.9	7.7 U	ug/Kg	7.7
Naphthalene	73 U	ug/Kg	73	74 U	ug/Kg	74	79 U	ug/Kg	79	77 U	ug/Kg	77
Phenanthrene	36 U	ug/Kg	36	37 U	ug/Kg	37	39 U	ug/Kg	39	38 U	ug/Kg	38
Pyrene	73 U	ug/Kg	73	74 U	ug/Kg	74	79 U	ug/Kg	79	77 U	ug/Kg	77

TPH

Total petroleum hydrocarbons	27 U	mg/kg	27	28 U	mg/kg	28	29 U	mg/kg	29	29 U	mg/kg	29
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC775007		RC775008		RC775009		RC775010		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S03401		20S03401D		20S03402		20S03402D		
Collect Date:	10-JAN-97		10-JAN-97		10-JAN-97		10-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	77 U	ug/Kg	77	76 U	ug/Kg	76	76 U	ug/Kg	76	76 U	ug/Kg	76
Acenaphthylene	77 U	ug/Kg	77	76 U	ug/Kg	76	76 U	ug/Kg	76	76 U	ug/Kg	76
Anthracene	7.7 U	ug/Kg	7.7	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6
Benzo (a) anthracene	7.7 U	ug/Kg	7.7	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6
Benzo (a) pyrene	3.8 U	ug/Kg	3.8									
Benzo (b) fluoranthene	3.8 U	ug/Kg	3.8									
Benzo (g,h,i) perylene	7.7 U	ug/Kg	7.7	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6
Benzo (k) fluoranthene	3.8 U	ug/Kg	3.8									
Chrysene	77 U	ug/Kg	77	76 U	ug/Kg	76	76 U	ug/Kg	76	76 U	ug/Kg	76
Dibenzo (a,h) anthracene	7.7 U	ug/Kg	7.7	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6
Fluoranthene	7.7 U	ug/Kg	7.7	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6
Fluorene	38 U	ug/Kg	38									
Indeno (1,2,3-cd) pyrene	7.7 U	ug/Kg	7.7	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6	7.6 U	ug/Kg	7.6
Naphthalene	77 U	ug/Kg	77	76 U	ug/Kg	76	76 U	ug/Kg	76	76 U	ug/Kg	76
Phenanthrene	38 U	ug/Kg	38									
Pyrene	77 U	ug/Kg	77	76 U	ug/Kg	76	76 U	ug/Kg	76	76 U	ug/Kg	76

TPH

Total petroleum hydrocarbons	29 U	mg/kg	29	28 U	mg/kg	28	28 U	mg/kg	28	28 U	mg/kg	28
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC775011		RC776001		RC776003		RC776002		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S03601		20S03602		20S03801		20S03802		
Collect Date:	10-JAN-97		10-JAN-97		10-JAN-97		10-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	74 U	ug/Kg	74	72 U	ug/Kg	72	77 U	ug/Kg	77	73 U	ug/Kg	73
Acenaphthylene	74 U	ug/Kg	74	72 U	ug/Kg	72	77 U	ug/Kg	77	73 U	ug/Kg	73
Anthracene	7.4 U	ug/Kg	7.4	7.2 U	ug/Kg	7.2	7.7 U	ug/Kg	7.7	7.3 U	ug/Kg	7.3
Benzo (a) anthracene	7.4 U	ug/Kg	7.4	7.2 U	ug/Kg	7.2	7.7 U	ug/Kg	7.7	7.3 U	ug/Kg	7.3
Benzo (a) pyrene	3.6 U	ug/Kg	3.6	3.5 U	ug/Kg	3.5	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Benzo (b) fluoranthene	3.6 U	ug/Kg	3.6	3.5 U	ug/Kg	3.5	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Benzo (g,h,i) perylene	7.4 U	ug/Kg	7.4	7.2 U	ug/Kg	7.2	7.7 U	ug/Kg	7.7	7.3 U	ug/Kg	7.3
Benzo (k) fluoranthene	3.6 U	ug/Kg	3.6	3.5 U	ug/Kg	3.5	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Chrysene	74 U	ug/Kg	74	72 U	ug/Kg	72	77 U	ug/Kg	77	73 U	ug/Kg	73
Dibenzo (a,h) anthracene	7.4 U	ug/Kg	7.4	7.2 U	ug/Kg	7.2	7.7 U	ug/Kg	7.7	7.3 U	ug/Kg	7.3
Fluoranthene	7.4 U	ug/Kg	7.4	7.2 U	ug/Kg	7.2	7.7 U	ug/Kg	7.7	7.3 U	ug/Kg	7.3
Fluorene	36 U	ug/Kg	36	35 U	ug/Kg	35	38 U	ug/Kg	38	36 U	ug/Kg	36
Indeno (1,2,3-cd) pyrene	7.4 U	ug/Kg	7.4	7.2 U	ug/Kg	7.2	7.7 U	ug/Kg	7.7	7.3 U	ug/Kg	7.3
Naphthalene	74 U	ug/Kg	74	72 U	ug/Kg	72	77 U	ug/Kg	77	73 U	ug/Kg	73
Phenanthrene	36 U	ug/Kg	36	35 U	ug/Kg	35	38 U	ug/Kg	38	36 U	ug/Kg	36
Pyrene	74 U	ug/Kg	74	72 U	ug/Kg	72	77 U	ug/Kg	77	73 U	ug/Kg	73

TPH

Total petroleum hydrocarbons	28 U	mg/kg	28	27 U	mg/kg	27	29 U	mg/kg	29	27 U	mg/kg	27
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC776005		RC776004		RC776007		RC776006		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S04001		20S04002		20S04201		20S04202		
Collect Date:	10-JAN-97		10-JAN-97		10-JAN-97		10-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	75 U	ug/Kg	75	73 U	ug/Kg	73	78 U	ug/Kg	78	74 U	ug/Kg	74
Acenaphthylene	75 U	ug/Kg	75	73 U	ug/Kg	73	78 U	ug/Kg	78	74 U	ug/Kg	74
Anthracene	7.5 U	ug/Kg	7.5	7.3 U	ug/Kg	7.3	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4
Benzo (a) anthracene	7.5 U	ug/Kg	7.5	7.3 U	ug/Kg	7.3	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4
Benzo (a) pyrene	3.7 U	ug/Kg	3.7	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Benzo (b) fluoranthene	3.7 U	ug/Kg	3.7	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Benzo (g,h,i) perylene	7.5 U	ug/Kg	7.5	7.3 U	ug/Kg	7.3	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4
Benzo (k) fluoranthene	3.7 U	ug/Kg	3.7	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Chrysene	75 U	ug/Kg	75	73 U	ug/Kg	73	78 U	ug/Kg	78	74 U	ug/Kg	74
Dibenzo (a,h) anthracene	7.5 U	ug/Kg	7.5	7.3 U	ug/Kg	7.3	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4
Fluoranthene	7.5 U	ug/Kg	7.5	7.3 U	ug/Kg	7.3	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4
Fluorene	37 U	ug/Kg	37	36 U	ug/Kg	36	38 U	ug/Kg	38	36 U	ug/Kg	36
Indeno (1,2,3-cd) pyrene	7.5 U	ug/Kg	7.5	7.3 U	ug/Kg	7.3	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4
Naphthalene	75 U	ug/Kg	75	73 U	ug/Kg	73	78 U	ug/Kg	78	74 U	ug/Kg	74
Phenanthrene	37 U	ug/Kg	37	36 U	ug/Kg	36	38 U	ug/Kg	38	36 U	ug/Kg	36
Pyrene	75 U	ug/Kg	75	73 U	ug/Kg	73	78 U	ug/Kg	78	74 U	ug/Kg	74

TPH

Total petroleum hydrocarbons	28 U	mg/kg	28	27 U	mg/kg	27	29 U	mg/kg	29	27 U	mg/kg	27
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC776009		RC776008		RC776010		RC776011		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S04401		20S04402		20S04601		20S04602		
Collect Date:	10-JAN-97		10-JAN-97		10-JAN-97		10-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	78 U	ug/Kg	78	74 U	ug/Kg	74	76 U	ug/Kg	76	73 U	ug/Kg	73
Acenaphthylene	78 U	ug/Kg	78	74 U	ug/Kg	74	76 U	ug/Kg	76	73 U	ug/Kg	73
Anthracene	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.3 U	ug/Kg	7.3
Benzo (a) anthracene	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.3 U	ug/Kg	7.3
Benzo (a) pyrene	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Benzo (b) fluoranthene	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Benzo (g,h,i) perylene	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.3 U	ug/Kg	7.3
Benzo (k) fluoranthene	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6	3.8 U	ug/Kg	3.8	3.6 U	ug/Kg	3.6
Chrysene	78 U	ug/Kg	78	74 U	ug/Kg	74	76 U	ug/Kg	76	73 U	ug/Kg	73
Dibenzo (a,h) anthracene	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.3 U	ug/Kg	7.3
Fluoranthene	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.3 U	ug/Kg	7.3
Fluorene	38 U	ug/Kg	38	36 U	ug/Kg	36	38 U	ug/Kg	38	36 U	ug/Kg	36
Indeno (1,2,3-cd) pyrene	7.8 U	ug/Kg	7.8	7.4 U	ug/Kg	7.4	7.6 U	ug/Kg	7.6	7.3 U	ug/Kg	7.3
Naphthalene	78 U	ug/Kg	78	74 U	ug/Kg	74	76 U	ug/Kg	76	73 U	ug/Kg	73
Phenanthrene	38 U	ug/Kg	38	36 U	ug/Kg	36	38 U	ug/Kg	38	36 U	ug/Kg	36
Pyrene	78 U	ug/Kg	78	74 U	ug/Kg	74	76 U	ug/Kg	76	73 U	ug/Kg	73

TPH

Total petroleum hydrocarbons	29 U	mg/kg	29	28 U	mg/kg	28	28 U	mg/kg	28	27 U	mg/kg	27
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC776012		RC776013		RC781001		RC781002		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S04801		20S04802		20S05001		20S05002		
Collect Date:	10-JAN-97		10-JAN-97		13-JAN-97		13-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	76 U	ug/Kg	76	78 U	ug/Kg	78	75 U	ug/kg	75	82 U	ug/kg	82
Acenaphthylene	76 U	ug/Kg	76	78 U	ug/Kg	78	75 U	ug/kg	75	82 U	ug/kg	82
Anthracene	7.6 U	ug/Kg	7.6	7.8 U	ug/Kg	7.8	7.5 U	ug/kg	7.5	8.2 U	ug/kg	8.2
Benzo (a) anthracene	7.6 U	ug/Kg	7.6	7.8 U	ug/Kg	7.8	7.5 U	ug/kg	7.5	8.2 U	ug/kg	8.2
Benzo (a) pyrene	3.8 U	ug/Kg	3.8	3.8 U	ug/Kg	3.8	3.7 U	ug/kg	3.7	4 U	ug/kg	4
Benzo (b) fluoranthene	3.8 U	ug/Kg	3.8	3.8 U	ug/Kg	3.8	3.7 U	ug/kg	3.7	4 U	ug/kg	4
Benzo (g,h,i) perylene	7.6 U	ug/Kg	7.6	7.8 U	ug/Kg	7.8	7.5 U	ug/kg	7.5	8.2 U	ug/kg	8.2
Benzo (k) fluoranthene	3.8 U	ug/Kg	3.8	3.8 U	ug/Kg	3.8	3.7 U	ug/kg	3.7	4 U	ug/kg	4
Chrysene	76 U	ug/Kg	76	78 U	ug/Kg	78	75 U	ug/kg	75	82 U	ug/kg	82
Dibenzo (a,h) anthracene	7.6 U	ug/Kg	7.6	7.8 U	ug/Kg	7.8	7.5 U	ug/kg	7.5	8.2 U	ug/kg	8.2
Fluoranthene	7.6 U	ug/Kg	7.6	7.8 U	ug/Kg	7.8	7.5 U	ug/kg	7.5	8.2 U	ug/kg	8.2
Fluorene	38 U	ug/Kg	38	38 U	ug/Kg	38	37 U	ug/kg	37	40 U	ug/kg	40
Indeno (1,2,3-cd) pyrene	7.6 U	ug/Kg	7.6	7.8 U	ug/Kg	7.8	7.5 U	ug/kg	7.5	8.2 U	ug/kg	8.2
Naphthalene	76 U	ug/Kg	76	78 U	ug/Kg	78	75 U	ug/kg	75	82 U	ug/kg	82
Phenanthrene	38 U	ug/Kg	38	38 U	ug/Kg	38	37 U	ug/kg	37	40 U	ug/kg	40
Pyrene	76 U	ug/Kg	76	78 U	ug/Kg	78	75 U	ug/kg	75	82 U	ug/kg	82

TPH

Total petroleum hydrocarbons	28 U	mg/kg	28	29 U	mg/kg	29	28 U	mg/kg	28	31 U	mg/kg	31
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC781003		RC781004		RC781005		RC781006		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S05201		20S05202		20S05401		20S05402		
Collect Date:	13-JAN-97		13-JAN-97		13-JAN-97		13-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	76 U	ug/kg	76	80 U	ug/kg	80	74 U	ug/kg	74	77 U	ug/kg	77
Acenaphthylene	76 U	ug/kg	76	80 U	ug/kg	80	74 U	ug/kg	74	77 U	ug/kg	77
Anthracene	7.6 U	ug/kg	7.6	8 U	ug/kg	8	7.4 U	ug/kg	7.4	7.7 U	ug/kg	7.7
Benzo (a) anthracene	7.6 U	ug/kg	7.6	8 U	ug/kg	8	7.4 U	ug/kg	7.4	7.7 U	ug/kg	7.7
Benzo (a) pyrene	3.8 U	ug/kg	3.8	3.9 U	ug/kg	3.9	3.7 U	ug/kg	3.7	3.8 U	ug/kg	3.8
Benzo (b) fluoranthene	3.8 U	ug/kg	3.8	3.9 U	ug/kg	3.9	3.7 U	ug/kg	3.7	3.8 U	ug/kg	3.8
Benzo (g,h,i) perylene	7.6 U	ug/kg	7.6	8 U	ug/kg	8	7.4 U	ug/kg	7.4	7.7 U	ug/kg	7.7
Benzo (k) fluoranthene	3.8 U	ug/kg	3.8	3.9 U	ug/kg	3.9	3.7 U	ug/kg	3.7	3.8 U	ug/kg	3.8
Chrysene	76 U	ug/kg	76	80 U	ug/kg	80	74 U	ug/kg	74	77 U	ug/kg	77
Dibenzo (a,h) anthracene	7.6 U	ug/kg	7.6	8 U	ug/kg	8	7.4 U	ug/kg	7.4	7.7 U	ug/kg	7.7
Fluoranthene	7.6 U	ug/kg	7.6	8 U	ug/kg	8	7.4 U	ug/kg	7.4	7.7 U	ug/kg	7.7
Fluorene	38 U	ug/kg	38	39 U	ug/kg	39	37 U	ug/kg	37	38 U	ug/kg	38
Indeno (1,2,3-cd) pyrene	7.6 U	ug/kg	7.6	8 U	ug/kg	8	7.4 U	ug/kg	7.4	7.7 U	ug/kg	7.7
Naphthalene	76 U	ug/kg	76	80 U	ug/kg	80	74 U	ug/kg	74	77 U	ug/kg	77
Phenanthrene	38 U	ug/kg	38	39 U	ug/kg	39	37 U	ug/kg	37	38 U	ug/kg	38
Pyrene	76 U	ug/kg	76	80 U	ug/kg	80	74 U	ug/kg	74	77 U	ug/kg	77

TPH

Total petroleum hydrocarbons	28 U	mg/kg	28	30 U	mg/kg	30	28 U	mg/kg	28	29 U	mg/kg	29
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC781007		RC781008		RC781009		RC781010		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S05601		20S05602		20S05801		20S05802		
Collect Date:	13-JAN-97		13-JAN-97		13-JAN-97		13-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	75 U	ug/kg	75	76 U	ug/kg	76	72 U	ug/kg	72	74 U	ug/kg	74
Acenaphthylene	75 U	ug/kg	75	76 U	ug/kg	76	72 U	ug/kg	72	74 U	ug/kg	74
Anthracene	7.5 U	ug/kg	7.5	7.6 U	ug/kg	7.6	7.2 U	ug/kg	7.2	7.4 U	ug/kg	7.4
Benzo (a) anthracene	7.5 U	ug/kg	7.5	7.6 U	ug/kg	7.6	7.2 U	ug/kg	7.2	7.4 U	ug/kg	7.4
Benzo (a) pyrene	3.7 U	ug/kg	3.7	3.8 U	ug/kg	3.8	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7
Benzo (b) fluoranthene	3.7 U	ug/kg	3.7	3.8 U	ug/kg	3.8	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7
Benzo (g,h,i) perylene	7.5 U	ug/kg	7.5	7.6 U	ug/kg	7.6	7.2 U	ug/kg	7.2	7.4 U	ug/kg	7.4
Benzo (k) fluoranthene	3.7 U	ug/kg	3.7	3.8 U	ug/kg	3.8	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7
Chrysene	75 U	ug/kg	75	76 U	ug/kg	76	72 U	ug/kg	72	74 U	ug/kg	74
Dibenzo (a,h) anthracene	7.5 U	ug/kg	7.5	7.6 U	ug/kg	7.6	7.2 U	ug/kg	7.2	7.4 U	ug/kg	7.4
Fluoranthene	7.5 U	ug/kg	7.5	7.6 U	ug/kg	7.6	7.2 U	ug/kg	7.2	7.4 U	ug/kg	7.4
Fluorene	37 U	ug/kg	37	38 U	ug/kg	38	36 U	ug/kg	36	37 U	ug/kg	37
Indeno (1,2,3-cd) pyrene	7.5 U	ug/kg	7.5	7.6 U	ug/kg	7.6	7.2 U	ug/kg	7.2	9.5	ug/kg	7.4
Naphthalene	75 U	ug/kg	75	76 U	ug/kg	76	72 U	ug/kg	72	74 U	ug/kg	74
Phenanthrene	37 U	ug/kg	37	38 U	ug/kg	38	36 U	ug/kg	36	37 U	ug/kg	37
Pyrene	75 U	ug/kg	75	76 U	ug/kg	76	72 U	ug/kg	72	74 U	ug/kg	74

TPH

Total petroleum hydrocarbons	28 U	mg/kg	28	28 U	mg/kg	28	27 U	mg/kg	27	28 U	mg/kg	28
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC781011		RC781012		RC774008MS		RC774008S		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S06001		20S06002		20S02001MS		20S02001MS		
Collect Date:	13-JAN-97		13-JAN-97		09-JAN-97		09-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	78 U	ug/kg	78	77 U	ug/kg	77	130	%rec	-
Acenaphthylene	78 U	ug/kg	78	77 U	ug/kg	77	44	%rec	-
Anthracene	7.8 U	ug/kg	7.8	7.7 U	ug/kg	7.7	54	%rec	-
Benzo (a) anthracene	7.8 U	ug/kg	7.8	7.7 U	ug/kg	7.7	59	%rec	-
Benzo (a) pyrene	3.8 U	ug/kg	3.8	3.8 U	ug/kg	3.8	58	%rec	-
Benzo (b) fluoranthene	3.8 U	ug/kg	3.8	3.8 U	ug/kg	3.8	63	%rec	-
Benzo (g,h,i) perylene	7.8 U	ug/kg	7.8	7.7 U	ug/kg	7.7	62	%rec	-
Benzo (k) fluoranthene	3.8 U	ug/kg	3.8	3.8 U	ug/kg	3.8	62	%rec	-
Chrysene	78 U	ug/kg	78	77 U	ug/kg	77	56	%rec	-
Dibenzo (a,h) anthracene	7.8 U	ug/kg	7.8	7.7 U	ug/kg	7.7	61	%rec	-
Fluoranthene	7.8 U	ug/kg	7.8	7.7 U	ug/kg	7.7	61	%rec	-
Fluorene	38 U	ug/kg	38	38 U	ug/kg	38	131	%rec	-
Indeno (1,2,3-cd) pyrene	7.8 U	ug/kg	7.8	7.7 U	ug/kg	7.7	61	%rec	-
Naphthalene	78 U	ug/kg	78	77 U	ug/kg	77	53	%rec	-
Phenanthrene	38 U	ug/kg	38	38 U	ug/kg	38	53	%rec	-
Pyrene	78 U	ug/kg	78	77 U	ug/kg	77	59	%rec	-

TPH

Total petroleum hydrocarbons	29 U	mg/kg	29	29 U	mg/kg	29	-		79.5	%rec
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC774008MS		RC774008D		RC774010MS		RC774010S		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S02001MSD		20S02001MSD		20S02002MS		20S02002MS		
Collect Date:	09-JAN-97		09-JAN-97		09-JAN-97		09-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	18	RPD	-	-	72	%rec	-
Acenaphthylene	13	RPD	-	-	58	%rec	-
Anthracene	19	RPD	-	-	54	%rec	-
Benzo (a) anthracene	21	RPD	-	-	65	%rec	-
Benzo (a) pyrene	20	RPD	-	-	58	%rec	-
Benzo (b) fluoranthene	19	RPD	-	-	70	%rec	-
Benzo (g,h,i) perylene	20	RPD	-	-	71	%rec	-
Benzo (k) fluoranthene	20	RPD	-	-	69	%rec	-
Chrysene	20	RPD	-	-	65	%rec	-
Dibenzo (a,h) anthracene	25	RPD	-	-	70	%rec	-
Fluoranthene	16	RPD	-	-	66	%rec	-
Fluorene	6	RPD	-	-	67	%rec	-
Indeno (1,2,3-cd) pyrene	24	RPD	-	-	68	%rec	-
Naphthalene	21	RPD	-	-	60	%rec	-
Phenanthrene	24	RPD	-	-	61	%rec	-
Pyrene	29	RPD	-	-	72	%rec	-

TPH

Total petroleum hydrocarbons	-		0	RPD	-		82.6	%rec
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OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8685  
 SOIL SAMPLES -- METHOD 8310 (PAH) & METHOD 418.1 (TPH)

Lab Sample Number:	RC774010MS		RC774010D		RC776001MS		RC776001MS		
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN		
Locator	20S02002MSD		20S02002MSD		20S03602MS		20S03602MSD		
Collect Date:	09-JAN-97		09-JAN-97		10-JAN-97		10-JAN-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

8310

Acenaphthene	4.9	RPD	-	-	67	%rec	3.4	RPD
Acenaphthylene	4.6	RPD	-	-	57	%rec	0	RPD
Anthracene	4.6	RPD	-	-	57	%rec	3	RPD
Benzo (a) anthracene	4.4	RPD	-	-	68	%rec	1.7	RPD
Benzo (a) pyrene	5	RPD	-	-	65	%rec	5.1	RPD
Benzo (b) fluoranthene	5	RPD	-	-	71	%rec	5.1	RPD
Benzo (g,h,i) perylene	5.4	RPD	-	-	72	%rec	4.7	RPD
Benzo (k) fluoranthene	4.2	RPD	-	-	71	%rec	6.3	RPD
Chrysene	4.4	RPD	-	-	66	%rec	4.3	RPD
Dibenzo (a,h) anthracene	3.8	RPD	-	-	71	%rec	2	RPD
Fluoranthene	5.3	RPD	-	-	66	%rec	3.4	RPD
Fluorene	3.9	RPD	-	-	66	%rec	4.3	RPD
Indeno (1,2,3-cd) pyrene	2.5	RPD	-	-	71	%rec	3.1	RPD
Naphthalene	3.9	RPD	-	-	59	%rec	.9	RPD
Phenanthrene	6.8	RPD	-	-	78	%rec	2.2	RPD
Pyrene	4.9	RPD	-	-	73	%rec	0	RPD

TPH

Total petroleum hydrocarbons	-		0	RPD	-		-	
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U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

# CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

0046

Project # <b>07541-36</b>		Purchase Order # <b>997-m1</b>		<input type="checkbox"/> LGN One Innovation Drive, Suite C Alachua, FL 32615-9586 (904) 462-3050 FAX (904) 462-1670		<input checked="" type="checkbox"/> <b>LRD</b> 5090 Caterpillar Road Redding, CA 96003-1412 (916) 244-5227 FAX (916) 244-4109		THIS AREA FOR LAB USE ONLY				
Project Name <b>OLF BARIN</b>				<input type="checkbox"/> LMG 2567 Fairlane Drive Montgomery, AL 36116-1622 (334) 271-2440 FAX (334) 271-3428		<input type="checkbox"/> LKW Canviro Analytical Laboratories, Inc. 50 Bathurst, Unit 12 Waterloo, Ontario, Canada N2V 2C5 (519) 747-2575 FAX (519) 747-3806		Lab # <b>RC773</b>	Page <b>1</b>	of <b>31</b>		
Company Name <b>ABB ENVIRONMENTAL SVCS.</b>								Client Service <b>A P Q S</b>				
Project Manager or Contact & Phone # <b>KATHY HODAK 904 942-7454 x256</b>				Report Copy to: <b>SAME</b>				Acct Code <b></b>				
Requested Completion Date: <b>7 days TAT</b>				Site ID <b>Sites 19B + 20B</b>		Sample Disposal: Dispose <input checked="" type="checkbox"/> Return <input type="checkbox"/>		Project Code <b></b>				
								LIMS Ver <b></b>				
								COC Review <b></b>				
								Login <b></b>				
								Mult. <b></b>				
								LAB 1 ID <b>1</b>				
								LAB 2 ID <b>2</b>				
								<b>3</b>				
								<b>4</b>				
								<b>5</b>				
								<b>6</b>				
								<b>7</b>				
								<b>8</b>				
								<b>9</b>				
								<b>10</b>				
								<b>11</b>				
Sampling		Type	Matrix	CLIENT SAMPLE ID (9 CHARACTERS)				QC ID (3 CHAR)		ANALYSES REQUESTED  # OF CONTAINERS <b>802 GLASS SOIL JAR TPH 4181/PAH B310</b>  <b>Total # of containers ON THIS chain 11</b>		
Date	Time	COMP	GRA B	WATER	SOIL							
1-9-97	0925	X	X	X		20500201						
1-9-97	0925	X	X	X		20500202						
1-9-97	1005	X	X	X		20500401						
1-9-97	1050	X	X	X		20500601						
1-9-97	1017	X	X	X		20500402						
1-9-97	1104	Y	X	X		20500602						
1-9-97	1146	X	X	X		20500802						
1-9-97	1157	X	X	X		20500801						
1-9-97	1210	X	X	X		20501001						
1-9-97	1222	X	X	X		20501002						
1-9-97	1329	X	X	X		20501201						
Sampled By & Title <i>[Signature]</i>		Date/Time <b>1/9/97 21:00</b>		Relinquished By <i>[Signature]</i>		Date/Time <b>1/9/97 21:00</b>		Date/Time <b>1/9/97 21:00</b>		HAZWRAP/NESSA: Y N		
Received By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Relinquished By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Date/Time <b>1/11/97 1115</b>		EDATA: 0 N		
Received By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Relinquished By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Date/Time <b>1/11/97 1115</b>		QC LEVEL 1 (2) 3 OTHER		
Received By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Relinquished By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Date/Time <b>1/11/97 1115</b>		pH N/A Ice		
Received By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Relinquished By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Date/Time <b>1/11/97 1115</b>		Custody Seal Y Temp <b>2°C</b>		
Received By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Relinquished By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Date/Time <b>1/11/97 1115</b>		Shipping # <b>2735047055</b>		
Received By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Relinquished By <i>[Signature]</i>		Date/Time <b>1/11/97 1115</b>		Date/Time <b>1/11/97 1115</b>		Shipped Via UPS <input checked="" type="checkbox"/> Fed-Ex Other		

Remarks: **Level C**

Terms and Agreement Provisions on Reverse Side

**CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES**

Project # <b>07541-36</b>		Purchase Order # <b>997-M1</b>		<input type="checkbox"/> <b>LGN</b> One Innovation Drive, Suite C Alachua, FL 32615-9586 (904) 462-3050 FAX (904) 462-1670		<input checked="" type="checkbox"/> <b>LRD</b> 5090 Caterpillar Road Redding, CA 96003-1412 (916) 244-5227 FAX (916) 244-4109		<b>THIS AREA FOR LAB USE ONLY</b>			
Project Name <b>OLF BARIN</b>				<input type="checkbox"/> <b>LMG</b> 2567 Fairlane Drive Montgomery, AL 36116-1622 (334) 271-2440 FAX (334) 271-3428		<input type="checkbox"/> <b>LKW</b> Canviro Analytical Laboratories, Inc. 50 Bathurst, Unit 12 Waterloo, Ontario, Canada N2V 2C5 (519) 747-2575 FAX (519) 747-3806		Lab # <b>RC174</b>	Page <b>21</b>	of <b>32</b>	
Company Name <b>ABB ENVIRONMENTAL SVCS</b>								Client Service		Price Source <b>A P Q S</b>	
Project Manager or Contact & Phone # <b>KATHY HODAK (904) 942-7454 x.256</b>		Report Copy to: <b>SAME</b>						Acct Code		Test Group	
Requested Completion Date: <b>7 days TAT</b>		Site ID <b>Sites 19B + 20B</b>		Sample Disposal: Dispose <input checked="" type="checkbox"/> Return <input type="checkbox"/>				Project Code		Ack. Gen.	
								LIMS Ver		Login	Mult.
								COC Review			
								SAMPLE REMARKS		LAB 1 ID	LAB 2 ID
										1	
										2	
										3	
										4	
										5	
										6	
										7	
										8	
								TAKE MS MSD		9	
										10	
								TAKE MS MSD		11	

Sampled By & Time <i>[Signature]</i> (Please sign and print name)		Date/Time <b>1/09/97 21:00</b>		Relinquished By <i>[Signature]</i> (Please sign and print name)		Date/Time <b>1/10/97 06:30</b>		HAZWRAP/NESSA: Y N	
Received By <i>[Signature]</i> (Please sign and print name)		Date/Time <b>1/11/97 11:15</b>		Relinquished By		Date/Time		EDATA: (Y) N	
Received By		Date/Time		Relinquished By		Date/Time		QC LEVEL 1 (2) 3 OTHER	
Received By		Date/Time		Shipped Via UPS <input checked="" type="checkbox"/> Fed-Ex Other		Shipping # <b>2735047055</b>		pH N/A Ice Y	
Batch Remarks:								Custody Seal Y Temp <b>20°C</b>	

**\* FIRST TWO CHARACTER ID SHOULD BE 00 NOT 02 PUL 2000 HAS 1/9/97**  
**\*\* SAMPLES COLLECTED @ 1609 HAS ARE 20502001 + 20502001D 2000 HAS 1/9/97**

0071

Total # of Containers 11

# OF CONTAINERS 802 CLASS SOIL JAR TPH 4151/PART 8310



LITY ANALYTICAL  
LABORATORIES, INC.

### CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

Project # <b>7541-36</b>		Purchase Order # <b>997-m1</b>		<input type="checkbox"/> LGN One Innovation Drive, Suite C Alachua, FL 32615-9586 (904) 462-3050 FAX (904) 462-1670		<input checked="" type="checkbox"/> LRD 5090 Caterpillar Road Redding, CA 96003-1412 (916) 244-5227 FAX (916) 244-4109		THIS AREA FOR LAB USE ONLY																																																																																
Project Name <b>OLF Basin</b>				<input type="checkbox"/> LMG 2567 Fairlane Drive Montgomery, AL 36116-1622 (334) 271-2440 FAX (334) 271-3428		<input type="checkbox"/> LKW Canviro Analytical Laboratories, Inc. 50 Bathurst, Unit 12 Waterloo, Ontario, Canada N2V 2C5 (519) 747-2575 FAX (519) 747-3806		Lab # <b>RC774</b>		Page <b>2</b> of <b>2</b> <b>3/3</b>																																																																														
Company Name <b>ABB Environmental Services Inc</b>								Client Service		Price Source <b>A P Q S</b>																																																																														
Project Manager or Contact & Phone # <b>Kathy Hodak</b> 904 656 1293 Ext 256			Report Copy to: <b>Same</b>			ANALYSES REQUESTED																																																																																		
Requested Completion Date: <b>7 days TAT</b>		Site ID <b>Sites 19B + 20B</b>		Sample Disposal: Dispose <input checked="" type="checkbox"/> Return <input type="checkbox"/>		# OF CONTAINERS <b>8oz glass soil jars TPH 4181 / PAH 8310</b>																																																																																		
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Date</th> <th rowspan="2">Time</th> <th colspan="2">Type</th> <th colspan="2">Matrix</th> <th rowspan="2">CLIENT SAMPLE ID (9 CHARACTERS)</th> <th rowspan="2">QC ID (3 CHAR)</th> <th rowspan="2">#</th> <th rowspan="2">OF</th> <th rowspan="2">CONTAINERS</th> </tr> <tr> <th>C</th> <th>G</th> <th>W</th> <th>S</th> </tr> </thead> <tbody> <tr> <td>1-9-97</td> <td>1652</td> <td>X</td> <td>X</td> <td>020</td> <td>S02401</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1-9-97</td> <td>1705</td> <td>X</td> <td>X</td> <td>020</td> <td>S02402</td> <td></td> <td></td> <td>1</td> <td>1</td> <td></td> </tr> <tr> <td>1-9-97</td> <td>1652</td> <td>X</td> <td>X</td> <td>020</td> <td>S02401</td> <td></td> <td></td> <td>1</td> <td>1</td> <td></td> </tr> <tr> <td>1-9-97</td> <td>1730</td> <td>X</td> <td>X</td> <td>020</td> <td>S02601</td> <td></td> <td></td> <td>1</td> <td>1</td> <td></td> </tr> <tr> <td>1-9-97</td> <td>1742</td> <td>X</td> <td>X</td> <td>020</td> <td>S02602</td> <td></td> <td></td> <td>1</td> <td>1</td> <td></td> </tr> <tr> <td colspan="10" style="text-align: center;"><b>Total # of containers = 4</b></td> <td></td> </tr> </tbody> </table>		Date	Time	Type		Matrix		CLIENT SAMPLE ID (9 CHARACTERS)	QC ID (3 CHAR)	#	OF	CONTAINERS	C	G	W	S	1-9-97	1652	X	X	020	S02401						1-9-97	1705	X	X	020	S02402			1	1		1-9-97	1652	X	X	020	S02401			1	1		1-9-97	1730	X	X	020	S02601			1	1		1-9-97	1742	X	X	020	S02602			1	1		<b>Total # of containers = 4</b>											LIMS Ver		Login		Mult.	
Date	Time			Type		Matrix							CLIENT SAMPLE ID (9 CHARACTERS)	QC ID (3 CHAR)	#	OF	CONTAINERS																																																																							
		C	G	W	S																																																																																			
1-9-97	1652	X	X	020	S02401																																																																																			
1-9-97	1705	X	X	020	S02402			1	1																																																																															
1-9-97	1652	X	X	020	S02401			1	1																																																																															
1-9-97	1730	X	X	020	S02601			1	1																																																																															
1-9-97	1742	X	X	020	S02602			1	1																																																																															
<b>Total # of containers = 4</b>																																																																																								
COC Review		LAB 1 ID		LAB 2 ID		Project Code		Ack. Gen.																																																																																
SAMPLE REMARKS																																																																																								

KMB

Total # of containers = 4

0072

**CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES**

Project # <b>07541.36</b>		Purchase Order #		<input type="checkbox"/> <b>LGN</b> One Innovation Drive, Suite C Nacurus, FL 32615-9586 (904) 462-3050 FAX (904) 462-1670		<input type="checkbox"/> <b>LRD</b> 5090 Caterpillar Road Redding, CA 96003-1412 (916) 244-5227 FAX (916) 244-4109		<b>THIS AREA FOR LAB USE ONLY</b>			
Project Name <b>OLF BARIN</b>				<input type="checkbox"/> <b>LMG</b> 2587 Fairlane Drive Montgomery, AL 36116-1622 (334) 271-2440 FAX (334) 271-3428		<input type="checkbox"/> <b>LKW</b> Canviro Analytical Laboratories, Inc. 51 Bathurst, Unit 12 Waterloo, Ontario, Canada N2V 2C5 (519) 747-2575 FAX (519) 747-3806		Lab # <b>RC775</b>	Page <b>1</b>	of <b>21</b>	
Company Name <b>ABB ENVIRONMENTAL</b>				Report Copy to: <b>The SAME</b>				Client Service		Price Source <b>A P O S</b>	
Project Manager or Contact & Phone # <b>(904) 942-7454 x 256</b>		Requested Completion Date:		Site ID		Sample Disposal: Dispose <input type="checkbox"/> Return <input type="checkbox"/>		Accr Code		Test Group	
Sampling		Type	Matrix	CLIENT SAMPLE ID (9 CHARACTERS)				OC ID (3 CHAR)		ANALYSES REQUESTED	
Date	Time	COM P	GRA B	WATER	SOIL						
7-10-97	0723	X	X	20	S02801						
7-10-97	0737	X	X	20	S02802						
7-10-97	0805	X	X	20	S03001						
7-10-97	0823	X	X	20	S03002						
7-10-97	0842	X	X	20	S03201						
7-10-97	0910	X	X	20	S03202						
7-10-97	0930	X	X	20	S03401	D					
7-10-97	0940	X	X	20	S03402						
7-10-97	0940	X	X	20	S03402	D					
7-10-97	1028	X	X	20	S03601						
Sampled By & Title <i>[Signature]</i>		Date/Time <b>11/19/97 16:30</b>		Relinquished By <i>[Signature]</i>		Date/Time <b>11/19/97 11:15</b>		Date/Time <b>11/10/97 16:00</b>		HAZWRAPNESS: Y N	
Received By <i>[Signature]</i>		Date/Time		Relinquished By		Date/Time		Date/Time		EDATA: Y N	
Received By		Date/Time		Relinquished By		Date/Time		Date/Time		OC LEVEL 1 (2) 3 OTHER	
Received By		Date/Time		Shipped Via UPS <input checked="" type="checkbox"/> Fed-Ex Other		Shipping # <b>273 50 47044</b>		pH <b>N/A</b> Ice <b>Y</b>		Custody Seal <b>Y</b> Temp <b>2°C</b>	
Batch Remarks:											

CONTAINERS

502 GLASS JAR  
TPH 418.1 PAH 8310

0049

# CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

Project # <b>07541-36</b>		Purchase Order #		<input type="checkbox"/> LGN One Innovation Drive, Suite C Alachua, FL 32615-3589 (904) 482-3050 FAX (904) 462-1670		<input type="checkbox"/> LRD 5090 Caterpillar Road Redding, CA 96003-1412 (918) 244-5227 FAX (918) 244-4109		THIS AREA FOR LAB USE ONLY			
Project Name <b>OLF BARIH</b>				<input type="checkbox"/> LMG 2567 Fairlane Drive Montgomery, AL 36116-1622 (334) 271-2410 FAX (334) 271-3428		<input type="checkbox"/> LKW Canviro Analytical Laboratories, Inc. 50 Bathurst, Unit 12 Waterloo, Ontario, Canada N2V 2C5 (519) 747-2575 FAX (519) 747-3606		Lab # <b>RC776</b>	Page <b>21</b>	of <b>32</b>	
Company Name <b>ABB ENVIRONMENTAL</b>				Report Copy to: <b>The SAME</b>		Client Service		Price Source <b>A P O S</b>			
Project Manager or Contact & Phone # <b>KATHY HODAK 604 942 7454 x256</b>		Requested Completion Date:		Site ID		Sample Disposal: Dispose <input type="checkbox"/> Return <input type="checkbox"/>		Acct Code		Test Group	
Sampling		Type	Matrix	CLIENT SAMPLE ID (9 CHARACTERS)			QC ID (3 CHAR)		ANALYSES REQUESTED		
Date	Time	COM P	G R A B	W A T E R	S O I L						
7-10-97	1036	X	X	X		20503602			# OF CONTAINERS 802 GLASS JAR TPH Y/D, PAH 8310		
7-10-97		X	X	X		20503602					
7-10-97	1115 <del>1145</del>	X	X	X		20503802					
7-10-97	1105	X	X	X		20503801					
7-10-97	1144	X	X	X		20504002					
7-10-97	1134	X	X	X		20504001					
7-10-97	1210	X	X	X		20504202					
7-10-97	1159	X	X	X		20504201					
7-10-97	1255	X	X	X		20504402					
7-10-97	1231 <del>1237</del>	X	X	X		20504401					
7-10-97	1255	X	X	X		20504601					
Sampled By: <i>[Signature]</i>		Date/Time: <b>1/10/97 16:30</b>		Relinquished By: <i>[Signature]</i>		Date/Time: <b>1/10/97 16:30</b>		HAZWRAPINESS: Y N			
Received By: <i>[Signature]</i>		Date/Time: <b>1/11/97 1115</b>		Relinquished By:		Date/Time:		EDATA: Y N			
Received By:		Date/Time:		Relinquished By:		Date/Time:		OC LEVEL 1 (2) 3 OTHER			
Received By:		Date/Time:		Shipped Via: <b>UPS Fed-Ex</b>		Shipping #: <b>773 50 47044</b>		pH: <b>N/A</b> Ice: <b>Y</b>			
Batch Remarks:								Custody Seal: <b>Y</b> Temp: <b>2°C</b>			

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: Original - LAB, Yellow - LAB, Pink - Client  
REV 5/95 LAB FORM 340

0051

Project # 07541.36		Purchase Order #		<input type="checkbox"/> LGN One Innovation Drive, Suite C Alachua, FL 32615-9598 (904) 462-3050 FAX (904) 462-1870		<input type="checkbox"/> LRD 5090 Caterpillar Road Redding, CA 96003-1412 (916) 244-5227 FAX (916) 244-4109		THIS AREA FOR LAB USE ONLY				
Project Name OLF BARIK				<input type="checkbox"/> LMG 2567 Fairlane Drive Montgomery, AL 36116-1622 (334) 271-2440 FAX (334) 271-3428		<input type="checkbox"/> LKW Carvivo Analytical Laboratories, Inc. 50 Bathurst, Unit 12 Waterloo, Ontario, Canada N2V 2C5 (519) 747-2575 FAX (519) 747-3805		Lab # RC776	Page 23	of 32		
Company Name ABB ENVIRONMENTAL				Report Copy to: THE SAME				Client Service		Price Source A P O S		
Project Manager or Contact & Phone # Kathy HODAK 904 942 7454 X286		Requested Completion Date:		Sample Disposal: Dispose <input type="checkbox"/> Return <input type="checkbox"/>		ANALYSES REQUESTED		Acct Code		Test Group		
Site ID								Project Code		Ack. Gen.		
Sampling		Type	Matrix	CLIENT SAMPLE ID (9 CHARACTERS)		QC ID (3 CHAR)		LIMS Ver		Login	Mult.	
Date	Time	C O M P	G R A B	W A T E R	S O I L			COC Review		SAMPLE REMARKS		
7-10-97	1305	X		X		20	S04602				LAB 1 ID 11	LAB 2 ID
7-10-97	1339	X		X		20	S04801				12	
7-10-97	1346	X		X		20	S04802				13	
Sampled By & Title <i>[Signature]</i>		Date/Time 11/10/97 16:30	Relinquished By <i>[Signature]</i>		Date/Time 11/10/97 16:30	HAZWRAPINESSA: Y N		EDATA: Y N		QC LEVEL 1 (?) 3 OTHER		
Received By <i>[Signature]</i>		Date/Time 11/11/97 11:15	Relinquished By		Date/Time	pH N/A		Temp Y		Custody Seal Y		
Received By		Date/Time	Relinquished By		Date/Time	Shipped Via UPS <input checked="" type="checkbox"/> Fed-Ex Other		Shipping # 273 50 47 044		Temp 2°C		
Batch Remarks:												

Instructions and Agreement Provisions on Reverse Side

ADD ENV ONLY 1-10-97 12:00PM SUBSTITUTION

0056





CANVIRO ANALYTICAL LABORATORIES, INC.

# CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

Project #		Purchase Order #		<input type="checkbox"/> LGN One Innovation Drive, Suite C Alachua, FL 32615-9586 (904) 462-3050 FAX (904) 462-1670		<input checked="" type="checkbox"/> LRD 5090 Caterpillar Road Redding, CA 96003-1412 (916) 244-5227 FAX (916) 244-4109		THIS AREA FOR LAB USE ONLY												
Project Name <b>OLF BARRIN/NAVY CLEAN</b>				<input type="checkbox"/> LMG 2567 Fairlane Drive Montgomery, AL 36116-1622 (334) 271-2440 FAX (334) 271-3428		<input type="checkbox"/> LKW Canviro Analytical Laboratories, Inc. 50 Bathurst, Unit 12 Waterloo, Ontario, Canada N2V 2C5 (519) 747-2575 FAX (519) 747-3806		Lab # <b>RC781</b>	Page <b>2</b>	of <b>3</b>										
Company Name <b>ABB-ES</b>				Report Copy to: <b>SAME</b>		Acct Code		Price Source <b>A P Q S</b>												
Project Manager or Contact & Phone # <b>KATHY HOOLAK (904) 656-1293</b>		Requested Completion Date: <b>CONTACT: BRIAN GEERS (LRD)</b>		Site ID <b>20</b>		Sample Disposal: Dispose <input checked="" type="checkbox"/> Return <input type="checkbox"/>		Acct Code		Test Group										
Date		Time		Type		Matrix		CLIENT SAMPLE ID (9 CHARACTERS)		QC ID (3 CHAR)	# OF CONTAINERS	ANALYSES REQUESTED				Project Code		Ack. Gen.		
Date		Time		Type		Matrix		CLIENT SAMPLE ID (9 CHARACTERS)		QC ID (3 CHAR)		8oz Soil Jar TPH 4/4/1 PAH 8/310 40ml w/ HCL 60Z 2.5 Liter Amber 8310 / 4°C 1/2 Gallon Polter LEAD *				LIMS Ver		Login	Mult.	
Date		Time		Type		Matrix		CLIENT SAMPLE ID (9 CHARACTERS)		QC ID (3 CHAR)					COC Review		SAMPLE REMARKS		LAB 1 ID	LAB 2 ID
1/13/97		10:10		Y		X		20505802			1 1 0 0 0								10	
1/13/97		10:28		Y		X		20506001			1 1 0 0 0								11	
1/13/97		10:34		X		X		20506002			1 1 0 0 0								12	
								2060E1TP			1									
1/13/97		12:15		Y		X		2060E1TP			0 3 1 1						Equipment Blank		14	
1/13/97		13:20		Y		X		2060E2TP			0 3 1 1						Ground Water		15	
1/13/97		11:50		Y		X		2060E3TP			0 3 1 1						Equipment Blank		16	
1/13/97				Y		X		205001EB			5 0 3 1 1						Soil		PUC	
1/9/97		12:10		Y		X		20501001			1 0 0 0 0						XX		13	
																	XX			

PUC 1/13/97

24 PUC  
19 Twenty four CONTAINERS  
THIS PAGE

Sampled By & Title <i>[Signature]</i>		Date/Time <b>2/13/97 1700</b>		Relinquished By <i>[Signature]</i>		Date/Time <b>1/13/97 1700</b>		HAZWRAP/NESSA: Y N	
Received By <i>[Signature]</i>		Date/Time <b>1-14-97 0950</b>		Relinquished By		Date/Time		EDATA: Y N	
Received By		Date/Time		Relinquished By		Date/Time		QC LEVEL 1 2 3 OTHER	
Received By		Date/Time		Shipped Via UPS <input checked="" type="checkbox"/> Fed-Ex <input type="checkbox"/> Other		Shipping # <b>2369342010</b>		pH	
								Ice <b>Y</b>	
								Custody Seal <b>Y</b>	
								Temp <b>4.0°C</b>	

Batch Remarks: \* LEAD SAMPLE TALK TO BRIAN GEERS (LRD); SAMPLE UN PRESERVED.  
 \*\* SAMPLE Collected 1/09/97 NOTED ON PREVIOUS CHAIN OF CUSTODY BUT NOT SENT, SAMPLE has been preserved w/ 4°C since 1/9/97 PUC (Patrick V. Ceano)  
 There IS NO 9th character to THIS page PUC 1/13/97

0101





**APPENDIX D**  
**GROUNDWATER ANALYTICAL RESULTS**



OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8684  
TERRA PROBE SAMPLES -- METHOD 602 (BETX) & METHOD 8310 (PAH)

Lab Sample Number:	RC768002		RC768001		RC768003		RC768004					
Site	OLFBARIN		OLFBARIN		OLFBARIN		OLFBARIN					
Locator	20GW024TP		20GW028TP		20GW037TP		20GW046TP					
Collect Date:	08-JAN-97		08-JAN-97		08-JAN-97		08-JAN-97					
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL

602

Benzene	1 U	ug/l	1									
Ethylbenzene	1 U	ug/l	1									
Toluene	1 U	ug/l	1									
Xylenes (total)	1 U	ug/l	1									

8310

Acenaphthene	2 U	ug/l	2									
Acenaphthylene	2 U	ug/l	2									
Anthracene	.2 U	ug/l	.2									
Benzo (a) anthracene	.2 U	ug/l	.2									
Benzo (a) pyrene	.1 U	ug/l	.1									
Benzo (b) fluoranthene	.1 U	ug/l	.1									
Benzo (g,h,i) perylene	.2 U	ug/l	.2									
Benzo (k) fluoranthene	.1 U	ug/l	.1									
Chrysene	2 U	ug/l	2									
Dibenzo (a,h) anthracene	.2 U	ug/l	.2									
Fluoranthene	.2 U	ug/l	.2									
Fluorene	1 U	ug/l	1									
Indeno (1,2,3-cd) pyrene	.2 U	ug/l	.2									
Naphthalene	2 U	ug/l	2									
Phenanthrene	1 U	ug/l	1									
Pyrene	2 U	ug/l	2									

U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

OLFBARIN -- ANALYTICAL RESULTS REPORT -- REPORT NO. 8684  
TERRA PROBE SAMPLES -- METHOD 602 (BETX) & METHOD 8310 (PAH)

Lab Sample Number:	RC768005		RC768006			
Site	OLFBARIN		OLFBARIN			
Locator	20GW056TP		20GW056TPDUP			
Collect Date:	08-JAN-97		08-JAN-97			
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

602

Benzene	1 U	ug/l	1	1 U	ug/l	1
Ethylbenzene	1 U	ug/l	1	1 U	ug/l	1
Toluene	1 U	ug/l	1	1 U	ug/l	1
Xylenes (total)	2.3	ug/l	1	1.4	ug/l	1

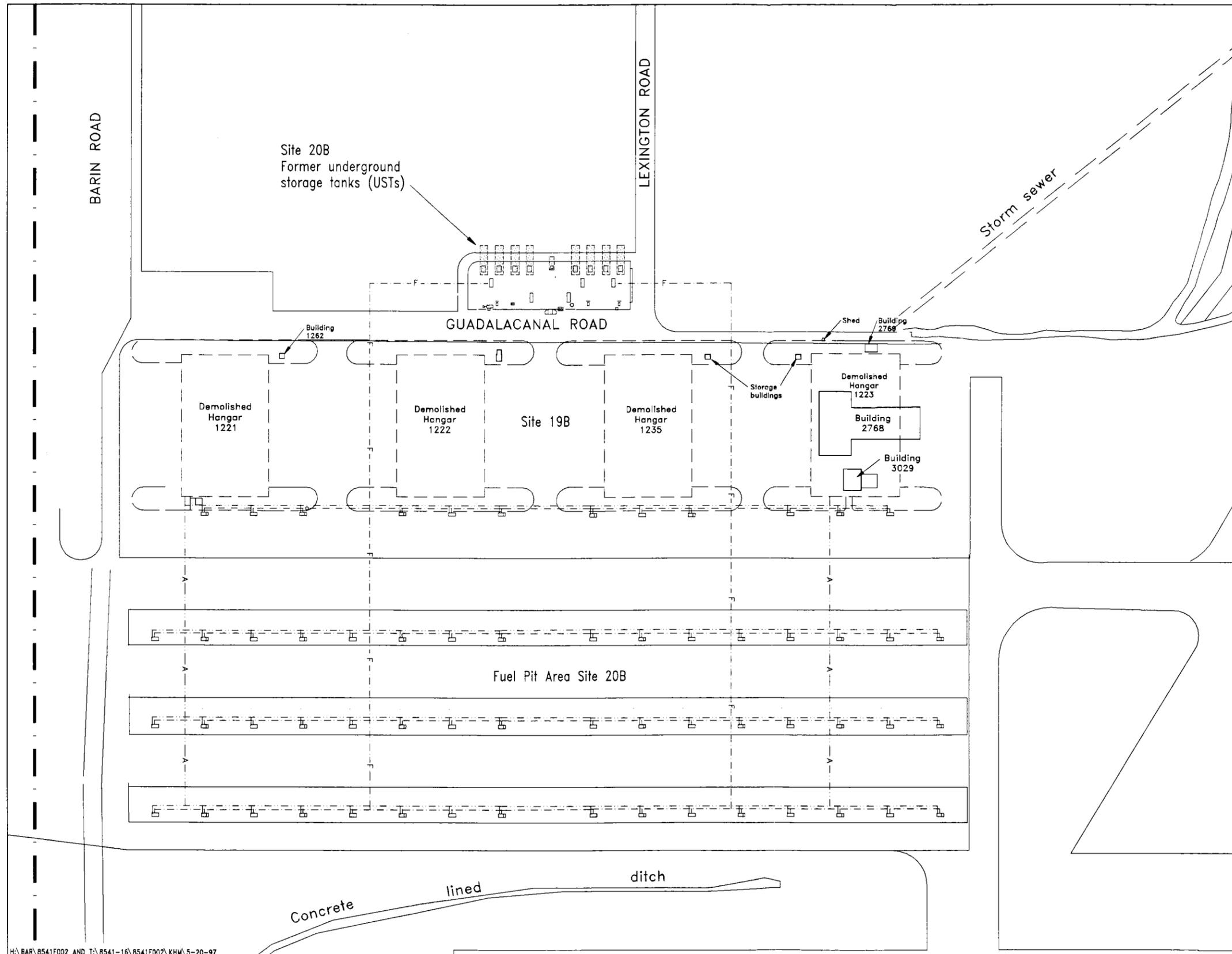
8310

Acenaphthene	2 U	ug/l	2	2 U	ug/l	2
Acenaphthylene	2 U	ug/l	2	2 U	ug/l	2
Anthracene	.2 U	ug/l	.2	.2 U	ug/l	.2
Benzo (a) anthracene	.2 U	ug/l	.2	.2 U	ug/l	.2
Benzo (a) pyrene	.1 U	ug/l	.1	.1 U	ug/l	.1
Benzo (b) fluoranthene	.1 U	ug/l	.1	.1 U	ug/l	.1
Benzo (g,h,i) perylene	.2 U	ug/l	.2	.2 U	ug/l	.2
Benzo (k) fluoranthene	.1 U	ug/l	.1	.1 U	ug/l	.1
Chrysene	2 U	ug/l	2	2 U	ug/l	2
Dibenzo (a,h) anthracene	.2 U	ug/l	.2	.2 U	ug/l	.2
Fluoranthene	.2 U	ug/l	.2	.2 U	ug/l	.2
Fluorene	1 U	ug/l	1	1 U	ug/l	1
Indeno (1,2,3-cd) pyrene	.2 U	ug/l	.2	.2 U	ug/l	.2
Naphthalene	2 U	ug/l	2	2 U	ug/l	2
Phenanthrene	1 U	ug/l	1	1 U	ug/l	1
Pyrene	2 U	ug/l	2	2 U	ug/l	2

U = NOT DETECTED R = RESULT IS REJECTED AND UNUSABLE  
J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED







**LEGEND**

- Fueling pit
- Fueling pit and lube oil tank
- Fuel line
- Air line
- Facility boundary
- Former fuel UST location and designation

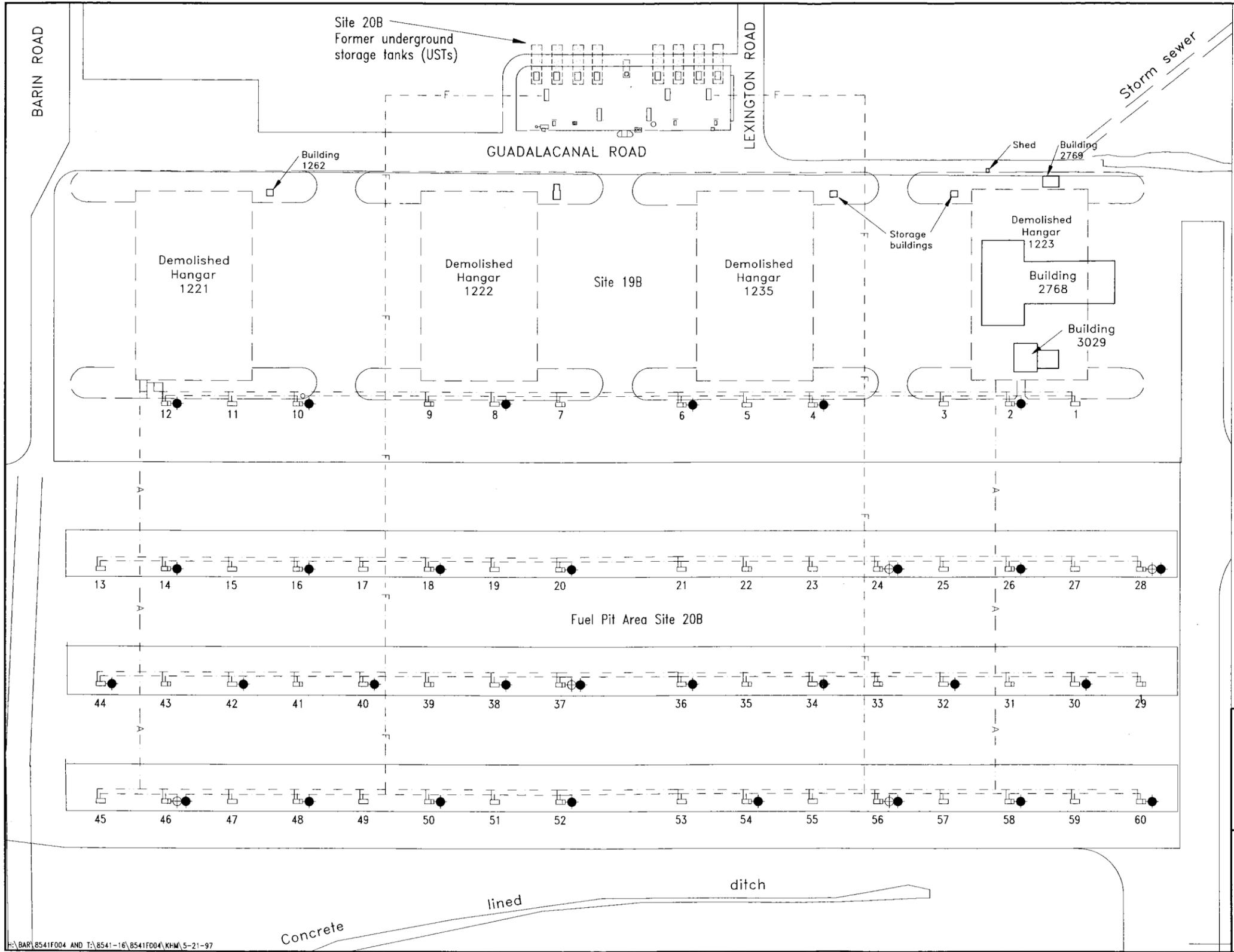


0 100 200  
SCALE: 1 INCH = 200 FEET

**FIGURE 1-3  
LOCATION OF FUEL PITS  
AND LINES AT SITE 20B**

**CLOSURE REPORT  
SITE 20B**

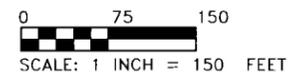
**OUTLYING LANDING FIELD BARIN  
FOLEY, ALABAMA**



**LEGEND**

- Fueling pit
- Fueling pit and lube oil tank
- Fuel line
- Air line
- Facility boundary
- Former fuel UST location and designation
- TerraProbe<sup>SM</sup> soil boring location
- TerraProbe<sup>SM</sup> groundwater sample location

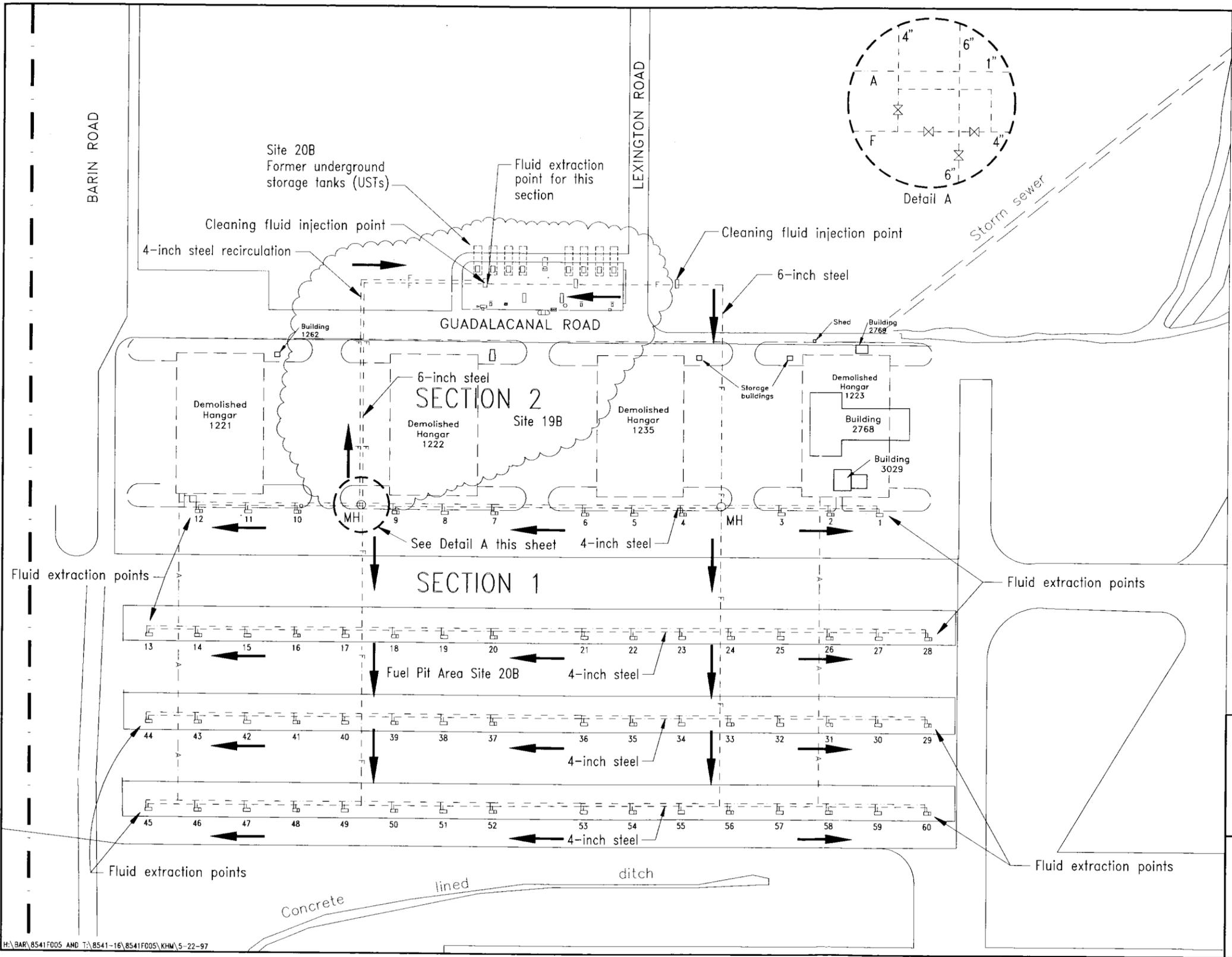
**Note:**  
 No soil samples were collected at fueling pit and lube oil tank #22 due to excess water on ground at the time of sample collection.



**FIGURE 3-1  
 SOIL AND GROUNDWATER  
 SAMPLE LOCATIONS**

**CLOSURE REPORT  
 SITE 20B**

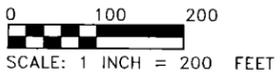
**OUTLYING LANDING FIELD BARIN  
 FOLEY, ALABAMA**



**LEGEND**

- Fueling pit
- Fueling pit and lube oil tank
- Fuel line
- Air line
- Facility boundary
- Flow direction during cleaning
- Former fuel UST location and designation
- Manhole

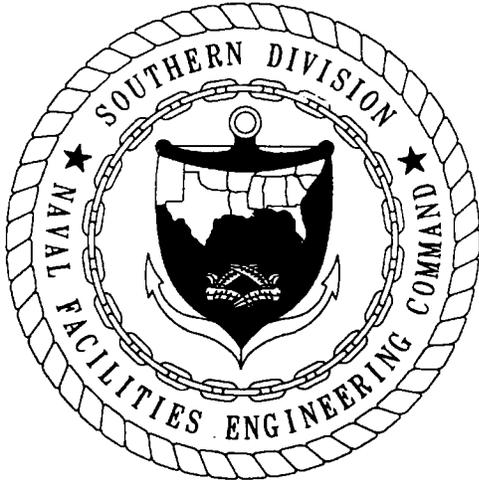
**NOTE:**  
Due to sections of piping being capped, two separate flushing operations were performed.



**FIGURE 4-1  
FAST FUEL LINE CLEANING AND FLUSHING**

**CLOSURE REPORT  
SITE 20B**

**OUTLYING LANDING FIELD BARIN  
FOLEY, ALABAMA**



**DRAFT**

Completion Report  
Site 20B, Fast Fuel Line Remediation

OLF Barin  
Foley, Alabama

Unit Identification Code (UIC): N60508  
Contract No. N62467-62467-93-D-1106

April 1997

**Southern Division  
Naval Facilities Engineering Command  
North Charleston, South Carolina  
29419-9010**

**DRAFT**

**COMPLETION REPORT  
OLF BARIN**

**OLF BARIN  
FOLEY, ALABAMA**

**April 1997**

**CONTRACT N62467-93-D-1106  
DELIVERY ORDER #0038  
STATEMENT OF WORK #044**

*Prepared for*

**SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
2155 Eagle Drive  
P.O. Box 190010  
North Charleston, South Carolina 29419-9010**

*Prepared by:*

**MORRISON KNUDSEN CORPORATION  
2420 Mall Drive  
Corporate Square 1 - Suite 211  
North Charleston, South Carolina 29406**

**PREPARED/APPROVED BY:**

\_\_\_\_\_  
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## EXECUTIVE SUMMARY

Outlying Landing Field (OLF) Barin has been used as a civilian airport and landing field for the US Navy since the 1930s. After the Korean Conflict, a majority of the installation buildings were sold or dismantled. In 1985, pilots from Naval Air Station (NAS) Whiting Field (Milton, Florida) began using the field for "touch-and-go" practice. A crash crew building was constructed and the facility was officially reopened in 1988. The Maintenance Hangar Area was used until 1959 when the hangars were demolished. Site 20B, located south of the hangar area, contained the fast fuel line (FFL) which was in service during the WW II and Korean Conflict years. The underground storage tanks serving the FFL were removed from service previously.

The objective at 20B was to remove the potential for future environmental impact by removing the product in the lube oil storage tanks (LOST) and FFL, cleaning both systems and then isolating the systems from the environment. This work was performed under an agreement between the Alabama Department of Environmental Management and the Navy before the remedial investigation (RI) was completed to remove potential environmental threats.

Site 20B is located south of the facility access road (Guadalcanal Road) along the runway, and consists of approximately 1.7 miles of fuel lines, 60 bowser pits, and 30-500 gallon underground lube oil storage tanks (LOST). The removal action began on December 30, 1996, with excavation to the tops of the LOST and bowser pits. Work activities continued with removal of the LOST contents, followed by location of the FFL and excavation at FFL line breaks and headers. The FFL was pressure tested for leaks, drained and cleaned. The FFL header and line breaks were capped, and the bowser pit valves were closed and the pits backfilled. The LOST were filled with flowable grout after cleaning. All excavated soils were stockpiled for sampling to determine suitability for backfill. The site was backfilled and graded to prevent ponding. Native grasses were planted for site restoration.

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## ACRONYMS AND ABBREVIATIONS

ADEM	Alabama Department of Environmental Management
bgs	below ground surface
CLEAN	Comprehensive Long Term Environmental Action Navy
cy	cubic yard
DOD	Department of Defense
EPA	Environmental Protection Agency
FFL	Fast Fuel Line
frac	fractionation tank
FS	Feasibility Study
IR	Installation Restoration
IWS	Industrial Water Services Inc.
LEL	Lower Explosive Limit
LOST	Lube Oil Storage Tank
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MK	Morrison Knudsen Corporation
NAS	Naval Air Station
NAVFACENGCOM	Naval Facilities Engineering Command
OLF	Outlying Landing Field
PID	Photo Ionization Detector
ppm	parts per million
psi	pounds per square inch
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROICC	Resident Officer in Charge of Construction
RPD	Relative Percent Difference
RPM	Remedial Project Manager
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
SOW	Statement of Work
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbons
UST	Underground Storage Tank
VOC	Volatile Organic Compound

## 1.0 INTRODUCTION

Morrison Knudsen Corporation (MK) was contracted by the Naval Facilities Engineering Command (NAVFACENGCOM), Southern Division Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), under contract N62467-93-D-1106, Delivery Order #0038, Statement of Work (SOW) #044, to remove product from approximately 1.7 miles of fast fuel line (FFL), 60 bowser pits, and 30 underground lube oil storage tanks (LOSTs) at Naval Air Station (NAS) Whiting Field Outlying Landing Field (OLF) Barin. This Completion Report summarizes the construction and environmental tasks associated with removal of the fuel line contents, off-site disposal of impacted soils and site restoration. Reports required by the Alabama Department of Environmental Management (ADEM) are being prepared by the Comprehensive Long Term Environmental Action Navy (CLEAN) contractor, ABB Environmental.

The OLF Barin facility was investigated under the Department of Defense (DOD) Installation Restoration (IR) program. During the Remedial Investigation (RI) phase, the ADEM approved Southern Division's request to complete a removal action at several sites at the facility [ABB, 1994]. During the RI activities, the drawings for Site 20B, FFL, were discovered. The FFL and LOST were determined to be potential sources of contamination, present and future. A removal action was deemed prudent by SOUTHNAVFACENGCOM and ADEM.

A meeting was held on November 14, 1996, with the NAVFAC Remedial Project Manager (RPM), the ADEM Site Manager, ABB Environmental and MK representatives to determine the activities that were to be performed [MK, 1997a]. MK was to perform actions to remove the potential sources of contamination, and ABB was to perform all closure and investigative sampling. All actions were agreed to by the ADEM and SOUTHNAVFACENGCOM representatives.

MK provided project management, construction management, scientific and environmental staff, health and safety oversight, and quality control to perform the removal action. MK's primary subcontractor was Kemron Construction, which provided LOST and FFL cleaning, and disposal services at the site. Core Laboratories provided analytical services to MK.

An Addendum Work Plan was prepared to plan the work. The Addendum Work Plan was a supplement to the *Work Plan, Outlying Landing Field Barin* [MK, 1996] and covered additional work added to the original scope since generation of the original Work Plan.

The following MK project documents were used to plan and perform the original underground storage tank (UST) removal, cleaning, and disposal; conduct sampling and analysis; ensure quality control; and ensure that all work complied with federal, state and local regulatory and industrial standards for health and safety and to plan and perform the DO 38 work:

- Draft, Work Plan Addendum for Lube Oil Tanks and Fast Fuel Line, January 1997
- Work Plan, Revision 0, June 17, 1996, [MK, 1996], including:
  - Appendix A, Site Safety and Health Plan
  - Appendix B, Quality Control Documentation
  - Appendix C, Quality Assurance Project Plan
  - Appendix D, Environmental Protection Plan
  - Appendix E, Waste Management Plan
  - Appendix F, Technical Specifications

The Work Plan was approved by Southern Division on September 12, 1996, and the Addendum Work Plan was submitted in February 1997.

## 2.0 SITE BACKGROUND

### 2.1 DESCRIPTION

OLF Barin is located in Baldwin County, approximately two miles southeast of Foley, Alabama. The site is approximately forty miles southeast of Mobile, Alabama, and thirty-five miles west of Pensacola, Florida. Access to the site is via Highway 98, as shown in Figure 2-1. OLF Barin has been used as a civilian airport and landing field for the US Navy since the 1930s [ABB, 1994]. A crash crew currently occupies the buildings at OLF Barin to support Naval flight training activities from nearby NAS Whiting Field.

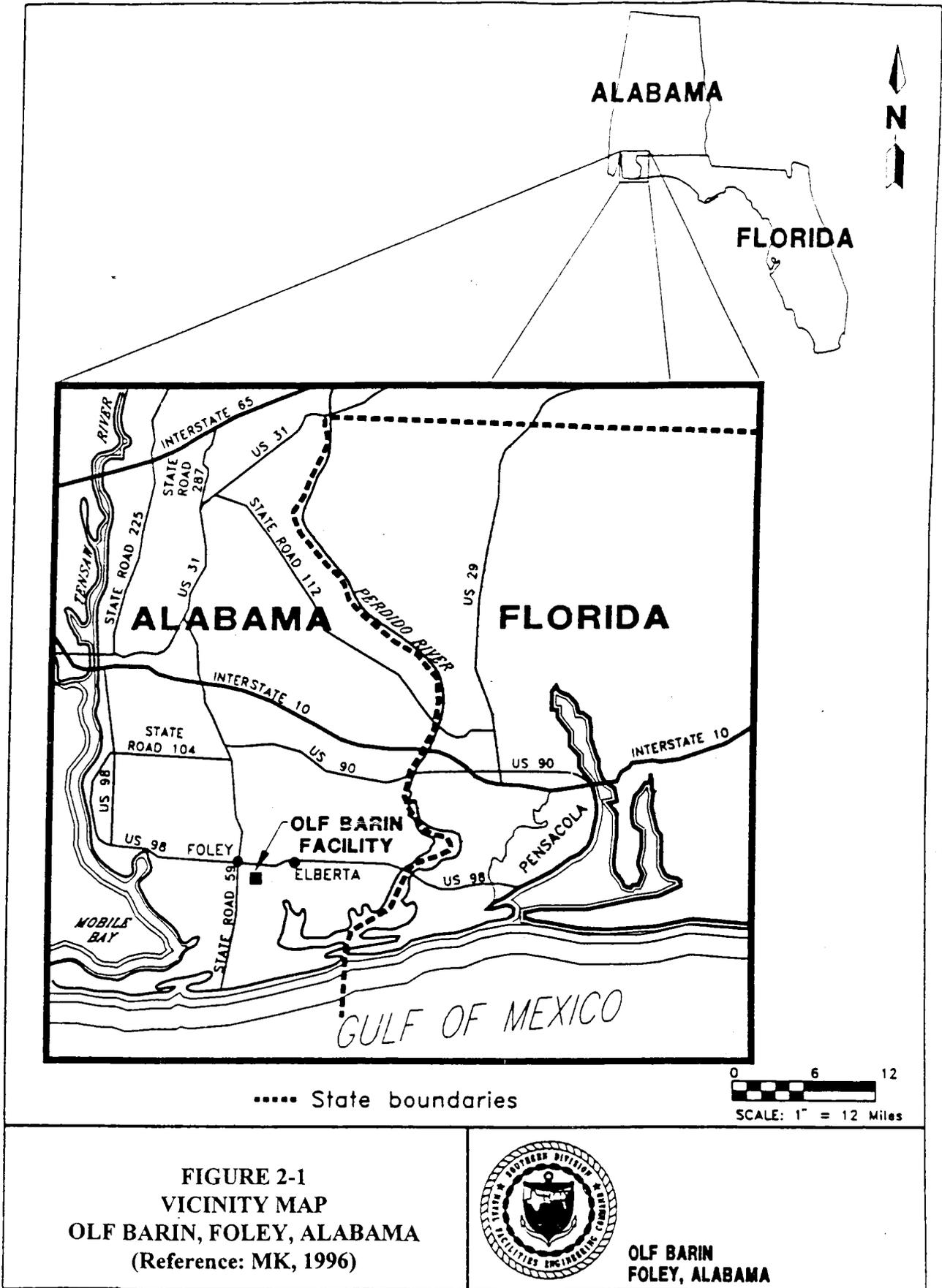
The work activity locations at OLF Barin included in this removal action were all associated with Site 20B, the underground fuel lines. Site 20B is shown on Figure 2-2, Site Layout. Three areas within the boundaries of Site 20B were identified to be addressed under this Delivery Order and are shown in Figure 2-3. These areas are identified as:

- The FFL, located in the northwest section of OLF Barin, running south through a six-inch steel line with four-inch lateral lines running east and west.
- 30 LOST of 500 gallon capacity, were located along the FFL on the north side of the bowser pits, lying east and west.
- 60 bowser pits located along the four-inch lateral lines.

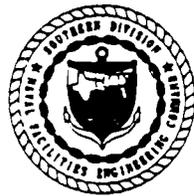
The FFL had been supplied by a series of underground storage tanks (USTs) that were previously removed and are not part of this project.

### 2.2 SITE GEOLOGY AND HYDROLOGY

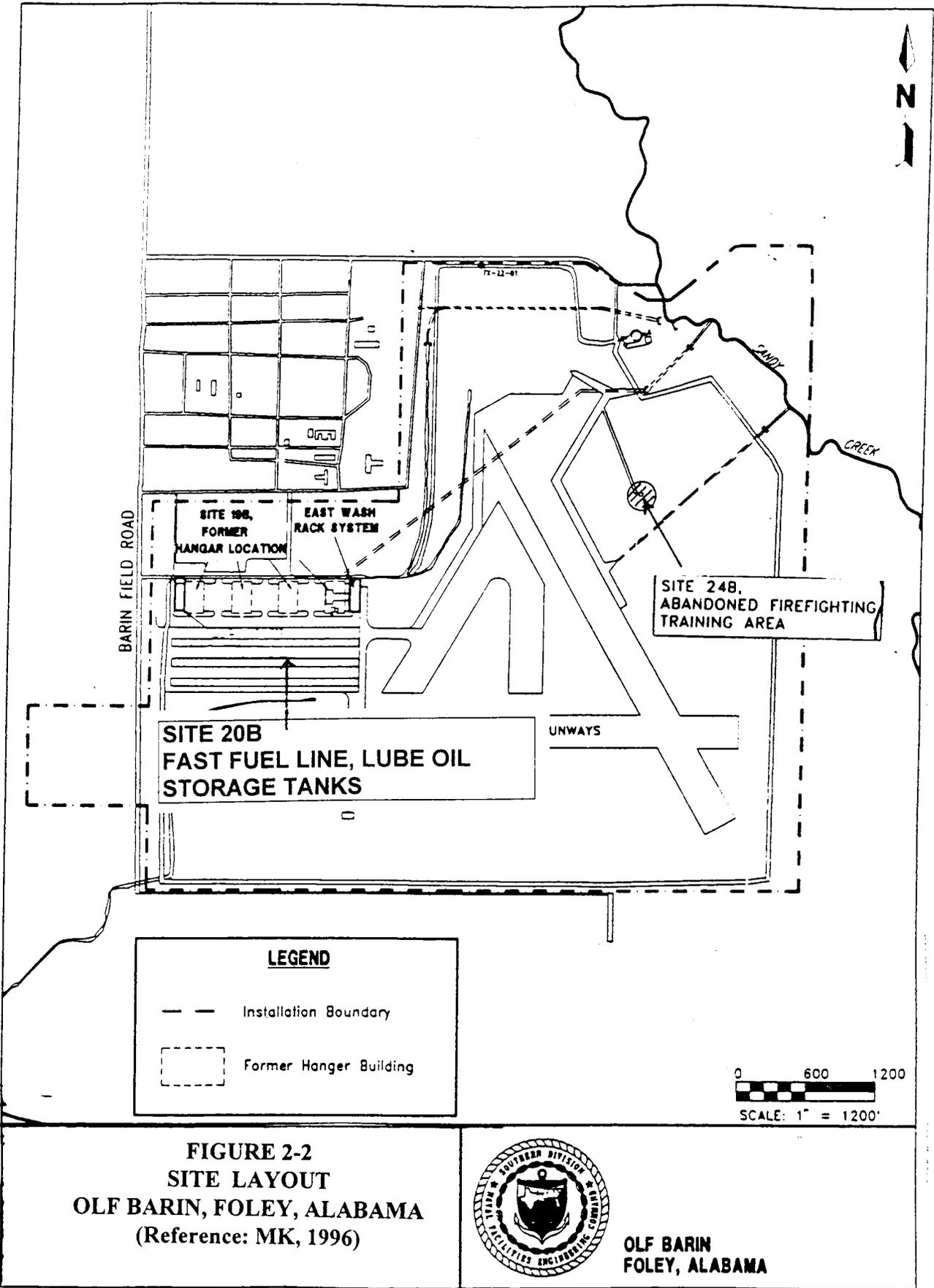
The predominate soil types at the facility are the Lakeland loamy fine sand and the Klej loamy fine sand. Ground water has been recorded between the depths of 14 and 20 feet below ground surface (bgs) at Site 20B. [ABB, 1995].

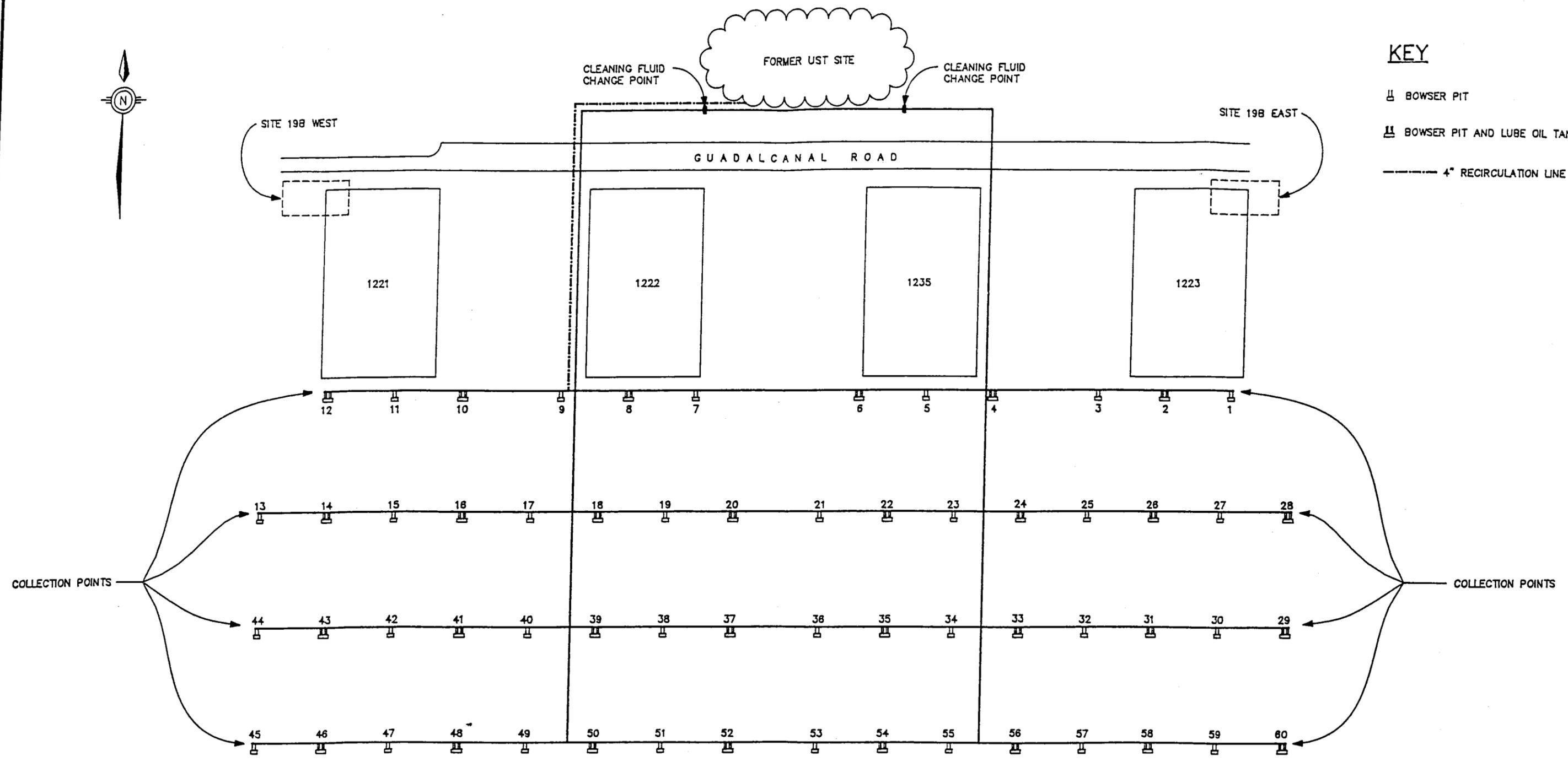


**FIGURE 2-1**  
**VICINITY MAP**  
**OLF BARIN, FOLEY, ALABAMA**  
 (Reference: MK, 1996)

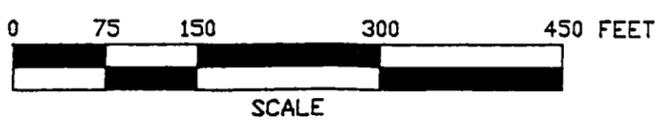


**OLF BARIN**  
**FOLEY, ALABAMA**





- KEY**
-  BOWSER PIT
  -  BOWSER PIT AND LUBE OIL TANK
  -  4" RECIRCULATION LINE



FAST FUEL LINE  
REMEDATION  
OLF BARIN  
FOLEY, AL



FIGURE 2-3  
FAST FUEL LINE  
SITE MAP

DWG DATE: 4/1/97 | DWG NAME: BARINFFL

## 3.0 WORK EXECUTION

MK began the remedial activities in December 1996. A preconstruction meeting had been held in September before the original work activities (Delivery Order 0013, Statement Of Work 16) began with NAVFAC, Resident Officer in Charge of Construction (ROICC), the Environmental Coordinator from NAS Whiting Field, the Southern Division Remedial Project Manager (RPM), the facility commanding officer, ABB Environmental, ADEM, MK, and MK's subcontractor. All site conditions and operating requirements remained the same as the Delivery Order 0013 activities. All field work and disposal activities were completed by February 26, 1997.

### 3.1 UNDERGROUND LUBE OIL STORAGE TANKS

Thirty LOST were located approximately three feet north of the bowser pits and approximately two feet bgs (Figure 2-3). Each of the 500 gallon capacity LOST were found to contain oily liquids. The soil on top of the LOST was excavated and staged on plastic adjacent to each LOST for sampling. Stockpiles were covered at the end of each day (Appendix A, Photographs 1,2,4).

#### 3.1.1 Liquid Removal

Removal of the liquids from the LOSTs began on January 9, 1997. Approximately 15,000 gallons of oily liquid were pumped out of the 30 LOSTs. The liquid was removed from the LOSTs using a 3,000 gallon vacuum truck and was then transferred into a 21,000 gallon fractionation (frac) tank to await disposal/recycling. (Appendix A, photograph 7).

#### 3.1.2 LOST Cleaning

Once the LOSTs were emptied, a pressure washer with a biodegradable detergent solution, Simple Green™, was used to remove residual product from the interior of the tank. The rinse water was pumped into the frac tank. The LOSTs were cleaned as described in the MK Work Plan Section 4.2.3, until the interior atmosphere had a lower explosive level (LEL) less than 10%, an oxygen level between 19.5% and 23.5%, an organic vapor concentration less than 10 parts per million (ppm) [by photo ionization detector (PID)], and a visually clean interior [MK, 1996]. Photograph 14 in Appendix A shows the tank cleaning activity.

#### 3.1.3 Grouting/Inerting of LOST

The LOST were left in the ground and closed in place by pumping low density concrete into each tank. For proper closure, the concrete fill was stirred manually to seal all voids and inhibit migration of liquids into the LOST. Appendix A, photograph 21 shows a LOST being filled with concrete.

### 3.2 BOWSER PITS

A bowser pit is an in-ground pit used as the fueling point for airplanes on a fuel line. Airplanes taxied up to the bowser pits and were refueled from near the runways. There were 60 bowser pits at OLF Barin arranged into four rows along the FFL. Twelve were on the north leg and 16 on each of the other three legs (See Figure 2-3). Bowser pits located adjacent to LOSTs contained three compartments: a main compartment measuring 6.5 x 3 x 3 feet in size and two smaller compartments measuring 2 x 3 x 1.5 feet. Bowser pits not located adjacent to LOSTs contained one compartment measuring 6.5 x 3 x 3 feet in size.

### **3.2.1 Bowser Pit Excavation/Inspection**

All bowser pits were covered with metal plate covers and some were filled with soil. All soil was removed and stockpiled on plastic sheeting adjacent to each pit. The bowser pit valves needed to be in the closed position before the FFL could be drained and cleaned so each bowser pit was inspected to ensure that the valve to the FFL was operable. The valve in pit #1 was not operable and was replaced with a two inch pipe cap. Appendix A, photographs 3, 6, 9 and 10 show some of these activities.

### **3.2.2 Decontamination**

After inspection, each bowser pit was cleaned with a pressure washer and a Simple Green™ solution to remove dirt and petroleum residual. Each bowser pit was cleaned until the interior atmosphere had an LEL less than 10%, an oxygen level between 19.5% and 23.5%, an organic vapor concentration less than 10 ppm by PID, and a visually clean interior [MK, 1996].

## **3.3 FAST FUEL LINE**

Based on conversations between the CLEAN and base personnel, the FFL was believed to have been abandoned while still containing petroleum product. Before draining the FFL, breaks in the line needed to be located to isolate the FFL from the environment.

### **3.3.1 Location and Excavation**

A radio wave based locating system was used to locate the FFL, FFL headers and line breaks. The system used was similar to utility line searches where a sound source is attached to the line and the line followed with a metal detector above ground (Appendix A, photograph 12 shows the activity). Figure 2-3 identifies the FFL, the bowser pits and LOSTs. Potential breaks in the line identified by the radio-signal system were investigated by excavation. Appendix A photographs 11 and 12 show the FFL excavation due to the signal discrepancy. One valve pit was discovered to be disconnected from the FFL during the radio signal/excavation process. The FFL had also been disconnected at the north end of the site when the USTs serving the FFL were removed. The FFL was cut in place and not capped at the time of the removal. All line breaks were capped or used for the air pressure test. A portion of the line in the northwest section of the header was removed and disposed of during the removal action.

### **3.3.2 Air Testing**

Prior to flushing the FFL, an air pressure test of the line was performed to ensure the liquids used during the flushing would be contained in the FFL until drained. Using an air compressor, approximately 10 pounds per square inch (psi) of compressed air was pumped into the FFL at header locations. The air pressure was measured over a two-hour period on all sections of the line tested. Pressure held during the test. Appendix A contains photographs 16 and 17 which show the air pressure set up.

### **3.3.3 Flushing**

Following testing, the liquid in the FFL was removed and placed into the frac tanks. A solution of water and Simple Green™ was pumped into the drained FFL and left to soak overnight. Simple Green™ is a biodegradable detergent. The overnight soaking was used to remove any materials that had collected in the interior of the FFL and hardened during the time that the FFL was not in use. After soaking, the lines were drained to the end bowser pit of each row (Figure 2-3 and Appendix A, photographs 22, 23, 24, 25, and 27) and the liquid was transferred to the frac tanks. The lines were then rinsed with water to remove residual materials. Over 9,100 linear feet of pipe was rinsed. The rinse water was also placed in the frac tanks. PID readings were taken from the end pit valves, and at randomly selected pit locations in the

middle of each row. The PID readings were all below 10 ppm. The valve in each bowser pit was then closed.

### **3.3.4 Grout and Backfill**

After the valves were closed, all open ends to the FFL were plugged and grouted with non-shrinking grout. The bowser pits were backfilled with stockpiled soil containing less than 100 ppm total petroleum hydrocarbons (TPH) and compacted using the excavator buckets. Soil sample results are provided in Tables 4-1 and 4-2. The metal covers were replaced on all pits.

## **3.4 CHARACTERIZATION SAMPLING**

Samples were collected from the frac tanks for disposal characterization after each tank was filled. Soil samples were collected from soil stockpiles to determine suitability for backfill and, as needed, disposal parameters. Per ADEM regulations (ADEM 335-6-15.30), soils with a TPH level below 100 ppm were used as backfill material.

### **3.4.1 Liquids**

Three samples were collected from the frac tanks and analyzed for the disposal parameters required by the disposal facility, Industrial Waters Services, Inc. (IWS). Disposal parameters included pH, flashpoint, Resource Conservation and Recovery Act (RCRA) metals, and volatile organic compounds (VOC). Results are provided in Table 4-2 and Appendix E.

### **3.4.2 Soils**

Ten soil samples were collected and analyzed for TPH to determine suitability for use as backfill. For stockpiles where soil sample TPH results were above 100 ppm, a composite sample was collected and analyzed for disposal parameters. Disposal parameters included: toxicity characteristic leaching procedure (TCLP) metals, TCLP semivolatiles (SVOCs), TCLP VOCs, TCLP pesticides/herbicides, ignitability, reactivity, corrosivity, and TPH. Samples for analysis of VOCs were not composited. A discrete sample was collected for this parameter. Approximately 100 cubic yards of soil was found to contain TPH above 100 ppm. One sample of this material was collected for disposal characterization.

## **3.5 RECONSTRUCTION AND RESTORATION**

All areas of the site were restored to pre-existing conditions after all activities were completed. Appendix A, photographs 37 through 43 show backfilling and final conditions of the site. Appendix F contains the as-built drawings of the activities.

### **3.5.1 Backfill Placement**

Placement of backfill was accomplished using the same procedure in all of the work areas. Two types of fill material, excavated soil containing less than 100 ppm TPH and imported fill, were used. A standard proctor test per ASTM D698, was run on each backfill material to determine the optimum moisture content and maximum dry density. The off-site material had a maximum dry density of 114.7 lbs/ft<sup>3</sup> and an optimum moisture content of 11.9%; the excavated soil had a maximum dry density of 110.8 lbs/ft<sup>3</sup> and an optimum moisture of 11.6%. The off-site fill material was also analyzed for TPH and confirmed to contain less than 100 ppm TPH. All fill was placed in two foot lifts and compacted with a excavator bucket. The backfill was compacted to 85% of the maximum dry density in unimproved areas, 90% in areas adjacent to structures or utilities, and 95% in areas where roads or structures were to be constructed. The density and moisture of each lift was verified using a nuclear densimeter (ASTM D2922 and ASTM D3017).

### 3.5.2 Topsoil

Six inches of top soil was placed over the backfill material along the FFL, bowser pits and LOST that were not under concrete to bring the excavations up to grade. The topsoil was tested for organic content, pH, and TPH. The topsoil itself did not meet the minimum organic content of 5% and was, therefore, tilled with peat moss at a ratio of 1.4 cubic yards (cy) of peat moss per 80 cy of topsoil. The topsoil was graded to a crown at a slope of 50:1 to prevent ponding. The area was seeded with a mixture of rye and Bahia, fertilized, rolled, and covered with hay.

### 3.5.3 Concrete Replacement

Masonry work was required to replace the curbing and paving that was removed during excavation. Damaged concrete and asphalt was saw-cut and removed. A 4,000 psi mix was used for both the curb and pavement repair.

## 3.6 WASTE DISPOSAL

Three waste streams were identified during site activities: soils with TPH above 100 ppm; product, rinse and decon water; and visually non-contaminated concrete. Approximately 169 tons of soils with TPH above 100 ppm, were designated as non-hazardous special waste, were loaded from stockpiled materials into dump trucks and shipped to the BFI Timberlands Landfill in Escambia County, Alabama. The disposal characterization sample indicated that all sample results were below hazardous waste characterization levels. Disposal approval was received from the ADEM before the waste was shipped. The ADEM approval is provided in Appendix B. The LOST and FFL liquids and LOST and FFL rinse water were shipped to IWS in Mobile, Alabama as a non-hazardous liquid. Non-impacted concrete and asphalt was crushed and used as road base material at Gene's Dozer Service, Lillian, Alabama. See Appendix C, Waste Disposal Log, for the quantities of each waste stream, the manifest number and its final disposition. Manifest copies are not included in this report, but are available in the Generator's file at NAS Whiting Field.

## 4.0 SAMPLING, ANALYSIS AND QUALITY CONTROL

### 4.1 SOIL SAMPLES

Stockpiled soils from Site 20B were sampled for TPH, by EPA method 418.1, to determine the potential for reuse. A sample was collected for every 40 yards of stockpiled material. The stockpiled soil samples were collected by removing the top 10 to 12 inches of soil from the surface and collecting grab samples from five to six different locations and compositing them in a stainless steel bowl. The soil was thoroughly mixed and then placed in the appropriate sample containers. Nine composite soil samples were collected and verified with one duplicate sample. After TPH sample results had been received, one composite sample was collected from stockpiled soils with TPH greater than 100 ppm and analyzed for disposal using EPA methods 418.1 (TPH), 1311 (TCLP), 8080 (polychlorinated biphenyls [PCBs]), 8260 (VOCs), 8270 (SVOCs), 6010 (metals), 7471 (mercury), reactivity, ignitability, and corrosivity. Table 4-1, Sample Information, identifies the sample number, sample location and analytical parameter information. Table 4-2, Sample Results, provides the analytical results. (See Appendix D, Chain of Custody Forms, and Appendix E, Analytical Data). Samples for analysis of VOCs were collected as grab samples.

### 4.2 LIQUID SAMPLES

The liquid within the LOSTs and the rinse water was sampled from the frac tanks to determine disposal options. Liquid samples were analyzed for metals, including mercury, VOCs, flashpoint, and pH. The frac tank was found to have a product layer on top. The sample collected from the frac tank contained a product layer which required significant sample dilution for the volatile analysis. Since the compounds detected were all petroleum related, the liquid was classified as a non-hazardous waste and shipped to IWS in Mobile, Alabama.

### 4.3 DATA QUALITY CONTROL

All soil and liquid samples collected from OLF Barin were transported to the laboratory using proper chain of custody procedures. Copies of the chain of custody documents are included in Appendix D of this report. Samples collected for OLF Barin were analyzed for TCLP VOCs, SVOCs, metals, total pesticides/PCBs; RCRA characteristics and/or TPH.

#### 4.3.1 Field Quality Control

Field quality control samples, including trip blanks and one field duplicate, were collected during the work at OLF Barin to identify potential sources of error or cross contamination that occurred during collection, storage, or shipment of samples to the laboratory and assist in evaluating precision and representativeness. Results for these samples are included in Table 4-2 and in Appendix E.

Trip blank sample results were evaluated to identify any cross-contamination that may have occurred during storage and shipping of the samples to the analytical laboratory. Trip blank samples containing organic free water were received in sealed containers from the laboratory. Trip blanks were stored and transported with the sample containers to the field sample locations, but were not opened at the site. No target analytes were detected in the trip blanks.

Sample OLFPS-006D was identified as a field duplicate collected during sampling. Precision objectives for field duplicate samples are established in the Quality Assurance Project Plan (QAPP) and data were evaluated to determine potential variability introduced by soil heterogeneity and sampling technique. OLFPS-006 indicated the presence of TPH at 680 mg/kg, while its field duplicate sample, OLFPS-006D, indicated TPH to be present at 1700 mg/kg. The resultant relative percent and difference (RPD) is high;

however, the samples were composites and both results were well above the criteria for TPH (100 ppm). The results were deemed acceptable for intended data quality objectives.

#### 4.3.2 Laboratory Quality Control

Laboratory analytical data was evaluated by the assessment of precision, accuracy, representativeness, comparability and completeness.

Precision is a measure of the reproducibility of measurements under a given set of conditions. Laboratory duplicates, matrix spikes (MS) and matrix spike duplicates (MSD) were used to determine the precision of the analytical process.

Accuracy is a measure of the bias in a measurement system and is defined as the closeness of the reported value to the true value. The accuracy of a measurement system was assessed by evaluating the results of sample and standard such as MS, analytical surrogates, and laboratory control samples.

Representativeness in the laboratory is ensured by using the proper analytical procedures, meeting sample holding times, and analyzing and assessing field duplicated samples. Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Analytical data are considered to be comparable when similar sampling and analytical methods are used and documented per the QAPP. Laboratory completeness is a measure of the number of valid measurements obtained from all measurements taken in the project.

The laboratory performed method blank, sample MS, MSD, sample duplicate, surrogate, and standard MS analyses in order to evaluate laboratory accuracy and precision. MK reviewed the laboratory data received to determine whether data quality objectives were met for the sampling and analytical programs through the assessment of precision, accuracy, representativeness, comparability and completeness.

The method blanks analyzed with samples OLFBTW013, OLFBTW014, OLFBTW018 and OLFTB019 for VOCs indicated 1,2,3-trichlorobenzene and 1,2,4-trichlorobenzene to be present above the reporting limit. Field samples prepared and analyzed with these method blanks did not show the presence of either of those analytes, and the data are acceptable for the intended data quality objective. All other method blanks were free of target compounds above the reporting limits. Sample surrogate recoveries fell within acceptable ranges to meet the project data quality objectives.

All laboratory standard MSs performed exhibited acceptable accuracy and precision, with the exception of one volatile laboratory standard spike which had a high recovery for toluene of 145%. The resulting relative percent difference was slightly high (17%) between the spike and its corresponding laboratory standard spike duplicate. The laboratory attributed the high recovery to possible carryover from the prior sample. Corresponding sample hits have been flagged appropriately. All sample MS/MSD analyzed had acceptable accuracy and precision.

Relative percent difference between the sample (OLFBTW015) and the laboratory replicate sample was outside of control limits for lead and barium between several serial dilutions of the field sample. For each of these analytes, the more conservative of the results has been reported and data qualified appropriately. In all other instances, precision was between laboratory replicates, within control limits.

Data quality objectives, specified in the QAPP, for accuracy, precision and completeness have been met with the exceptions noted here, and the data are deemed to be acceptable as flagged.

**TABLE 4-1  
SAMPLE INFORMATION**

SAMPLE ID	DATE	TIME	DESCRIPTION	ANALYSES	RESULTS	SAMPLER/LAB
OLF TS 001	01/15/97	08:29	COMPOSITE: NORTH TANK MATERIAL	EPA 418.1	62 PPM	KEMRON/CORE
OLF TS 002	01/15/97	08:41	COMPOSITE: 2ND ROW TANK MATERIAL	EPA 418.1	210 PPM	KEMRON/CORE
OLF TS 003	01/15/97	08:59	COMPOSITE: 3RD ROW TANK MATERIAL	EPA 418.1	130 PPM	KEMRON/CORE
OLF TS 004	01/15/97	09:23	COMPOSITE: 4TH ROW TANK MATERIAL	EPA 418.1	320 PPM	KEMRON/CORE
OLF BTW 001	01/15/97	10:42	FUEL PIT AND TANK LIQUID	RCRA METALS	*	KEMRON/CORE
OLF BTW 002	01/15/97	10:46	FUEL PIT AND TANK LIQUID	PH/FLASHPOINT	6.5/>180 **	KEMRON/CORE
OLF BTW 003	01/15/97	10:50	FUEL PIT AND TANK LIQUID	8260	*	KEMRON/CORE
TRIP BLANK	01/15/97	10:00	TRIP BLANK	8260	*	KEMRON/CORE
OLF PS 005	01/23/97	10:58	COMPOSITE: 1ST ROW PIT SOILS	EPA 418.1	360 PPM	KEMRON/CORE
OLF PS 006	01/23/97	11:14	COMPOSITE: 2ND ROW PIT SOILS	EPA 418.1	680 PPM	
OLF PS 006D	01/23/97	11:16	COMPOSITE: 2ND ROW - DUPLICATE	EPA 418.1	1,700 PPM	KEMRON/CORE
OLF PS 007	01/23/97	11:31	COMPOSITE: 3RD ROW PIT SOILS	EPA 418.1	39 PPM	KEMRON/CORE
OLF PS 008	01/23/97	12:10	COMPOSITE: 4TH ROW PIT SOILS	EPA 418.1	34,000 PPM	KEMRON/CORE
OLF PS 009	01/30/97	13:44	COMPOSITE: FUEL LINE SOILS	EPA 418.1	27 PPM	KEMRON/CORE
OLF PS 010	01/30/97	13:57	COMPOSITE: TANK/PIT SOIL	EPA418.1/1010/9045/7.33/8260/ 6010/8270/8080/8150	*	KEMRON/CORE
OLF BTW 011	02/06/97	10:13	BT:GS496 EA BAKER TANK WATER	RCRA METALS	*	KEMRON/CORE
OLF BTW 012	02/06/97	10:17	BT:GS496 EA BAKER TANK WATER	PH/FLASHPOINT	5.4/>186	KEMRON/CORE
OLF BTW 013	02/06/97	10:26	BT:GS496 EA BAKER TANK WATER	8260	*	KEMRON/CORE
OLF BTW 014	02/03/97	15:25	TRIP BLANK	8260	*	KEMRON/CORE
OLF BTW 015	02/06/97	09:40	BT:GS496 EA PRODUCT	RCRA METALS	*	KEMRON/CORE
OLF BTW 016	02/06/97	09:55	BT:GS496 EA PRODUCT	PH/FLASHPOINT	5.3/>186*	KEMRON/CORE
OLF BTW -17	02/06/97	10:06	BT:GS496 EA PRODUCT	8260	*	KEMRON/CORE
OLF BTW 018	02/10/97	12:51	BT:GS496 EA PRODUCT	8260	*	KEMRON/CORE
OLF BTW 019	02/07/97	14:30	TRIP BLANK	8260	*	KEMRON/CORE

\*-FINAL DATA/ SEE APPENDIX E

TABLE 4-2  
SAMPLE RESULTS  
SUMMARY

SiteID	SampleDate		TPH mg/Kg	Arsenic mg/L	Barium mg/L	Cadmium mg/L	Chromium mg/L	Lead mg/L	Mercury mg/L	Selenium mg/L	Silver mg/L	Corrosivity pH Units	Ignitability deg F	Reactive Cyanide mg/Kg	Reactive Sulfide mg/Kg	Toluene ug/L		
OLFBTW001	1/15/97	LIQUID	N/A	ND	0.0338	0.0006	B	0.0019	B	0.035	B	ND	ND	ND	N/A	N/A	N/A	
OLFBTW002	1/15/97	LIQUID	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.5	> 180	N/A	N/A	N/A		
OLFBTW003	1/15/97	LIQUID	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0	J	
TRIPBLANK	1/15/97	TRIP BLANK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND	
OLFTS001	1/15/97	SOIL	62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFTS002	1/15/97	SOIL	210	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFTS003	1/15/97	SOIL	130	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFTS004	1/15/97	SOIL	320	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFPS-005	1/23/97	SOIL	360	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFPS-006	1/23/97	SOIL	680	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFPS-006D	1/23/97	SOIL	1700	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFPS-007	1/23/97	SOIL	39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFPS-008	1/23/97	SOIL	34000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFFLS009	1/30/97	SOIL	27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFTPS010 (*)	1/30/97	SOIL	210	ND	0.219	B	0.0034	B	ND	0.414	ND	ND	ND	7.8	Neg	< 10	20	ND
OLFBTW011	2/6/97	LIQUID	N/A	0.008	B	0.114	0.0004	B	0.0064	B	4.11	ND	ND	ND	N/A	N/A	N/A	N/A
OLFBTW012	2/6/97	LIQUID	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.4	>186	N/A	N/A	N/A	N/A	
OLFBTW013	2/6/97	LIQUID	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	86000	YZ
OLFBTW014	2/3/97	TRIP BLANK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND
OLFTB019	2/7/97	TRIP BLANK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	ND

SiteID	SampleDate		TPH mg/Kg	Arsenic mg/Kg	Barium mg/Kg	Cadmium mg/Kg	Chromium mg/Kg	Lead mg/Kg	Mercury mg/Kg	Selenium mg/Kg	Silver mg/Kg	Corrosivity pH Units	Ignitability deg F	Reactive Cyanide mg/Kg	Reactive Sulfide mg/Kg	Toluene ug/Kg								
OLFBTW015	2/6/97	PRODUCT	N/A	0.3	B	0.52	E	ND	0.70	2090	*	0.0193	B	0.8	B	0.07	B	N/A	N/A	N/A	N/A	N/A		
OLFBTW016	2/6/97	PRODUCT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.3	> 186	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
OLFBTW018	2/10/97	PRODUCT	N/A	X	N/A	X	N/A	X	N/A	X	N/A	X	N/A	X	N/A	X	N/A	X	N/A	X	N/A	X	13000000	X

Notes:

- (\*) indicates that this soil sample was prepared by TCLP for analyses other than TPH, ignitability, corrosivity, and reactivity
- Flagcode explanations:
  - J: Estimated concentration below reporting limit
  - Y: (for Organic Analytes) indicates laboratory standard spike recovery to be outside of control limits.
  - Z: (for Organic Analytes) indicates laboratory standard spike precision to be outside of control limits.
  - B: (for metals) indicates a concentration below reporting limit.
  - \*: (for metals) indicates laboratory duplicate analysis not within control limits.
  - E: (for metals) indicates an estimated value because of the presence of an interference.
  - X: Estimated concentration due to sample matrix.
- N/A: indicates Not Analyzed
- ND indicates analyte not detected.
- All sample results not shown in this table are non-detects.

TABLE 4-2  
SAMPLE RESULTS  
SUMMARY

SiteID	SampleDate		1,2,4-Trimethylbenzene ug/L	1,3,5-Trimethylbenzene ug/L	Benzene ug/L	Chloroethan ug/L	Ethylbenzene ug/L	Isopropylbenzene ug/L	Naphthalene ug/L	n-Propylbenzen ug/L	Xylenes (total) ug/L	n-Butylbenzene ug/L	p-Isopropyltoluene ug/L
OLFBTW001	1/15/97	LIQUID	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFBTW002	1/15/97	LIQUID	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFBTW003	1/15/97	LIQUID	3 2	J 2 9	J ND	ND	ND	ND	ND	ND	ND	ND	ND
TRIPBLANK	1/15/97	TRIP BLANK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OLFTS001	1/15/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFTS002	1/15/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFTS003	1/15/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFTS004	1/15/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFPS-005	1/23/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFPS-006	1/23/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFPS-006D	1/23/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFPS-007	1/23/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFPS-008	1/23/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFFLS009	1/30/97	SOIL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFTPS010 (*)	1/30/97	SOIL	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OLFBTW011	2/6/97	LIQUID	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFBTW012	2/6/97	LIQUID	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFBTW013	2/6/97	LIQUID	97	30	6800	7 5 J	5000	8.7	84	12	15000	N/A	N/A
OLFBTW014	2/3/97	TRIP BLANK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OLFTB019	2/7/97	TRIP BLANK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

SiteID	SampleDate		1,2,4-Trimethylbenzene ug/Kg	1,3,5-Trimethylbenzene ug/Kg	Benzene ug/Kg	Chloroethan ug/Kg	Ethylbenzene ug/Kg	Isopropylbenzene ug/Kg	Naphthalene ug/Kg	n-Propylbenzen ug/Kg	Xylenes (total) ug/Kg	n-Butylbenzene ug/Kg	p-Isopropyltoluene ug/Kg
OLFBTW015	2/6/97	PRODUCT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFBTW016	2/6/97	PRODUCT	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
OLFBTW018	2/10/97	PRODUCT	930000	X 350000	X 34000	X ND	X 11000000	X 82000	X ND	X 140000	X 43000000	X 51000	X 34000

Notes:

- (\*) indicates that this soil sample was prepared by TCLP for analyses other than TPH, ignitability, corrosivity, and reactivity.
- Flagcode explanations:
  - J: Estimated concentration below reporting limit
  - Y: (for Organic Analytes) indicates laboratory standard spike recovery to be outside of control limits
  - Z: (for Organic Analytes) indicates laboratory standard spike precision to be outside of control limits
  - B: (for metals) indicates a concentration below reporting limit
  - \*: (for metals) indicates laboratory duplicate analysis not within control limits
  - E: (for metals) indicates an estimated value because of the presence of an interference
  - X: Estimated concentration due to sample matrix
- N/A: indicates Not Analyzed
- ND indicates analyte not detected.
- All sample results not shown in this table are non-detects.



## 5.0 SUMMARY AND CONCLUSION

All activities were performed in accordance with ADEM regulations and the MK Work Plan and Addendum. The FFL and LOST contained residual product and liquids which were removed, and the FFL and LOST were subsequently cleaned. The LOST were filled with flowable grout and closed in place. The FFL was isolated by capping all open lines. The bowser pits were backfilled with either on-site material or backfill from off-site. All backfill used from on-site was analyzed and determined to be below the ADEM requirement of 100 ppm TPH. All construction material and contaminated soil encountered was transported off-site for recycling or appropriate disposal. All excavations have been brought up to grade, and the sites restored with native grasses.

All requirements of the removal action under this Delivery Order and Statement of Work have been met.



## 6.0 REFERENCES

ABB, 1994. *RI/FS Technical Memorandum No. 5, RI Data Summary and Work Plan for Additional Investigations, Outlying Landing Field Barin, Foley, Alabama*, ABB Environmental Services, I.c., March 1994.

ABB, 1995a, *Performance Criteria Plan, Site 19B, Former Maintenance Hanger Area, Outlying Landing Field (OLF) Barin, Foley, Alabama*, ABB Environmental Services, Inc., August 1995.

ABB, 1995b, *Performance Criteria Plan, Site 24B, Abandoned Firefighting Training Area, Outlying Landing Field (OLF) Barin, Foley, Alabama*, ABB Environmental Services, Inc., August 1995.

ADEM, 1995, *Alabama Underground Storage Tank Release Investigation and Corrective Action Guidance Manual*, Alabama Department of Environmental Management, Ground-Water Branch, Water Division, May 1995.

MK, 1996, *Work Plan, Outlying Landing Field Barin, Foley, Alabama*, Morrison Knudsen Corporation, June 1996.

MK, 1997a, *Work Plan Addendum, Outlying Landing Field Barin, Foley, Alabama*, Morrison Knudsen Corporation, January 1997.

MK, 1997b, *Completion Report for Activities at Outlying Landing Field Barin, Foley, Alabama*, Morrison Knudsen Corporation, March 1997.



**APPENDIX A**  
**PROJECT PHOTOGRAPHS**



**APPENDIX A  
PHOTO LOG**

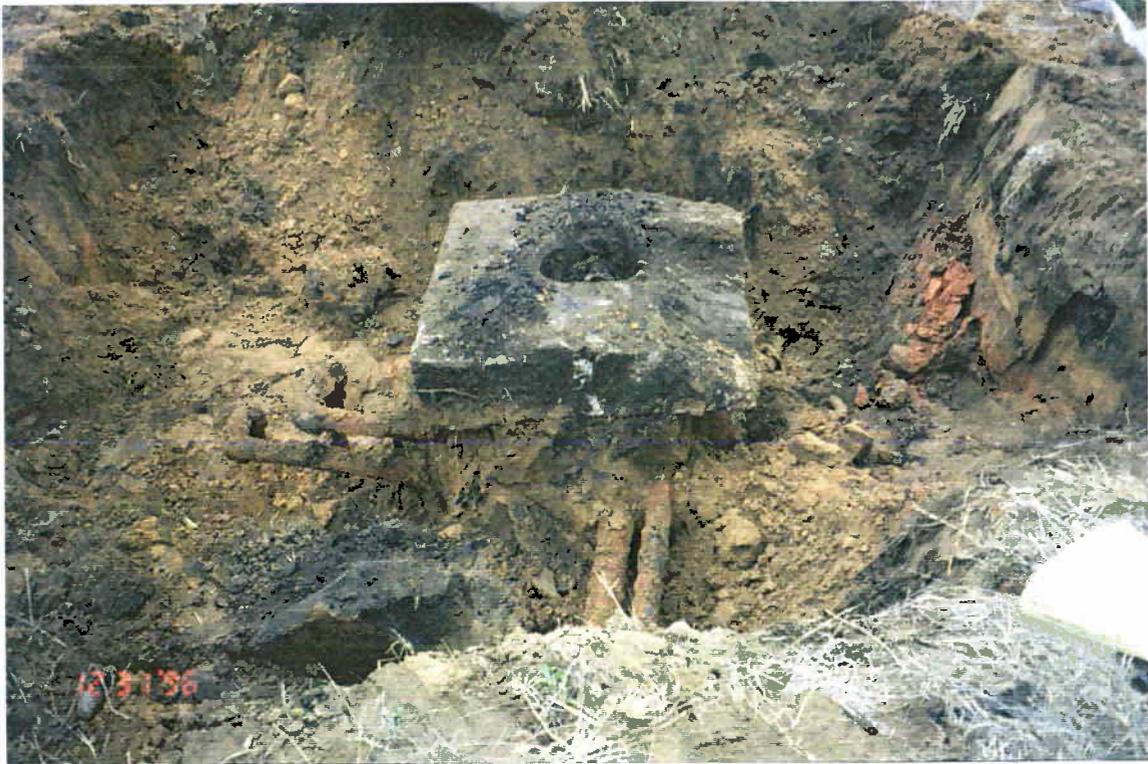
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**Photo 1, December 31, 1996  
Piping and Fill Port at Top of Lube Oil Tank**



**Photo 2, January 2, 1997  
Plug at End of Lube Oil Tank to be  
Used for Content Removal**



**Photo 3, January 8, 1997**  
**Valve Pit for Fast Fuel Header Backfilled**  
**with Concrete Pipe and Soil**



**Photo 4, January 8, 1997**  
**Overview of Area where Top of Lube Oil Tanks**  
**was Uncovered**



**Photo 5, January 9, 1997  
Vacuum Truck Removing Liquids from  
Bowser Pits**



**Photo 6, January 9, 1997  
Bowser Pit after being Pumped out**



**Photo 7, January 10, 1997  
Lube Oil Tank Contents being Removed by  
Vacuum Truck**



**Photo 8, January 10, 1997  
Capped and Plugged Lube Oil Tank after  
Contents Removed**



**Photo 9, January 15, 1997  
Kemron Employees Removing Material from  
a Bowser Pit**



**Photo 10, January 16, 1997  
Case Backhoe Removed Material from  
Bowser Pit # 48**



Photo 11, January 21, 1997  
4th Excavation North of Guadalcanal Rd. NE of  
Gasoline Filling Pit



Photo 12, January 21, 1997  
5th Excavation, Break in Line Indicated with Yellow  
Paint, Backhoe Begins to Break Asphalt at 23 & 24



Photo 13, January 21, 1997  
Inside of Concrete Pit. During 5th Exploratory  
Excavation between Stations 23 &24



Photo 14, January 23, 1997  
Tank Cleaning Process



**Photo 15, January 24, 1997**  
**Fast Fueline Pipe after Cut is Complete**



**Photo 16, January 24, 1997**  
**Kemron Finishes Putting Fittings on End of Pipes**



**Photo 17, January 27, 1997  
Apparatus Attached to Conduct Air Test  
of Fast Fuel Line**



**Photo 18, January 28, 1997  
Excavation Located N. of Pit #9, Kemron Uncovered  
Fast Fuel Line Bypass Piping**



Photo 19, January 29, 1997  
Byers Engineering, Kemron and MK Conducting  
Underground Utility Locating



Photo 20, January 30, 1997  
Excavation and Removal of 6" Fast Fuel Line



Photo 21, January 29, 1997  
Grouting Process, Concrete Poured into Tank  
at Station #46



Photo 22, January 31, 1997  
Fast Fuel Line Cleaning Set-Up



Photo 23, January 31, 1997  
Water Flow at Station #11. View is Facing East



Photo 24, January 31, 1997  
Beginning of Fast Fuel Line Flushing Process at  
Pit #45 - Dark Water Flowing out of Open Valve



Photo 25, February 3, 1997  
Flushing Procedures in Fast Fuel Pit #11  
Water Flowing out of Open Valve



Photo 26, February 4, 1997  
Freshly Exposed 4" Line North of Grassy Area.  
Kemron Excavates Soil around Pipe



Photo 27, February 4, 1997  
Pit Where "T" in Fuel Line Exists - Vacuum Truck Removing  
Liquids from 6" Line



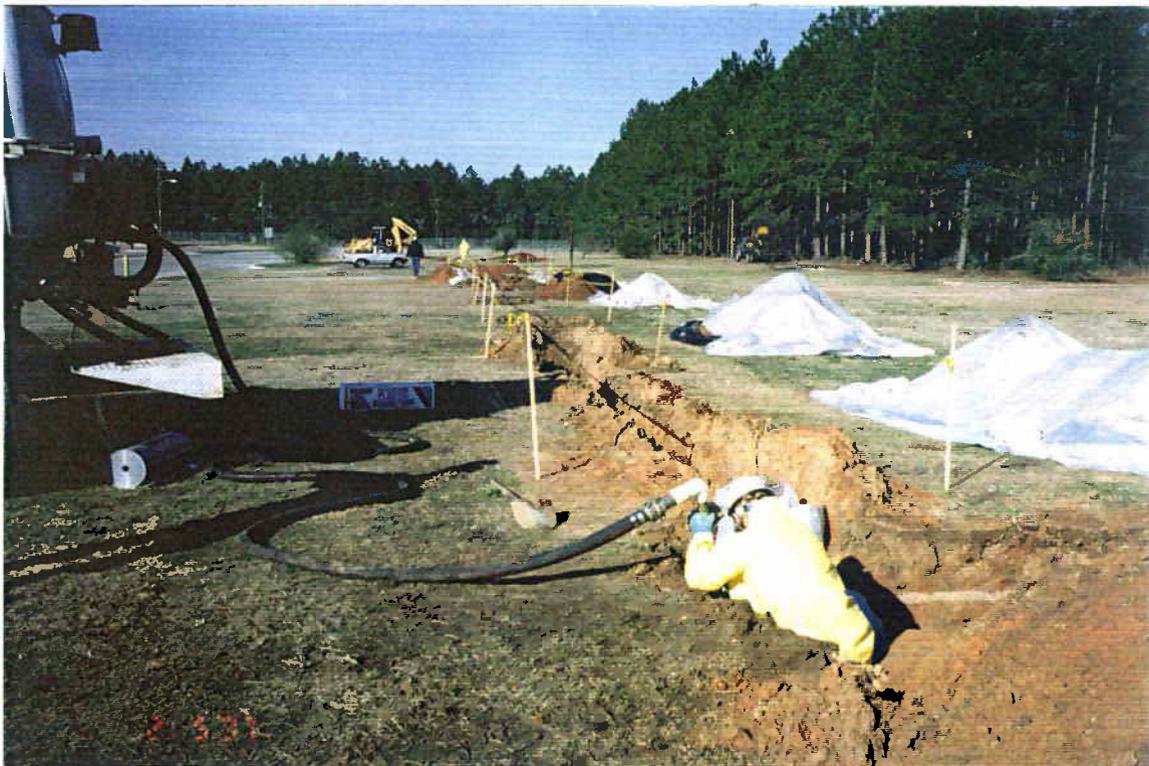
Photo 28, February 4, 1997  
View of Activity in Grassy Area, Tank Facing NW  
Vacuum Truck in View



Photo 29, February 4, 1997  
View From on top of Baker Tank Facing SE



**Photo 30, February 4, 1997**  
**View of 4" Line and Bucket Used to Catch Water**  
**Facing West**



**Photo 31, February 5, 1997**  
**6" Line Flushing Procedure - Drawing Fluids From**  
**Flushed Line via Vacuum Truck - View Facing West**



**Photo 32, February 5, 1997  
Backfilling Process on Tops of Lube Oil  
Tank #6 Facing SW**



**Photo 33, February 7, 1997  
Bowser Pit Backfilling Procedure at Pit #50  
View Facing SW**



Photo 34, February 11, 1997  
Freshly Backfilled Tank Excavation at Station #46  
View Facing NW - Stockpiled Contaminated Soil



Photo 35, February 11, 1997  
Grouted Ends of FFL Where Air Pressure Test  
was Conducted - Facing NW



**Photo 36, February 11, 1997  
Excavated FFL, Stockpiled Material, Grouted Piping  
Stockpiled Prior to Backfilling Area - D. Allen  
Inspects Excavation - Facing West**



**Photo 37, February 11, 1997  
Backfilling Process in Grassy Area Along FFL,  
Case Backhoe Pushing Material into Excavation - Facing East**



Photo 38, February 12, 1997  
Concrete Pour at Station #24  
Facing North



Photo 39, February 12, 1997  
Finished Concrete Pour at Tank #8  
Facing NE



**Photo 40, February 13, 1997**  
**Backfilling on Bank Where FFL Air Testing was Conducted**  
**Facing East**



**Photo 41, February 18, 1997**  
**Backfilled Header Area at Completion**  
**Facing West**



**Photo 42, February 18, 1997  
Fast Fuel Pit in Its Final State  
Facing SE**



**Photo 43, February 18, 1997  
Completed Lube Oil Storage Tank, Backfilled and  
Filled with Concrete, and Completed FFL Pit - Facing SE**

**APPENDIX B**

**APPROVALS, PERMITS AND REGULATORY INFORMATION**

**APPENDIX B**

**APPROVALS, PERMITS AND REGULATORY INFORMATION**

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**APPENDIX C**  
**WASTE DISPOSAL LOG**

**APPENDIX C  
OLF BARIN WASTE DISPOSAL SUMMARY**

TYPE	SITE AREA	DISPOSAL DATE	DESTINATION	D. METHOD	MANIFEST NUMBER	WEIGHT (POUNDS)	CLASS	HAZ CODE	TYPE
SOIL	20B	27-Feb-97	BFI TIMBERLANDS	LANDFILL	016155	24340	NON-HAZ	NA	Contaminated soil
SOIL	20B	27-Feb-97	BFI TIMBERLANDS	LANDFILL	016154	14440	NON-HAZ	NA	Contaminated soil
SOIL	20B	26-Feb-97	BFI TIMBERLANDS	LANDFILL	016157	40940	NON-HAZ	NA	Contaminated soil
SOIL	20B	27-Feb-97	BFI TIMBERLANDS	LANDFILL	016149	42220	NON-HAZ	NA	Contaminated soil
SOIL	20B	27-Feb-97	BFI TIMBERLANDS	LANDFILL	016151	38980	NON-HAZ	NA	Contaminated soil
SOIL	20B	26-Feb-97	BFI TIMBERLANDS	LANDFILL	016147	41760	NON-HAZ	NA	Contaminated soil
SOIL	20B	26-Feb-97	BFI TIMBERLANDS	LANDFILL	016148	39820	NON-HAZ	NA	Contaminated soil
SOIL	20B	26-Feb-97	BFI TIMBERLANDS	LANDFILL	016150	48380	NON-HAZ	NA	Contaminated soil
SOIL	20B	26-Feb-97	BFI TIMBERLANDS	LANDFILL	016156	47260	NON-HAZ	NA	Contaminated soil
					POUNDS	338140	169.07	TONS	
LIQUID	20B	20-Feb-97	IWS INC.	RECYCLER	11430	6700 GAL	NON-HAZ	NA	PETROLEUM WATER
LIQUID	20B	20-Feb-97	IWS INC.	RECYCLER	11431	6700 GAL	NON-HAZ	NA	PETROLEUM WATER
LIQUID	20B	20-Feb-97	IWS INC.	RECYCLER	11432	6700 GAL	NON-HAZ	NA	PETROLEUM WATER
LIQUID	20B	21-Feb-97	IWS INC.	RECYCLER	11433	6200 GAL	NON-HAZ	NA	PETROLEUM WATER
LIQUID	20B	20-Feb-97	IWS INC.	RECYCLER	11434	300 GAL	NON-HAZ	NA	PETROLEUM WATER
					GALLONS	26600	NON-HAZ		



**APPENDIX D**  
**CHAIN-OF-CUSTODY FORMS**

**APPENDIX D**  
**CHAIN-OF-CUSTODY FORMS**

**TABLE OF CONTENTS**

Chain-of-Custody Record

6 pages



CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION				PROJECT INFORMATION				NUMBER OF CONTAINERS	ANALYSIS / METHOD REQUEST	LAB JOB NO. 970131
COMPANY Morrison Knudsen Corporation				PROJECT NAME/NUMBER 4324-0038 OLF Barin						
SEND REPORT TO Alan Fosdick				BILLING INFORMATION						
ADDRESS 1500 West 3rd Street Cleveland, Ohio 44113-1406				BILL TO PO# 1FG-4324-2773						
PHONE 1-800-334-3081				PHONE						
FAX 216-523-5201				FAX PO NO						
SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.			REMARKS / PRECAUTIONS	
OLF BTW001	Fuel Pits and Tanks Liquid	01-15-97	1042	Water	Plastic	HNO3	1			
OLF BTW002	Fuel Pits and Tanks Liquid	01-15-97	1046	Water	Glass	None	1	X	temp alk 2.1c	
OLF BTW003	Fuel Pit and Tank Liquid	01-15-97	1050	Water	VOA	HCl None S.T.S.	3	X		
	Trip Blank	-	-	Water	VOA	HCL	1	X	← 1/16-97	

SAMPLER: Gene Bland (Kemron) SHIPMENT METHOD: Federal Express AIRBILL NO: 2970430945

REQUIRED TURNAROUND\*  SAME DAY  24 HOURS  48 HOURS  72 HOURS  5 DAYS  10 DAYS  ROUTINE  OTHER

1. RELINQUISHED BY: SIGNATURE <i>Paul J. Szygalski</i>	DATE 01-15-97	2. RELINQUISHED BY: SIGNATURE	DATE	3. RELINQUISHED BY: SIGNATURE	DATE
PRINTED NAME/COMPANY: Samuel J. Sanguedra / Morrison Knudsen Corp.	TIME 1146	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY: SIGNATURE <i>Michelle Weatherford</i>	DATE 1/16/97	2. RECEIVED BY: SIGNATURE	DATE	3. RECEIVED BY: SIGNATURE	DATE
PRINTED NAME/COMPANY CORE	TIME 0950	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY:	TIME

- Anahelm, CA  
1250 E. Gene Autry Way  
Anahelm, CA 92805  
(714) 937-1094 Fax (714) 937-1170
- Aurora, CO  
10703 E. Bethany Drive  
Aurora, CO 80014  
(303) 751-1780 Fax (303) 751-1784
- Casper, WY  
420 W. First Street  
Casper, WY 82601  
(307) 235-5741 Fax (307) 266-1676
- Corpus Christi, TX  
1733 N. Padre Island Drive  
Corpus Christi, TX 78408  
(512) 289-2673 Fax (512) 289-2471
- Edison, NJ  
284 Rankin Center Parkway  
Edison, NJ 08837  
(908) 225-6700 Fax (908) 225-6777
- Houston, TX (Env)  
6310 Rudrway Drive  
Houston, TX 77040  
(713) 690-4444 Fax (713) 690-5616
- Houston, TX (Pet)  
8210 Mosley Road  
Houston, TX 77075  
(713) 943-9776 Fax (713) 943-3846
- Indianapolis, IN  
7726 Moller Road  
Indianapolis, IN 46268  
(317) 875-5894 Fax (317) 872-6189
- Lake Charles, LA  
3645 Bugis Parkway  
Sulphur, LA 70663  
(318) 583-4926 Fax (318) 583-4929
- Long Beach, CA  
3700 Cherry Avenue  
Long Beach, CA 90807  
(510) 595-8401 Fax (310) 427-5174
- Tampa, FL  
5460 Busanment Center Blvd  
Tampa, FL 33634  
(813) 884-8268 Fax (813) 885-4938
- Valparaiso, IN  
2400 Cumberland Drive  
Valparaiso, IN 46383  
(219) 464-2389 Fax (219) 464-2389



# CORE LABORATORIES, INC.

No. 87686

## CHAIN OF CUSTODY RECORD

<b>CUSTOMER INFORMATION</b>		<b>PROJECT INFORMATION</b>	
COMPANY <i>Morrison Knudsen Corporation</i>	PROJECT NAME/NUMBER <i>4324-0038 OLF Barin</i>	<b>BILLING INFORMATION</b>	
SEND REPORT TO <i>Alan Fosdick</i>			
ADDRESS <i>1500 West 3rd Street Cleveland, OH 44113-1406</i>	BILL TO <i>PO # 1F6-4324-2773</i>	PHONE PHONE FAX PO NO	
PHONE <i>1-800-334-3081</i>	ADDRESS		
FAX <i>216-523-5201</i>			

NUMBER OF CONTAINERS

ANALYSIS / METHOD REQUEST  
*EPA 418.1*

LAB JOB NO.  
**970130**

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.		REMARKS / PRECAUTIONS
<i>OLFTS001</i>	<i>Composite: North Tank Material</i>	<i>01-15-97</i>	<i>0829</i>	<i>Soil</i>	<i>Glass</i>	<i>N/A</i>	<i>1</i>	<i>temp 2.5°C</i>
<i>OLFTS002</i>	<i>Composite: 2nd Riv Tank Material</i>	<i>01-15-97</i>	<i>0841</i>	<i>Soil</i>	<i>glass</i>	<i>N/A</i>	<i>1</i>	
<i>OLFTS003</i>	<i>Composite: 3rd Riv Tank Material</i>	<i>01-15-97</i>	<i>0859</i>	<i>Soil</i>	<i>Glass</i>	<i>N/A</i>	<i>1</i>	
<i>OLFTS004</i>	<i>Composite: 4th Riv Tank Material</i>	<i>01-15-97</i>	<i>0923</i>	<i>Soil</i>	<i>glass</i>	<i>N/A</i>	<i>1</i>	

SAMPLER *Gene Bland (Kemper)* SHIPMENT METHOD *Federal Express* AIRBILL NO *2970430956*

REQUIRED TURNAROUND\*  SAME DAY  24 HOURS  48 HOURS  72 HOURS  5 DAYS  10 DAYS ROUTINE OTHER

1. RELINQUISHED BY: SIGNATURE <i>Samuel J. Sangreola</i>	DATE <i>01-15-97</i>	2. RELINQUISHED BY: SIGNATURE	DATE	3. RELINQUISHED BY: SIGNATURE	DATE
PRINTED NAME/COMPANY: <i>Samuel J. Sangreola / Morrison Knudsen Corp.</i>	TIME <i>1148</i>	PRINTED NAME/COMPANY	TIME	PRINTED NAME/COMPANY	TIME
1. RECEIVED BY: SIGNATURE <i>Michelle Weatherford</i>	DATE <i>1/16/97</i>	2. RECEIVED BY: SIGNATURE	DATE	3. RECEIVED BY: SIGNATURE	DATE
PRINTED NAME/COMPANY <i>COLE</i>	TIME <i>0850</i>	PRINTED NAME/COMPANY	TIME	PRINTED NAME/COMPANY	TIME

- Anaheim, CA  
1250 E. Gene Autry Way  
Anaheim, CA 92806  
(714) 937-1004 Fax (714) 937-1170
- Aurora, CO  
10703 E. Bathany Drive  
Aurora, CO 80014  
(303) 751-1780 Fax (303) 751-1784
- Casper, WY  
420 W. First Street  
Casper, WY 82601  
(307) 235-5741 Fax (307) 268-1678
- Corpus Christi, TX  
1733 N. Padre Island Drive  
Corpus Christi, TX 78408  
(512) 289-2873 Fax (512) 289-2471
- Edison, NJ  
284 Raritan Center Parkway  
Edison, NJ 08837  
(908) 225-6700 Fax (908) 225-6777
- Houston, TX (Env)  
6310 Flodway Drive  
Houston, TX 77060  
(713) 690-4444 Fax (713) 690-5640
- Houston, TX (Pet)  
8210 Moseley Road  
Houston, TX 77075  
(713) 943-9776 Fax (713) 943-3844
- Indianapolis, IN  
7726 Moller Road  
Indianapolis, IN 46288  
(317) 875-5894 Fax (317) 872-6198
- Lake Charles, LA  
3645 Bugis Parkway  
Sulphur, LA 70663  
(318) 583-4926 Fax (318) 583-4929
- Long Beach, CA  
3700 Cherry Avenue  
Long Beach, CA 90807  
(310) 595-8401 Fax (310) 427-5174
- Tampa, FL  
5460 Boardman Center Blvd  
Tampa, FL 33634  
(813) 884-8268 Fax (813) 885-4938
- Valparaiso, IN (Env)  
Valparaiso, IN 46383  
(219) 464-2368 Fax (219) 467-2777

ORIGINAL



CHAIN OF CUSTODY RECORD

<b>CUSTOMER INFORMATION</b>		<b>PROJECT INFORMATION</b>				
COMPANY Morrison Knudsen Corporation:	PROJECT NAME/NUMBER 4324-0038 OLF BARIN					
SEND REPORT TO Alan Fedick	<b>BILLING INFORMATION</b>					
ADDRESS 1500 West 3 <sup>rd</sup> Street Cleveland, OH 44113-1406	BILL TO PO # 1F6-4324-2773	ADDRESS				
PHONE 1-800-334-3081	PHONE					
FAX 216-523-5201	FAX PO NO					

NUMBER OF CONTAINERS

ANALYSIS / METHOD REQUEST  
EPA 418.1

LAB JOB NO.  
970210

SAMPLE NO	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV	REMARKS / PRECAUTIONS
OLFPS-005	Composite: 1 <sup>st</sup> row: Pit Soils	01-23-97	1058	Soil	Glass	N/A	
OLFPS-006	Composite: 2 <sup>nd</sup> row: Pit Soils	01-23-97	1114	Soil	Glass	N/A	
OLFPS-007	Composite 3 <sup>rd</sup> row: Pit Soils	01-23-97	1131	Soil	Glass	N/A	
OLFPS-008	Composite: 4 <sup>th</sup> row: Pit Soils	01-23-97	1210	Soil	Glass	N/A	
OLFPS-006D	Composite: 2 <sup>nd</sup> row: Duplicate	01-23-97	1116	Soil	Glass	N/A	

Temp 2.0c

SAMPLER Gene Blend (Kemper) SHIPMENT METHOD Federal Express: AIRBILL NO 2970430886

REQUIRED TURNAROUND \*  SAME DAY  24 HOURS  48 HOURS  5 DAYS  10 DAYS  ROUTINE  OTHER

1. RELINQUISHED BY: SIGNATURE <i>Samuel J. Sanguedolfe</i>	DATE 01-23-97	2. RELINQUISHED BY: SIGNATURE	DATE	3. RELINQUISHED BY: SIGNATURE	DATE
PRINTED NAME/COMPANY Samuel J. Sanguedolfe / Morrison Knudsen Corp	TIME 1309	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY	TIME
1. RECEIVED BY: SIGNATURE <i>Mark A. Steffler</i>	DATE 1/24/97	2. RECEIVED BY: SIGNATURE	DATE	3. RECEIVED BY: SIGNATURE	DATE
PRINTED NAME/COMPANY MARK A. STEFFLER	TIME 0930	PRINTED NAME/COMPANY:	TIME	PRINTED NAME/COMPANY	TIME

- Anaheim, CA  
1250 E. Gene Autry Way  
Anaheim, CA 92805  
(714) 937-1094 Fax (714) 937-1170
- Aurora, CO  
10703 E. Bathany Drive  
Aurora, CO 80014  
(303) 751-1780 Fax (303) 751-1784
- Casper, WY  
420 W. First Street  
Casper, WY 82601  
(307) 235-5741 Fax (307) 266-1678
- Corpus Christi, TX  
1733 N. Padre Island Drive  
Corpus Christi, TX 78408  
(512) 289-2673 Fax (512) 289-2471
- Edison, NJ  
284 Raritan Center Parkway  
Edison, NJ 08837  
(908) 225-6700 Fax (908) 225-6777
- Houston, TX (Env)  
6310 Rutledge Drive  
Houston, TX 77040  
(713) 690-4444 Fax (713) 690-5616
- Houston, TX (Pet)  
8210 Mosley Road  
Houston, TX 77075  
(713) 943-9776 Fax (713) 943-3846
- Indianapolis, IN  
7726 Moller Road  
Indianapolis, IN 46268  
(317) 875-5894 Fax (317) 872-6189
- Lake Charles, LA  
3645 Beglis Parkway  
Sulphur, LA 70663  
(318) 583-4926 Fax (318) 583-4920
- Long Beach, CA  
3700 Cherry Avenue  
Long Beach, CA 90807  
(310) 595-8401 Fax (310) 427-5174
- Tampa, FL  
5460 Beaumont Center Blvd  
Tampa, FL 33634  
(813) 884-8268 Fax (813) 885-4938
- Valparaiso, IN  
2400 Cumberland Drive  
Valparaiso, IN 46383  
(219) 464-2369 Fax (219) 462-5000





CHAIN OF CUSTODY RECORD

<b>CUSTOMER INFORMATION</b>		<b>PROJECT INFORMATION</b>	
COMPANY <i>Morrison Knudsen Corporation</i>	PROJECT NAME/NUMBER <i>4324-0038 OLF BARIN</i>		
SEND REPORT TO <i>Alan Fisdick</i>	<b>BILLING INFORMATION</b>		
ADDRESS <i>1500 West 3rd Street Cleveland, OH 44113-1406</i>	BILL TO <i>PO #: 1 F 6 4324 2773</i>	ADDRESS	
PHONE <i>1-800-334-3081</i>	PHONE	FAX	
FAX <i>216-523-5201</i>	FAX	PO NO	

NUMBER OF CONTAINERS

ANALYSIS / METHOD REQUEST

Metals  
PH  
Flashpoint  
Volatile Organics 8260

LAB JOB NO.  
*970343*

SAMPLE NO	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.		REMARKS / PRECAUTIONS
<i>OLF BTW 011</i>	<i>BT: 65496 EA Water</i>	<i>2-6-97</i>	<i>1013</i>	<i>Water</i>	<i>Plastic</i>	<i>HNO3</i>	<i>1</i>	<i>temp 2.6°C</i>
<i>OLF BTW 012</i>	<i>BT: 65496 EA Water</i>	<i>2-6-97</i>	<i>1017</i>	<i>Water</i>	<i>Glass</i>	<i>None</i>	<i>1</i>	
<i>OLF BTW 013</i>	<i>BT: 65496 EA Water</i>	<i>2-6-97</i>	<i>1026</i>	<i>Water</i>	<i>VOA</i>	<i>HCl</i>	<i>3</i>	
<i>OLF BTW 014</i>	<i>Trip Blank</i>	<i><del>2-6-97</del></i>	<i>1525</i>	<i>Water</i>	<i>VOA</i>	<i>HCl</i>	<i>1</i>	
<i>OLF BTW 015</i>	<i>BT: 65496 EA Product</i>	<i>2-6-97</i>	<i>0940</i>	<i>Water</i>	<i>Plastic</i>	<i>HNO3</i>	<i>1</i>	
<i>OLF BTW 016</i>	<i>BT: 65496 EA Product</i>	<i>2-6-97</i>	<i>0955</i>	<i>Water</i>	<i>Glass</i>	<i>None</i>	<i>1</i>	
<i>OLF BTW 017</i>	<i>BT: 65496 EA Product</i>	<i>2-6-97</i>	<i>1006</i>	<i>Water</i>	<i>VOA</i>	<i>HCl</i>	<i>3</i>	

SAMPLER *G. Bland (Kamron)* SHIPMENT METHOD *Federal Express* AIRBILL NO *1939738371*

REQUIRED TURNAROUND \* SAME DAY 24 HOURS 48 HOURS 72 HOURS  5 DAYS 10 DAYS ROUTINE OTHER

1. RELINQUISHED BY SIGNATURE <i>[Signature]</i>	DATE <i>02-06-97</i>	2. RELINQUISHED BY SIGNATURE	DATE	3. RELINQUISHED BY SIGNATURE	DATE
PRINTED NAME/COMPANY <i>Samuel J. Sanguedillo / Morrison Knudsen Corp</i>	TIME <i>1300</i>	PRINTED NAME/COMPANY	TIME	PRINTED NAME/COMPANY	TIME
1. RECEIVED BY SIGNATURE <i>Michelle Weatherford</i>	DATE <i>2/7/97</i>	2. RECEIVED BY SIGNATURE	DATE	3. RECEIVED BY SIGNATURE	DATE
PRINTED NAME/COMPANY <i>CORE</i>	TIME <i>0930</i>	PRINTED NAME/COMPANY	TIME	PRINTED NAME/COMPANY	TIME

- Anahem, CA 1250 E Gene Autry Way Anaheim, CA 92805 (714) 937-1094 Fax (714) 937-1170
- Aurora, CO 10703 E. Bethany Drive Aurora, CO 80014 (303) 751-1780 Fax (303) 751-1784
- Casper, WY 420 W. First Street Casper, WY 82601 (307) 235-5741 Fax (307) 266-1678
- Corpus Christi, TX 1733 N. Padre Island Drive Corpus Christi, TX 78406 (512) 289-2673 Fax (512) 289-2471
- Edison, NJ 284 Raritan Center Parkway Edison, NJ 08837 (908) 225-6700 Fax (908) 225-6777
- Houston, TX (Env) 6310 Rothway Drive Houston, TX 77040 (713) 690-4444 Fax (713) 690-5646
- Houston, TX (Pet) 8210 Mosley Road Houston, TX 77075 (713) 943-9776 Fax (713) 943-3846
- Indianapolis, IN 7726 Moller Road Indianapolis, IN 46268 (317) 875-5894 Fax (317) 872-6189
- Lake Charles, LA 3645 Beglis Parkway Sulphur, LA 70663 (318) 583-4926 Fax (318) 583-4929
- Long Beach, CA 3700 Cherry Avenue Long Beach, CA 90807 (310) 595-8401 Fax (310) 427-5174
- Tampa, FL 5460 Beaumont Center Blvd Tampa, FL 33634 (813) 884-8268 Fax (813) 885-4938
- Valparaiso, IN 2400 Cumberland Drive Valparaiso, IN 46383 (219) 464-2109 Fax (219) 463-2651



CHAIN OF CUSTODY RECORD

<b>CUSTOMER INFORMATION</b>		<b>PROJECT INFORMATION</b>	
COMPANY <i>Morrison Knudsen Corporation</i>	SEND REPORT TO <i>Alan Fedick</i>	PROJECT NAME/NUMBER <i>4324-0038-OLF-BARIN</i>	<b>BILLING INFORMATION</b>
ADDRESS <i>1500 West 3<sup>rd</sup> Street</i>	PHONE <i>1-800-334-3081</i>	BILL TO <i>PO # 1 F B 4324-2773</i>	PHONE
FAX <i>216-523-5201</i>		ADDRESS	FAX
		PO NO	

NUMBER OF CONTAINERS

ANALYSIS / METHOD REQUEST

*Volatiles by jarvis 8260*

**LAB JOB NO.**  
*970343*

SAMPLE NO	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	REMARKS / PRECAUTIONS
<i>OLF BTW 019</i>	<i>BT: GS496EA: Product</i>	<i>02-10-97</i>	<i>1251</i>	<i>Water</i>	<i>VOM</i>	<i>HCl</i>	<i>3</i>	<i>temp 3.1°C</i>
<i>OLFTB 019</i>	<i>Trip Blank</i>	<i>02-07-97</i>	<i>1430</i>	<i>Water</i>	<i>VOM</i>	<i>HCl</i>	<i>1</i>	

SAMPLER *G. Blund (Kumron Construction Co.)* SHIPMENT METHOD *Federal Express* AIRBILL NO. *196 306 5812*

REQUIRED TURNAROUND: \*  SAME DAY  24 HOURS  48 HOURS  72 HOURS  5 DAYS  10 DAYS  ROUTINE  OTHER

1. RELINQUISHED BY: SIGNATURE <i>[Signature]</i>	DATE <i>02-10-97</i>	2. RELINQUISHED BY: SIGNATURE	DATE	3. RELINQUISHED BY: SIGNATURE	DATE
PRINTED NAME/COMPANY <i>Samuel T. Sangreth / Morrison Knudsen Corporation</i>	TIME <i>1300</i>	PRINTED NAME/COMPANY	TIME	PRINTED NAME/COMPANY	TIME
1. RECEIVED BY: SIGNATURE <i>Michelle Weatherford</i>	DATE <i>2/11/97</i>	2. RECEIVED BY: SIGNATURE	DATE	3. RECEIVED BY: SIGNATURE	DATE
PRINTED NAME/COMPANY <i>CORE</i>	TIME <i>1300</i>	PRINTED NAME/COMPANY	TIME	PRINTED NAME/COMPANY	TIME

- Anahem, CA  
1250 E. Gene Autry Way  
Anahem, CA 92805  
(714) 937-1094 Fax (714) 937-1170
- Aurora, CO  
10703 E. Bethany Drive  
Aurora, CO 80014  
(303) 751-1780 Fax (303) 751-1784
- Casper, WY  
420 W. First Street  
Casper, WY 82601  
(307) 235-5741 Fax (307) 266-1676
- Corpus Christi, TX  
1733 N. Padre Island Drive  
Corpus Christi, TX 78408  
(512) 289-2673 Fax (512) 289-2471
- Edison, NJ  
264 Raritan Center Parkway  
Edison, NJ 08837  
(908) 225-6700 Fax (908) 225-6777
- Houston, TX (Env)  
6310 Foothway Drive  
Houston, TX 77040  
(714) 444-4444 Fax (713) 490-5616
- Houston, TX (Pet)  
8210 Mosley Road  
Houston, TX 77075  
(281) 943-9226 Fax (281) 943-3046
- Indianapolis, IN  
7726 Moller Road  
Indianapolis, IN 46268  
(317) 875-5894 Fax (317) 872-6189
- Lake Charles, LA  
3645 Beglis Parkway  
Sulphur, LA 70663  
(318) 583-4926 Fax (318) 583-4929
- Long Beach, CA  
3700 Cherry Avenue  
Long Beach, CA 90807  
(310) 595-8401 Fax (310) 427-5174
- Tampa, FL  
5460 Beaumont Center Blvd  
Tampa, FL 33634  
(813) 981-9228 Fax (813) 981-9228
- Valparaiso, IN  
44444  
Valparaiso, IN 46083  
(317) 875-5894 Fax (317) 872-6189



**APPENDIX E**  
**LABORATORY ANALYTICAL DATA**

**APPENDIX E**  
**LABORATORY ANALYTICAL DATA**

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Analytical Data

30 pages



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970131

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW001  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 10:42  
 Sample Matrix.....: Water

Laboratory Sample ID: 970131-1  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 3010	Acid Digestion, Total Metals	Complete					01/20/97	lmt
SW-846 6010A	Arsenic (As), Total	<0.004		U	0.004	mg/L	01/21/97	gag
SW-846 6010A	Barium (Ba), Total	0.0338			0.0002	mg/L	01/21/97	gag
SW-846 6010A	Cadmium (Cd), Total	0.0006		B	0.0002	mg/L	01/21/97	gag
SW-846 6010A	Chromium (Cr), Total	0.0019		B	0.0007	mg/L	01/21/97	gag
SW-846 6010A	Lead (Pb), Total	0.035		B	0.002	mg/L	01/21/97	gag
SW-846 7470	Mercury (Hg), Total	<0.0001		U	0.0001	mg/L	01/21/97	lmt
846 6010A	Selenium (Se), Total	<0.006		U	0.006	mg/L	01/21/97	gag
SW-846 6010A	Silver (Ag), Total	<0.0007		U	0.0007	mg/L	01/21/97	gag



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970131

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW002  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 10:46  
 Sample Matrix.....: Water

Laboratory Sample ID: 970131-2  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 9040	Corrosivity (pH-Liquids)	6.5			0.1	pH Units	01/21/97	Lmt
SW-846 1010	Ignitability (Flashpoint)	>180			1	Degrees F	01/22/97	Lmt



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970131

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW003  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 10:50  
 Sample Matrix.....: Water

Laboratory Sample ID: 970131-3  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260	Volatile Organics							
	Benzene	ND		U	1	ug/L	01/20/97	dmj
	Bromobenzene	ND		U	5	ug/L	01/20/97	dmj
	Bromochloromethane	ND		U	5	ug/L	01/20/97	dmj
	Bromodichloromethane	ND		U	5	ug/L	01/20/97	dmj
	Bromoform	ND		U	5	ug/L	01/20/97	dmj
	Bromomethane	ND		U	10	ug/L	01/20/97	dmj
	n-Butylbenzene	ND		U	5	ug/L	01/20/97	dmj
	sec-Butylbenzene	ND		U	5	ug/L	01/20/97	dmj
	tert-Butylbenzene	ND		U	5	ug/L	01/20/97	dmj
	Carbon tetrachloride	ND		U	5	ug/L	01/20/97	dmj
	Chlorobenzene	ND		U	5	ug/L	01/20/97	dmj
	Chloroethane	ND		U	10	ug/L	01/20/97	dmj
	Chloroform	ND		U	5	ug/L	01/20/97	dmj
	Chloromethane	ND		U	10	ug/L	01/20/97	dmj
	o-Chlorotoluene	ND		U	5	ug/L	01/20/97	dmj
	p-Chlorotoluene	ND		U	5	ug/L	01/20/97	dmj
	Dibromochloromethane	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dibromo-3-chloropropane	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dibromoethane (EDB)	ND		U	5	ug/L	01/20/97	dmj
	Dibromomethane	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dichlorobenzene	ND		U	5	ug/L	01/20/97	dmj
	1,3-Dichlorobenzene	ND		U	5	ug/L	01/20/97	dmj
	1,4-Dichlorobenzene	ND		U	5	ug/L	01/20/97	dmj
	Dichlorodifluoromethane	ND		U	5	ug/L	01/20/97	dmj
	1,1-Dichloroethane	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dichloroethane	ND		U	5	ug/L	01/20/97	dmj
	1,1-Dichloroethene	ND		U	5	ug/L	01/20/97	dmj
	cis-1,2-Dichloroethene	ND		U	5	ug/L	01/20/97	dmj
	trans-1,2-Dichloroethene	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dichloropropane	ND		U	5	ug/L	01/20/97	dmj
	1,3-Dichloropropane	ND		U	5	ug/L	01/20/97	dmj
	2,2-Dichloropropane	ND		U	5	ug/L	01/20/97	dmj
	1,1-Dichloropropene	ND		U	5	ug/L	01/20/97	dmj
	Ethylbenzene	ND		U	5	ug/L	01/20/97	dmj
	Hexachlorobutadiene	ND		U	5	ug/L	01/20/97	dmj
	Isopropylbenzene	ND		U	5	ug/L	01/20/97	dmj
	p-Isopropyltoluene	ND		U	5	ug/L	01/20/97	dmj
	Methylene chloride	ND		U	5	ug/L	01/20/97	dmj
	Naphthalene	ND		U	5	ug/L	01/20/97	dmj
n-Propylbenzene	ND		U	5	ug/L	01/20/97	dmj	
Styrene	ND		U	5	ug/L	01/20/97	dmj	
1,1,1,2-Tetrachloroethane	ND		U	5	ug/L	01/20/97	dmj	
1,1,2,2-Tetrachloroethane	ND		U	5	ug/L	01/20/97	dmj	
Tetrachloroethene	ND		U	5	ug/L	01/20/97	dmj	
Toluene	3.0			J	5	ug/L	01/20/97	dmj
1,2,3-Trichlorobenzene	ND			U	5	ug/L	01/20/97	dmj
1,2,4-Trichlorobenzene	ND			U	5	ug/L	01/20/97	dmj



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970131

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW003  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 10:50  
 Sample Matrix.....: Water

Laboratory Sample ID: 970131-3  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
	1,1,1-Trichloroethane	ND		U	5	ug/L	01/20/97	dmj
	1,1,2-Trichloroethane	ND		U	5	ug/L	01/20/97	dmj
	Trichloroethene	ND		U	5	ug/L	01/20/97	dmj
	Trichlorofluoromethane	ND		U	5	ug/L	01/20/97	dmj
	1,2,4-Trimethylbenzene	3.2		J	5	ug/L	01/20/97	dmj
	1,3,5-Trimethylbenzene	2.9		J	5	ug/L	01/20/97	dmj
	1,2,3-Trichloropropane	ND		U	5	ug/L	01/20/97	dmj
	Vinyl chloride	ND		U	10	ug/L	01/20/97	dmj
	Xylenes (total)	ND		U	5	ug/L	01/20/97	dmj



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970131

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: TRIP BLANK  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 00:00  
 Sample Matrix.....: Water

Laboratory Sample ID: 970131-4  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260	Volatile Organics							
	Benzene	ND		U	1	ug/L	01/20/97	dmj
	Bromobenzene	ND		U	5	ug/L	01/20/97	dmj
	Bromochloromethane	ND		U	5	ug/L	01/20/97	dmj
	Bromodichloromethane	ND		U	5	ug/L	01/20/97	dmj
	Bromoform	ND		U	5	ug/L	01/20/97	dmj
	Bromomethane	ND		U	10	ug/L	01/20/97	dmj
	n-Butylbenzene	ND		U	5	ug/L	01/20/97	dmj
	sec-Butylbenzene	ND		U	5	ug/L	01/20/97	dmj
	tert-Butylbenzene	ND		U	5	ug/L	01/20/97	dmj
	Carbon tetrachloride	ND		U	5	ug/L	01/20/97	dmj
	Chlorobenzene	ND		U	5	ug/L	01/20/97	dmj
	Chloroethane	ND		U	10	ug/L	01/20/97	dmj
	Chloroform	ND		U	5	ug/L	01/20/97	dmj
	Chloromethane	ND		U	10	ug/L	01/20/97	dmj
	o-Chlorotoluene	ND		U	5	ug/L	01/20/97	dmj
	p-Chlorotoluene	ND		U	5	ug/L	01/20/97	dmj
	Dibromochloromethane	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dibromo-3-chloropropane	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dibromoethane (EDB)	ND		U	5	ug/L	01/20/97	dmj
	Dibromomethane	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dichlorobenzene	ND		U	5	ug/L	01/20/97	dmj
	1,3-Dichlorobenzene	ND		U	5	ug/L	01/20/97	dmj
	1,4-Dichlorobenzene	ND		U	5	ug/L	01/20/97	dmj
	Dichlorodifluoromethane	ND		U	5	ug/L	01/20/97	dmj
	1,1-Dichloroethane	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dichloroethane	ND		U	5	ug/L	01/20/97	dmj
	1,1-Dichloroethene	ND		U	5	ug/L	01/20/97	dmj
	cis-1,2-Dichloroethene	ND		U	5	ug/L	01/20/97	dmj
	trans-1,2-Dichloroethene	ND		U	5	ug/L	01/20/97	dmj
	1,2-Dichloropropane	ND		U	5	ug/L	01/20/97	dmj
	1,3-Dichloropropane	ND		U	5	ug/L	01/20/97	dmj
	2,2-Dichloropropane	ND		U	5	ug/L	01/20/97	dmj
	1,1-Dichloropropene	ND		U	5	ug/L	01/20/97	dmj
	Ethylbenzene	ND		U	5	ug/L	01/20/97	dmj
	Hexachlorobutadiene	ND		U	5	ug/L	01/20/97	dmj
	Isopropylbenzene	ND		U	5	ug/L	01/20/97	dmj
	p-Isopropyltoluene	ND		U	5	ug/L	01/20/97	dmj
	Methylene chloride	ND		U	5	ug/L	01/20/97	dmj
	Naphthalene	ND		U	5	ug/L	01/20/97	dmj
	n-Propylbenzene	ND		U	5	ug/L	01/20/97	dmj
	Styrene	ND		U	5	ug/L	01/20/97	dmj
	1,1,1,2-Tetrachloroethane	ND		U	5	ug/L	01/20/97	dmj
	1,1,2,2-Tetrachloroethane	ND		U	5	ug/L	01/20/97	dmj
	Tetrachloroethene	ND		U	5	ug/L	01/20/97	dmj
	Toluene	ND		U	5	ug/L	01/20/97	dmj
	1,2,3-Trichlorobenzene	ND		U	5	ug/L	01/20/97	dmj
	1,2,4-Trichlorobenzene	ND		U	5	ug/L	01/20/97	dmj

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# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970131

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: TRIP BLANK  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 00:00  
 Sample Matrix.....: Water

Laboratory Sample ID: 970131-4  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
	1,1,1-Trichloroethane	ND		U	5	ug/L	01/20/97	dmj
	1,1,2-Trichloroethane	ND		U	5	ug/L	01/20/97	dmj
	Trichloroethene	ND		U	5	ug/L	01/20/97	dmj
	Trichlorofluoromethane	ND		U	5	ug/L	01/20/97	dmj
	1,2,4-Trimethylbenzene	ND		U	5	ug/L	01/20/97	dmj
	1,3,5-Trimethylbenzene	ND		U	5	ug/L	01/20/97	dmj
	1,2,3-Trichloropropane	ND		U	5	ug/L	01/20/97	dmj
	Vinyl chloride	ND		U	10	ug/L	01/20/97	dmj
	Xylenes (total)	ND		U	5	ug/L	01/20/97	dmj



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970130

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLF75001  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 08:29  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970130-1  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	92.7			0.1	%	01/22/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	7.3			0.1	%	01/22/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	62			11	mg/Kg	01/17/97	jbd



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970130

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFT5002  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 08:41  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970130-2  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	90.4			0.1	%	01/22/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	9.6			0.1	%	01/22/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	210			11	mg/Kg	01/17/97	jbd



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970130

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFT5003  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 08:59  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970130-3  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	90.3			0.1	%	01/22/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	9.7			0.1	%	01/22/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	130			11	mg/Kg	01/17/97	jbd



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970130

Date: 01/23/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038 OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFT5004  
 Date Sampled.....: 01/15/97  
 Time Sampled.....: 09:23  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970130-4  
 Date Received.....: 01/16/97  
 Time Received.....: 08:50

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	90.4			0.1	%	01/22/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	9.6			0.1	%	01/22/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	320			11	mg/Kg	01/17/97	jbd



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970210

Date: 01/30/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324.0038 OLF BARIN

ATTN: Dylan Carelli

Customer Sample ID: COMPOSITE: 1ST ROW: PIT SOILS  
 Date Sampled.....: 01/23/97  
 Time Sampled.....: 10:58  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970210-1  
 Date Received.....: 01/24/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	83.5			0.1	%	01/28/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	16.5			0.1	%	01/28/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	360			12	mg/Kg	01/27/97	jbd



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970210

Date: 01/30/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324.0038 OLF BARIN

ATTN: Dylan Carelli

Customer Sample ID: COMPOSITE: 2ND ROW: PIT SOILS  
 Date Sampled.....: 01/23/97  
 Time Sampled.....: 11:14  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970210-2  
 Date Received.....: 01/24/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	81.8			0.1	%	01/28/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	18.2			0.1	%	01/28/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	680			24	mg/Kg	01/27/97	jbd



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970210

Date: 01/30/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324.0038 OLF BARIN

ATTN: Dylan Carelli

Customer Sample ID: COMPOSITE: 3RD ROW: PIT SOILS  
 Date Sampled.....: 01/23/97  
 Time Sampled.....: 11:31  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970210-3  
 Date Received.....: 01/24/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	83.7			0.1	%	01/28/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	16.3			0.1	%	01/28/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	39			12	mg/Kg	01/27/97	jbd



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970210

Date: 01/30/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324.0038 OLF BARIN

ATTN: Dylan Carelli

Customer Sample ID: COMPOSITE: 4TH ROW: PIT SOILS  
 Date Sampled.....: 01/23/97  
 Time Sampled.....: 12:10  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970210-4  
 Date Received.....: 01/24/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	61.2			0.1	%	01/28/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	38.8			0.1	%	01/28/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	34000			1600	mg/Kg	01/27/97	jbd



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970210

Date: 01/30/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324.0038 OLF BARIN

ATTN: Dylan Carelli

Customer Sample ID: COMPOSITE: 2ND ROW: DUPLICATE  
 Date Sampled.....: 01/23/97  
 Time Sampled.....: 11:16  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970210-5  
 Date Received.....: 01/24/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	82.0			0.1	%	01/28/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	18.0			0.1	%	01/28/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	1700			61	mg/Kg	01/27/97	jbd



# CORE LABORATORIES

LABORATORY TEST RESULTS

Job Number: 970281 Date: 02/13/97

CUSTOMER: Morrison Knudsen Corporation PROJECT: 4324-0038-OLF-BARIN ATTN: Allan Fosdick

Customer Sample ID: OLFFLS009 Laboratory Sample ID: 970281-1  
 Date Sampled.....: 01/30/97 Date Received.....: 02/01/97  
 Time Sampled.....: 13:44 Time Received.....: 11:05  
 Sample Matrix.....: Soil

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	88.2			0.1	%	02/05/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	11.8			0.1	%	02/05/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	27			11	mg/Kg	02/05/97	jbd

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# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970281

Date: 02/13/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF-BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFFLS010  
 Date Sampled.....: 01/30/97  
 Time Sampled.....: 13:57  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970281-2  
 Date Received.....: 02/01/97  
 Time Received.....: 11:05

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SM 2540G	% Solids (104 Degree C Oven)	86.6			0.1	%	02/05/97	rwm
SM 2540G	Moisture (@ 104 deg. C)	13.4			0.1	%	02/05/97	rwm
EPA 418.1	Total Recoverable Petroleum Hydrocarbo, Solid	210			12	mg/Kg	02/05/97	jbd
SW-846 9045	Corrosivity (pH Solid)	7.8			0.1	pH Units	02/04/97	lmt
SW846 7-7.1.2.2	Ignitability	neg				Pos/Neg	02/06/97	lmt
SW846 7.3/9010	Reactivity, Cyanide	<10			10	mg/Kg	02/05/97	lmt
SW846 7.3/9030	Reactivity, Sulfide	20			10	mg/Kg	02/05/97	lmt
W-846 1311	TCLP Nonvolatile Extraction	Complete					02/07/97	lmt
SW-846 1311	TCLP Volatile ZHE Extraction	Complete					02/07/97	lmt
SW-846 6010A	TCLP Metals Analysis (ICAP)							
	Arsenic (As)	<0.004		U	0.004	mg/L	02/07/97	smh
	Barium (Ba)	0.219		B	0.0004	mg/L	02/07/97	smh
	Cadmium (Cd)	0.0034		B	0.0004	mg/L	02/07/97	smh
	Chromium (Cr)	<0.002		U	0.002	mg/L	02/07/97	smh
	Lead (Pb)	0.414		U	0.004	mg/L	02/07/97	smh
	Selenium (Se)	<0.009		U	0.009	mg/L	02/07/97	smh
	Silver (Ag)	<0.002		U	0.002	mg/L	02/07/97	smh
SW-846 7470	TCLP Mercury (CVAA) Mercury (Hg)	<0.000047		U	0.00004	mg/L	02/07/97	gag
SW-846 3510B	Extraction (Sep. Funnel) TCLP Herb. Separatory Funnel Liq/Liq Extraction	Complete					02/07/97	rwm
SW-846 3510B	Extraction (Sep. Funnel) TCLP Pest. Separatory Funnel Liq/Liq Extraction	Complete					02/07/97	rwm
SW-846 8080	TCLP Pesticides							
	Chlordane	ND		U	1.4	ug/L	02/10/97	smc
	Endrin	ND		U	0.6	ug/L	02/10/97	smc
	Heptachlor	ND		U	0.3	ug/L	02/10/97	smc
	Heptachlor epoxide	ND		U	8.3	ug/L	02/10/97	smc
	gamma-BHC (Lindane)	ND		U	0.4	ug/L	02/10/97	smc
	Methoxychlor	ND		U	18.0	ug/L	02/10/97	smc
	Toxaphene	ND		U	24.0	ug/L	02/10/97	smc
SW-846 8150	TCLP Herbicides							
	2,4-D	ND			12	ug/L	02/10/97	smc
	2,4,5-TP (Silvex)	ND		U	1.7	ug/L	02/10/97	smc



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970281

Date: 02/13/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF-BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFFLS010  
 Date Sampled.....: 01/30/97  
 Time Sampled.....: 13:57  
 Sample Matrix.....: Soil

Laboratory Sample ID: 970281-2  
 Date Received.....: 02/01/97  
 Time Received.....: 11:05

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 35108	Extraction (Sep. Funnel) TCLP SVCC Separatory Funnel Liq/Liq Extraction	Complete					02/07/97	rwm
SW-846 8270	Semivolatile Organics (TCLP)				100	ug/L	02/10/97	mLa
	1,4-Dichlorobenzene	ND		U	100	ug/L	02/10/97	mLa
	2,4-Dinitrotoluene	ND		U	100	ug/L	02/10/97	mLa
	Hexachlorobenzene	ND		U	100	ug/L	02/10/97	mLa
	Hexachlorobutadiene	ND		U	100	ug/L	02/10/97	mLa
	Hexachloroethane	ND		U	100	ug/L	02/10/97	mLa
	Nitrobenzene	ND		U	100	ug/L	02/10/97	mLa
	Pyridine	ND		U	100	ug/L	02/10/97	mLa
	2-Methylphenol (o-cresol)	ND		U	100	ug/L	02/10/97	mLa
	3 & 4 Methylphenol (m&p cresol)	ND		U	100	ug/L	02/10/97	mLa
	Pentachlorophenol	ND		U	500	ug/L	02/10/97	mLa
	2,4,5-Trichlorophenol	ND		U	100	ug/L	02/10/97	mLa
	2,4,6-Trichlorophenol	ND		U	100	ug/L	02/10/97	mLa
SW-846 8240	Volatile Organics (TCLP)				10	ug/L	02/07/97	dmj
	Benzene	ND		U	50	ug/L	02/07/97	dmj
	Carbon tetrachloride	ND		U	50	ug/L	02/07/97	dmj
	Chlorobenzene	ND		U	50	ug/L	02/07/97	dmj
	Chloroform	ND		U	50	ug/L	02/07/97	dmj
	1,4-Dichlorobenzene	ND		U	50	ug/L	02/07/97	dmj
	1,1-Dichloroethane	ND		U	50	ug/L	02/07/97	dmj
	1,2-Dichloroethane	ND		U	50	ug/L	02/07/97	dmj
	1,2-Dichloropropane	ND		U	50	ug/L	02/07/97	dmj
	1,1-Dichloroethene	ND		U	50	ug/L	02/07/97	dmj
	cis-1,2-Dichloroethene	ND		U	50	ug/L	02/07/97	dmj
	Methyl ethyl ketone (2-Butanone)	ND		U	1000	ug/L	02/07/97	dmj
	Tetrachloroethene	ND		U	50	ug/L	02/07/97	dmj
	1,1,1-Trichloroethane	ND		U	50	ug/L	02/07/97	dmj
	Trichloroethene	ND		U	50	ug/L	02/07/97	dmj
	Trichlorofluoromethane	ND		U	50	ug/L	02/07/97	dmj
	Vinyl chloride	ND		U	100	ug/L	02/07/97	dmj
SW-846 1311	TCLP Nonvolatile Physical Characterizat.				0.5	%	02/07/97	lmt
	% Solids	100			0.5	%	02/07/97	lmt
	% Liquid	<0.5			0.5	%	02/07/97	lmt
	% Aqueous - Extract	100			0.5	%	02/07/97	lmt
	% Non-aqueous - Extract	<0.5			0.5	%	02/07/97	lmt
	Density Of Extract	1.0			0.1	Kg/L	02/07/97	lmt
SW-846 1311	TCLP Volatile Physical Characterization				0.5	%	02/07/97	lmt
	% Solids	100			0.5	%	02/07/97	lmt
	% Liquid	<0.5			0.5	%	02/07/97	lmt
	% Aqueous - Extract	100			0.5	%	02/07/97	lmt
	% Non-aqueous - Extract	<0.5			0.5	%	02/07/97	lmt
	Density Of Extract	1.0			0.1	Kg/L	02/07/97	lmt



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW011  
 Date Sampled.....: 02/06/97  
 Time Sampled.....: 10:13  
 Sample Matrix.....: Water

Laboratory Sample ID: 970343-1  
 Date Received.....: 02/07/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 3010	Acid Digestion, Total Metals	Complete					02/10/97	lmt
SW-846 6010A	Arsenic (As), Total	0.008		B	0.004	mg/L	02/11/97	smh
SW-846 6010A	Barium (Ba), Total	0.114			0.0002	mg/L	02/11/97	smh
SW-846 6010A	Cadmium (Cd), Total	0.0004		B	0.0002	mg/L	02/11/97	smh
SW-846 6010A	Chromium (Cr), Total	0.0064		B	0.0007	mg/L	02/11/97	smh
SW-846 6010A	Lead (Pb), Total	4.11			0.01	mg/L	02/11/97	smh
SW-846 7470	Mercury (Hg), Total	<0.000047		U	0.00004	mg/L	02/11/97	lmt
SW-846 6010A	Selenium (Se), Total	<0.006		U	0.006	mg/L	02/11/97	smh
SW-846 6010A	Silver (Ag), Total	<0.0007		U	0.0007	mg/L	02/11/97	smh



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BAKIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW012  
Date Sampled.....: 02/06/97  
Time Sampled.....: 10:17  
Sample Matrix.....: Water

Laboratory Sample ID: 970343-2  
Date Received.....: 02/07/97  
Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 9040	Corrosivity (pH-Liquids)	5.4			0.1	pH Units	02/10/97	Lmt
SW-846 1010	Ignitability (Flashpoint)	>186			1	Degrees F	02/13/97	Lmt



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW013  
 Date Sampled.....: 02/06/97  
 Time Sampled.....: 10:26  
 Sample Matrix.....: Water

Laboratory Sample ID: 970343-3  
 Date Received.....: 02/07/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260	Volatile Organics							
	Benzene	6800			100	ug/L	02/10/97	dmj
	Bromobenzene	ND	U		5	ug/L	02/10/97	dmj
	Bromochloromethane	ND	U		5	ug/L	02/10/97	dmj
	Bromodichloromethane	ND	U		5	ug/L	02/10/97	dmj
	Bromoform	ND	U		5	ug/L	02/10/97	dmj
	Bromomethane	ND	U		10	ug/L	02/10/97	dmj
	n-Butylbenzene	ND	U		5	ug/L	02/10/97	dmj
	sec-Butylbenzene	ND	U		5	ug/L	02/10/97	dmj
	tert-Butylbenzene	ND	U		5	ug/L	02/10/97	dmj
	Carbon tetrachloride	ND	U		5	ug/L	02/10/97	dmj
	Chlorobenzene	ND	U		5	ug/L	02/10/97	dmj
	Chloroethane	7.5	J		10	ug/L	02/10/97	dmj
	Chloroform	ND	U		5	ug/L	02/10/97	dmj
	Chloromethane	ND	U		10	ug/L	02/10/97	dmj
	o-Chlorotoluene	ND	U		5	ug/L	02/10/97	dmj
	p-Chlorotoluene	ND	U		5	ug/L	02/10/97	dmj
	Dibromochloromethane	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dibromo-3-chloropropane	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dibromoethane (EDB)	ND	U		5	ug/L	02/10/97	dmj
	Dibromomethane	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dichlorobenzene	ND	U		5	ug/L	02/10/97	dmj
	1,3-Dichlorobenzene	ND	U		5	ug/L	02/10/97	dmj
	1,4-Dichlorobenzene	ND	U		5	ug/L	02/10/97	dmj
	Dichlorodifluoromethane	ND	U		5	ug/L	02/10/97	dmj
	1,1-Dichloroethane	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dichloroethane	ND	U		5	ug/L	02/10/97	dmj
	1,1-Dichloroethene	ND	U		5	ug/L	02/10/97	dmj
	cis-1,2-Dichloroethene	ND	U		5	ug/L	02/10/97	dmj
	trans-1,2-Dichloroethene	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dichloropropane	ND	U		5	ug/L	02/10/97	dmj
	1,3-Dichloropropane	ND	U		5	ug/L	02/10/97	dmj
	2,2-Dichloropropane	ND	U		5	ug/L	02/10/97	dmj
	1,1-Dichloropropene	ND	U		5	ug/L	02/10/97	dmj
	Ethylbenzene	5000			500	ug/L	02/10/97	dmj
	Hexachlorobutadiene	ND	U		5	ug/L	02/10/97	dmj
	Isopropylbenzene	8.7			5	ug/L	02/10/97	dmj
	p-Isopropyltoluene	ND	U		5	ug/L	02/10/97	dmj
	Methylene chloride	ND	U		5	ug/L	02/10/97	dmj
	Naphthalene	84			5	ug/L	02/10/97	dmj
	n-Propylbenzene	12			5	ug/L	02/10/97	dmj
	Styrene	ND	U		5	ug/L	02/10/97	dmj
	1,1,1,2-Tetrachloroethane	ND	U		5	ug/L	02/10/97	dmj
	1,1,2,2-Tetrachloroethane	ND	U		5	ug/L	02/10/97	dmj
	Tetrachloroethene	ND	U		5	ug/L	02/10/97	dmj
Toluene	86000		YZ	10000	ug/L	02/10/97	dmj	
1,2,3-Trichlorobenzene	ND	U	B	5	ug/L	02/10/97	dmj	
1,2,4-Trichlorobenzene	ND	U		5	ug/L	02/10/97	dmj	



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW013  
 Date Sampled.....: 02/06/97  
 Time Sampled.....: 10:26  
 Sample Matrix.....: Water

Laboratory Sample ID: 970343-3  
 Date Received.....: 02/07/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
	1,1,1-Trichloroethane	ND		U	5	ug/L	02/10/97	dmj
	1,1,2-Trichloroethane	ND		U	5	ug/L	02/10/97	dmj
	Trichloroethene	ND		U	5	ug/L	02/10/97	dmj
	Trichlorofluoromethane	ND		U	5	ug/L	02/10/97	dmj
	1,2,4-Trimethylbenzene	27			5	ug/L	02/10/97	dmj
	1,3,5-Trimethylbenzene	30			5	ug/L	02/10/97	dmj
	1,2,3-Trichloropropane	ND		U	5	ug/L	02/10/97	dmj
	Vinyl chloride	ND		U	10	ug/L	02/10/97	dmj
	Xylenes (total)	15000			500	ug/L	02/10/97	dmj



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW014  
 Date Sampled.....: 02/03/97  
 Time Sampled.....: 15:25  
 Sample Matrix.....: Water

Laboratory Sample ID: 970343-4  
 Date Received.....: 02/07/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260	Volatile Organics							
	Benzene	ND	U		1	ug/L	02/10/97	dmj
	Bromobenzene	ND	U		5	ug/L	02/10/97	dmj
	Bromochloromethane	ND	U		5	ug/L	02/10/97	dmj
	Bromodichloromethane	ND	U		5	ug/L	02/10/97	dmj
	Bromoform	ND	U		5	ug/L	02/10/97	dmj
	Bromomethane	ND	U		5	ug/L	02/10/97	dmj
	n-Butylbenzene	ND	U		10	ug/L	02/10/97	dmj
	sec-Butylbenzene	ND	U		5	ug/L	02/10/97	dmj
	tert-Butylbenzene	ND	U		5	ug/L	02/10/97	dmj
	Carbon tetrachloride	ND	U		5	ug/L	02/10/97	dmj
	Chlorobenzene	ND	U		5	ug/L	02/10/97	dmj
	Chloroethane	ND	U		5	ug/L	02/10/97	dmj
	Chloroform	ND	U		10	ug/L	02/10/97	dmj
	Chloromethane	ND	U		5	ug/L	02/10/97	dmj
	o-Chlorotoluene	ND	U		10	ug/L	02/10/97	dmj
	p-Chlorotoluene	ND	U		5	ug/L	02/10/97	dmj
	Dibromochloromethane	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dibromo-3-chloropropane	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dibromoethane (EDB)	ND	U		5	ug/L	02/10/97	dmj
	Dibromomethane	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dichlorobenzene	ND	U		5	ug/L	02/10/97	dmj
	1,3-Dichlorobenzene	ND	U		5	ug/L	02/10/97	dmj
	1,4-Dichlorobenzene	ND	U		5	ug/L	02/10/97	dmj
	Dichlorodifluoromethane	ND	U		5	ug/L	02/10/97	dmj
	1,1-Dichloroethane	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dichloroethane	ND	U		5	ug/L	02/10/97	dmj
	1,1-Dichloroethene	ND	U		5	ug/L	02/10/97	dmj
	cis-1,2-Dichloroethene	ND	U		5	ug/L	02/10/97	dmj
	trans-1,2-Dichloroethene	ND	U		5	ug/L	02/10/97	dmj
	1,2-Dichloropropane	ND	U		5	ug/L	02/10/97	dmj
	1,3-Dichloropropane	ND	U		5	ug/L	02/10/97	dmj
	2,2-Dichloropropane	ND	U		5	ug/L	02/10/97	dmj
	1,1-Dichloropropene	ND	U		5	ug/L	02/10/97	dmj
	Ethylbenzene	NC	U		5	ug/L	02/10/97	dmj
	Hexachlorobutadiene	ND	U		5	ug/L	02/10/97	dmj
	Isopropylbenzene	ND	U		5	ug/L	02/10/97	dmj
	p-Isopropyltoluene	ND	U		5	ug/L	02/10/97	dmj
	Methylene chloride	ND	U		5	ug/L	02/10/97	dmj
	Naphthalene	ND	U		5	ug/L	02/10/97	dmj
	n-Propylbenzene	ND	U		5	ug/L	02/10/97	dmj
	Styrene	ND	U		5	ug/L	02/10/97	dmj
	1,1,1,2-Tetrachloroethane	ND	U		5	ug/L	02/10/97	dmj
	1,1,2,2-Tetrachloroethane	ND	U		5	ug/L	02/10/97	dmj
	Tetrachloroethene	ND	U		5	ug/L	02/10/97	dmj
Toluene	ND	U		5	ug/L	02/10/97	dmj	
1,2,3-Trichlorobenzene	ND	U		5	ug/L	02/10/97	dmj	
1,2,4-Trichlorobenzene	ND	U		5	ug/L	02/10/97	dmj	



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW014  
 Date Sampled.....: 02/03/97  
 Time Sampled.....: 15:25  
 Sample Matrix.....: Water

Laboratory Sample ID: 970343-4  
 Date Received.....: 02/07/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
	1,1,1-Trichloroethane	ND		U	5	ug/L	02/10/97	dmj
	1,1,2-Trichloroethane	ND		U	5	ug/L	02/10/97	dmj
	Trichloroethene	ND		U	5	ug/L	02/10/97	dmj
	Trichlorofluoromethane	ND		U	5	ug/L	02/10/97	dmj
	1,2,4-Trimethylbenzene	ND		U	5	ug/L	02/10/97	dmj
	1,3,5-Trimethylbenzene	ND		U	5	ug/L	02/10/97	dmj
	1,2,3-Trichloropropane	ND		U	5	ug/L	02/10/97	dmj
	Vinyl chloride	ND		U	10	ug/L	02/10/97	dmj
	Xylenes (total)	ND		U	5	ug/L	02/10/97	dmj



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLF8TW015  
 Date Sampled.....: 02/06/97  
 Time Sampled.....: 09:40  
 Sample Matrix.....: Oil

Laboratory Sample ID: 970343-5  
 Date Received.....: 02/07/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 3050	Acid Digestion: Solids, Oil	Complete					02/10/97	lmt
SW-846 6010A	Arsenic (As), Oil	0.3	B		0.2	mg/Kg	02/11/97	smh
SW-846 6010A	Barium (Ba), Oil	0.52		E	0.01	mg/Kg	02/11/97	smh
SW-846 6010A	Cadmium (Cd), Oil	<0.01	U		0.01	mg/Kg	02/11/97	smh
SW-846 6010A	Chromium (Cr), Oil	0.70			0.03	mg/Kg	02/11/97	smh
SW-846 6010A	Lead (Pb), Oil	2090		*	2	mg/Kg	02/11/97	smh
SW-846 7471	Mercury (Hg), Oil	0.0193	B		0.0067	mg/Kg	02/11/97	lmt
846 6010A	Selenium (Se), Oil	0.8	B		0.3	mg/Kg	02/11/97	smh
SW-846 6010A	Silver (Ag), Oil	0.07	B		0.03	mg/Kg	02/11/97	smh



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW016  
 Date Sampled.....: 02/03/97  
 Time Sampled.....: 09:55  
 Sample Matrix.....: Oil

Laboratory Sample ID: 970343-6  
 Date Received.....: 02/07/97  
 Time Received.....: 09:30

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 9040	Corrosivity (pH-Liquids)	5.3			0.1	pH Units	02/10/97	lmt
SW-846 1010	Ignitability (Flashpoint)	>186			1	Degrees F	02/13/97	lmt
SW-846 1010	Ignitability (Flashpoint), Oil	>186			1	Degrees F	02/13/97	lmt



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW018  
 Date Sampled.....: 02/10/97  
 Time Sampled.....: 12:51  
 Sample Matrix.....: Oil

Laboratory Sample ID: 970343-7  
 Date Received.....: 02/11/97  
 Time Received.....: 09:05

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260	Volatile Organics							
	Benzene, Oil	34000			10000	ug/Kg	02/14/97	dmj
	Bromobenzene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Bromochloromethane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Bromodichloromethane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Bromoform, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Bromomethane, Oil	ND	U		100000	ug/Kg	02/14/97	dmj
	n-Butylbenzene, Oil	51000	J		60000	ug/Kg	02/14/97	dmj
	sec-Butylbenzene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	tert-Butylbenzene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Carbon tetrachloride, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Chlorobenzene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Chloroethane, Oil	ND	U		100000	ug/Kg	02/14/97	dmj
	Chloroform, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Chloromethane, Oil	ND	U		100000	ug/Kg	02/14/97	dmj
	o-Chlorotoluene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	p-Chlorotoluene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Dibromochloromethane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,2-Dibromo-3-chloropropane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,2-Dibromoethane (EDB), Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Dibromomethane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,2-Dichlorobenzene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,3-Dichlorobenzene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,4-Dichlorobenzene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Dichlorodifluoromethane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,1-Dichloroethane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,2-Dichloroethane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,1-Dichloroethene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	cis-1,2-Dichloroethene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	trans-1,2-Dichloroethene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,2-Dichloropropane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,3-Dichloropropane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	2,2-Dichloropropane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	1,1-Dichloropropene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Ethylbenzene, Oil	11000000			600000	ug/Kg	02/14/97	dmj
	Hexachlorobutadiene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Isopropylbenzene, Oil	82000			60000	ug/Kg	02/14/97	dmj
	p-Isopropyltoluene, Oil	34000	J		60000	ug/Kg	02/14/97	dmj
	Methylene chloride, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
	Naphthalene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj
n-Propylbenzene, Oil	140000			60000	ug/Kg	02/14/97	dmj	
Styrene, Oil	ND	U		60000	ug/Kg	02/14/97	dmj	
1,1,1,2-Tetrachloroethane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj	
1,1,2,2-Tetrachloroethane, Oil	ND	U		60000	ug/Kg	02/14/97	dmj	
Tetrachloroethene, Oil	ND	U		60000	ug/Kg	02/17/97	dmj	
Toluene, Oil	13000000			600000	ug/Kg	02/14/97	dmj	
1,2,3-Trichlorobenzene, Oil	ND	U	B	60000	ug/Kg	02/14/97	dmj	
1,2,4-Trichlorobenzene, Oil	ND	U	B	60000	ug/Kg	02/14/97	dmj	



**CORE LABORATORIES**

LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-C038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFBTW018  
 Date Sampled.....: 02/10/97  
 Time Sampled.....: 12:51  
 Sample Matrix.....: Oil

Laboratory Sample ID: 970343-7  
 Date Received.....: 02/11/97  
 Time Received.....: 09:05

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
	1,1,1-Trichloroethane, Oil	ND		U	60000	ug/Kg	02/14/97	dmj
	1,1,2-Trichloroethane, Oil	ND		U	60000	ug/Kg	02/14/97	dmj
	Trichloroethene, Oil	ND		U	60000	ug/Kg	02/14/97	dmj
	Trichlorofluoromethane, Oil	ND		U	60000	ug/Kg	02/14/97	dmj
	1,2,4-Trimethylbenzene, Oil	930000			60000	ug/Kg	02/14/97	dmj
	1,3,5-Trimethylbenzene, Oil	350000			60000	ug/Kg	02/14/97	dmj
	1,2,3-Trichloropropane, Oil	ND		U	60000	ug/Kg	02/14/97	dmj
	Vinyl chloride, Oil	ND		U	100000	ug/Kg	02/14/97	dmj
	Xylenes (total), Oil	43000000			600000	ug/Kg	02/14/97	dmj



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-J038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFT8019  
 Date Sampled.....: 02/07/97  
 Time Sampled.....: 14:30  
 Sample Matrix.....: Water

Laboratory Sample ID: 970343-8  
 Date Received.....: 02/11/97  
 Time Received.....: 09:05

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260	Volatile Organics							
	Benzene	ND		U	1	ug/L	02/17/97	dmj
	Bromobenzene	ND		U	5	ug/L	02/17/97	dmj
	Bromochloromethane	ND		U	5	ug/L	02/17/97	dmj
	Bromodichloromethane	ND		U	5	ug/L	02/17/97	dmj
	Bromoform	ND		U	5	ug/L	02/17/97	dmj
	Bromomethane	ND		U	10	ug/L	02/17/97	dmj
	n-Butylbenzene	ND		U	5	ug/L	02/17/97	dmj
	sec-Butylbenzene	ND		U	5	ug/L	02/17/97	dmj
	tert-Butylbenzene	ND		U	5	ug/L	02/17/97	dmj
	Carbon tetrachloride	ND		U	5	ug/L	02/17/97	dmj
	Chlorobenzene	ND		U	5	ug/L	02/17/97	dmj
	Chloroethane	ND		U	10	ug/L	02/17/97	dmj
	Chloroform	ND		U	5	ug/L	02/17/97	dmj
	Chloromethane	ND		U	10	ug/L	02/17/97	dmj
	o-Chlorotoluene	ND		U	5	ug/L	02/17/97	dmj
	p-Chlorotoluene	ND		U	5	ug/L	02/17/97	dmj
	Dibromochloromethane	ND		U	5	ug/L	02/17/97	dmj
	1,2-Dibromo-3-chloropropane	ND		U	5	ug/L	02/17/97	dmj
	1,2-Dibromoethane (EDB)	ND		U	5	ug/L	02/17/97	dmj
	Dibromomethane	ND		U	5	ug/L	02/17/97	dmj
	1,2-Dichlorobenzene	ND		U	5	ug/L	02/17/97	dmj
	1,3-Dichlorobenzene	ND		U	5	ug/L	02/17/97	dmj
	1,4-Dichlorobenzene	ND		U	5	ug/L	02/17/97	dmj
	Dichlorodifluoromethane	ND		U	5	ug/L	02/17/97	dmj
	1,1-Dichloroethane	ND		U	5	ug/L	02/17/97	dmj
	1,2-Dichloroethane	ND		U	5	ug/L	02/17/97	dmj
	1,1-Dichloroethene	ND		U	5	ug/L	02/17/97	dmj
	cis-1,2-Dichloroethene	ND		U	5	ug/L	02/17/97	dmj
	trans-1,2-Dichloroethene	ND		U	5	ug/L	02/17/97	dmj
	1,2-Dichloropropane	ND		U	5	ug/L	02/17/97	dmj
	1,3-Dichloropropane	ND		U	5	ug/L	02/17/97	dmj
	2,2-Dichloropropane	ND		U	5	ug/L	02/17/97	dmj
	1,1-Dichloropropene	ND		U	5	ug/L	02/17/97	dmj
	Ethylbenzene	ND		U	5	ug/L	02/17/97	dmj
	Hexachlorobutadiene	ND		U	5	ug/L	02/17/97	dmj
	Isopropylbenzene	ND		U	5	ug/L	02/17/97	dmj
	p-Isopropyltoluene	ND		U	5	ug/L	02/17/97	dmj
	Methylene chloride	ND		U	5	ug/L	02/17/97	dmj
	Naphthalene	ND		U	5	ug/L	02/17/97	dmj
n-Propylbenzene	ND		U	5	ug/L	02/17/97	dmj	
Styrene	ND		U	5	ug/L	02/17/97	dmj	
1,1,1,2-Tetrachloroethane	ND		U	5	ug/L	02/17/97	dmj	
1,1,2,2-Tetrachloroethane	ND		U	5	ug/L	02/17/97	dmj	
Tetrachloroethene	ND		U	5	ug/L	02/17/97	dmj	
Toluene	ND		U	5	ug/L	02/17/97	dmj	
1,2,3-Trichlorobenzene	ND		U	5	ug/L	02/17/97	dmj	
1,2,4-Trichlorobenzene	ND		U	5	ug/L	02/17/97	dmj	



# CORE LABORATORIES

## LABORATORY TEST RESULTS

Job Number: 970343

Date: 02/21/97

CUSTOMER: Morrison Knudsen Corporation

PROJECT: 4324-0038-OLF BARIN

ATTN: Allan Fosdick

Customer Sample ID: OLFTB019  
 Date Sampled.....: 02/07/97  
 Time Sampled.....: 14:30  
 Sample Matrix.....: Water

Laboratory Sample ID: 970343-8  
 Date Received.....: 02/11/97  
 Time Received.....: 09:05

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
	1,1,1-Trichloroethane	ND		U	5	ug/L	02/17/97	dmj
	1,1,2-Trichloroethane	ND		U	5	ug/L	02/17/97	dmj
	Trichloroethene	ND		U	5	ug/L	02/17/97	dmj
	Trichlorofluoromethane	ND		U	5	ug/L	02/17/97	dmj
	1,2,4-Trimethylbenzene	ND		U	5	ug/L	02/17/97	dmj
	1,3,5-Trimethylbenzene	ND		U	5	ug/L	02/17/97	dmj
	1,2,3-Trichloropropane	ND		U	5	ug/L	02/17/97	dmj
	Vinyl chloride	ND		U	10	ug/L	02/17/97	dmj
	Xylenes (total)	ND		U	5	ug/L	02/17/97	dmj



**APPENDIX F**  
**AS-BUILT DRAWINGS**

**APPENDIX F**  
**AS-BUILT DRAWINGS**

**TABLE OF CONTENTS**

Sheet 1	Tanks
Sheet 2	Line Cleaning/Flushing

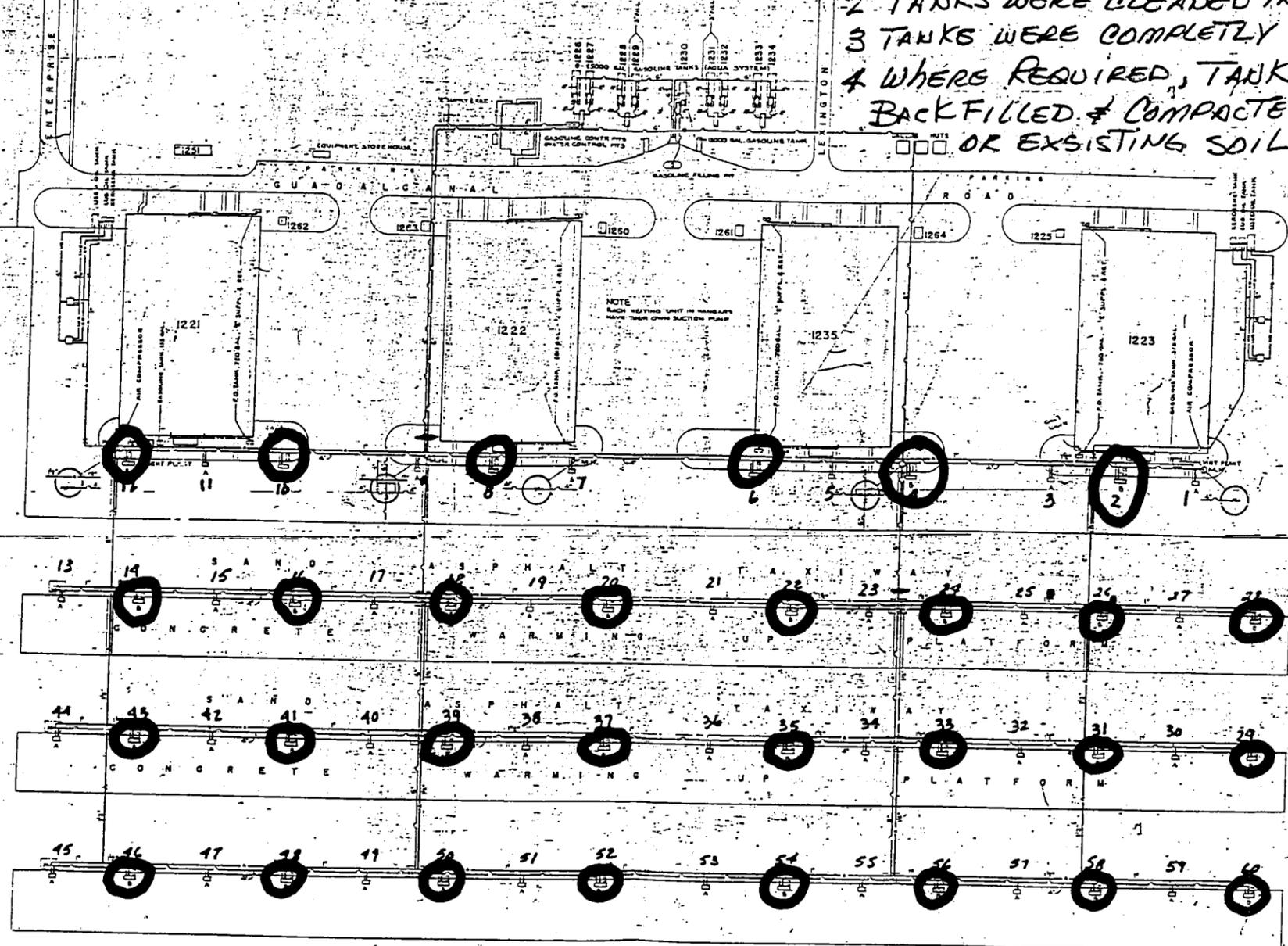
# TANKS

ADJACENT DWG. NO. G-F 10-16

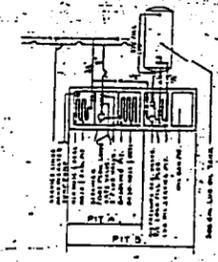
AREAS CIRCLED  
ARE TANK LOCATIONS

ALL TANKS WERE HANDLED IN THE BELOW LISTED MANNER:

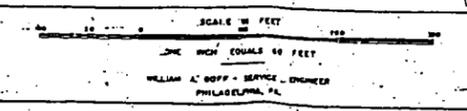
- 1 ALL EXISTING PRODUCT WAS EVACUATED
- 2 TANKS WERE CLEANED IN AN APPROVED MANNER
- 3 TANKS WERE COMPLETELY FILLED WITH GROUT
- 4 WHERE REQUIRED, TANK EXCAVATIONS WERE BACKFILLED & COMPACTED WITH NEW SOIL OR EXISTING SOIL.



NOTE  
TANKS OF GASOLINE PIPES EXCEPT  
WARMING UP SYSTEM ARE ALL WELDED PIPES  
TANKS NOT UNDER REMOVAL LINES  
ARE OTHER ALL WELDED PIPES  
APPROVED PRESSURE IS APPROX. 20 LBS.  
USED IN OPERATION.



LEGEND	
---	OIL LUBRICATING
---	OIL USED LUB.
---	OIL KEROSENE
---	GASOLINE
---	AIR COMP.
---	OIL FUEL



REVISIONS	

CONDITION OF 8 MARCH 1944

DRAWN BY: G.F.  
CHECKED BY: L.F.  
N.A.S. NO. 23013

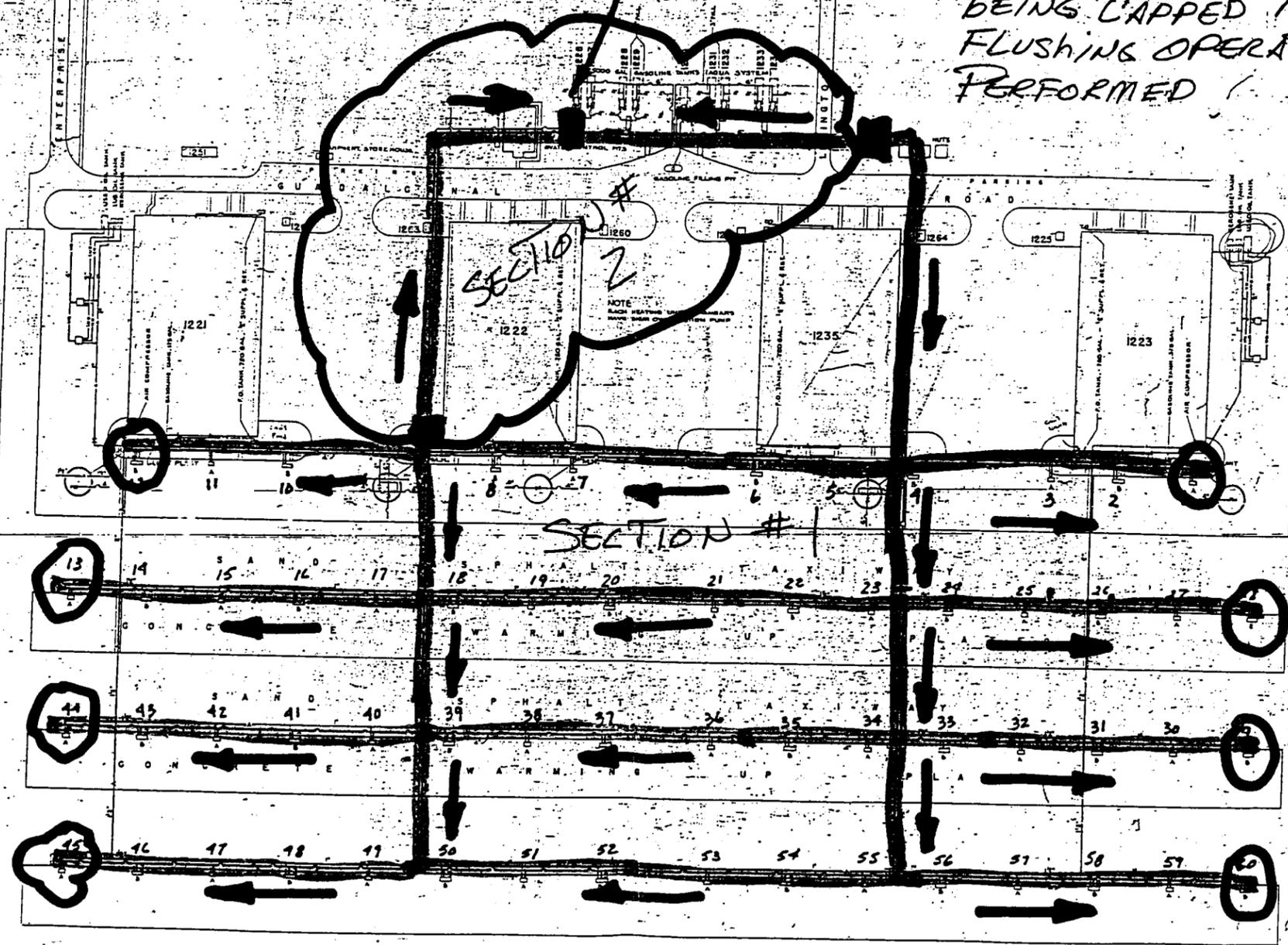
NAVAL AIR TRAINING CENTER, PENSACOLA, FLA.  
N.A.A.S. BARIN FIELD  
COMP. AIR GASOLINE & OILS  
APPROVED: [Signature]  
OFFICE OF CONTRACTS

# LINE CLEANING / FLUSHING

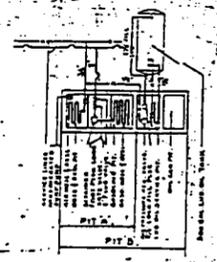
ADJACENT DWG. NO. G-F 10-16

COLLECTION POINT FOR THIS SECTION

DUE TO SECTIONS OF PIPING BEING CAPPED TWO SEPERATE FLUSHING OPERATIONS WERE PERFORMED



NOTE  
 ALL GASOLINE PIPES EXCEPT  
 IN AREA SYSTEM ARE ALL WELDED PIPES  
 1" AND 1 1/2" DIAMETER PIPES  
 ARE BUTTER FLAME CUT PIPES  
 ALL OTHERS ARE APPROX. SOLID  
 WELDED IN PLACE



**█** = LINES CLEANED

LINE CONTENTS FLUSHED INTO PITS CIRCLED & COLLECTED - PITS WERE THEN DECONTAMINATED & BACKFILLED

<b>LEGEND</b> OIL LUBRICATING OIL USED LUB. OIL KEROSENE		<b>LEGEND</b> GASOLINE AIR COMP. OIL FUEL		SCALE IN FEET ONE INCH EQUALS 40 FEET WILLIAM A. SOFF - SERVICE ENGINEER PHILADELPHIA, PA.	REVISIONS NO. 1 DATE	DRAWN BY: G.E. CHECKED BY: L.A.P. N.A.S. NO. 23013	NAVAL AIR TRAINING CENTER - PENSACOLA, FLA. U.S. AIR FORCE BARON FIELD COMP. AIR, GASOLINE & OILS APPROVED: [Signature] OFFICE IN CHARGE OF CONSTRUCTION
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