Aboveground Storage Tanks/ Ore Hopper Demolition and Petroleum Release Investigation Red Devil Mine Red Devil, Alaska

Prepared for

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MACTEC Project 4034030008

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ADEC REVIEW COMMENTS

Aboveground Storage Tanks/Ore Hopper Demolition and Petroleum Release Investigation
Red Devil Mine, Alaska
Project 4034030008

Reviewer	Comment Number	Reference Location	Review Comments/Questions	Comment Disposition
Anne Marie Palmieri	1	Page 4	The AST metal was buried in an onsite disposal area. As the United States Bureau of Land Management (BLM) is not planning to retain ownership of this property, the department requests that the location of this area, as well as the other onsite disposal areas, be surveyed and noted on the land status maps.	Comment noted for the purpose of this report. Larry Beck will provide follow-on information for the BLM's planned survey activities this summer.
	2	Page 9 Section 3.3, Analytical Results	The cleanup levels proposed in this report cannot be approved. The proposed cleanup levels are the 18 AAC 75.340, method one, category B levels for gasoline range organics (GRO) and residual range organics (RRO), method two cleanup levels other contaminants of concern, and method three cleanup levels for diesel range organics (DRO) and benzene. The use of the various methods cannot be mixed as has been proposed. The department recommends using method three to determine cleanup levels at this site. By using a site-specific hydraulic gradient of 0.074, the migration to groundwater risk-based pathway values would change for several contaminants of concern. Still, the contaminant cleanup level is determined by the governing pathway which has the most-stringent value. Below is a table which shows the cleanup levels with their respective governing pathways that the department believes are applicable for this site. If BLM wishes to propose these levels in the final workplan, they can be approved at that time.	The values (from the Method 3 calculator) and proposed in the ADEC table (copied at the end of this document) were incorporated into the text and figures.

Reviewer	Comment Number	Reference Location	Review Comments/Questions	Comment Disposition
	2 (cont'd)		The department requested additional supporting documentation concerning the calculation used for hydraulic gradient from your consultant, Bryan Lund of MACTEC, Inc, on May 18, 2004. This information was provided to the department on May 19th. The department has received the calculation and concurs with the manner in which it was developed.	Comment noted.
	3	Page 13, Section 5.0	The department concurs with the proposal to excavate the contaminated soil this year, stockpile it through the winter, and treat it next field season.	Comment noted.
	4	Figure 3	The benzene value listed for sample 03RDV37SL is non-detect with a method detection limit of 0.053 mg/kg. Table 1 and the laboratory data sheets show a concentration of 0.053 mg/kg for this sample.	ND and the parentheses were removed from Figure 3.
	5	Table 2	Table 2 is missing from this report.	Table 2 was mislabeled Table 3 in the draft report. This typographic error was corrected for the final document.
	6	General	It is not stated if the groundwater monitoring wells are planned to be sampled in 2004. The department requests that groundwater samples be collected from the monitoring wells and analyzed for arsenic, antimony, and mercury.	Comment noted for the purpose of this report.

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DISTRIBUTION

ABBREVIATIONS AND ACRONYMS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AST	aboveground storage tank
bgs	below ground surface
BLM	Bureau of Land Management
BTEX	benzene, toluene, ethylbenzene, xylenes
°C	degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
GRO	gasoline-range organics
µg/L	micrograms per liter
MACTEC	MACTEC Engineering and Consulting
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MW	monitoring well
ND	not detected
PAHs	polynuclear aromatic hydrocarbons
PID	photoionization detector
QC	quality control
RRO	residual-range organics
SOW	Statement of Work
USGS	U.S. Geological Survey

1.0 INTRODUCTION

The Bureau of Land Management (BLM), Alaska State Office, retained MACTEC Engineering and Consulting (MACTEC), formerly Harding ESE, to continue environmental restoration activities at the Red Devil Mine site. The following activities are included in this task order:

- Demolishing and disposing of five aboveground storage tanks (ASTs) and one ore hopper
- Characterizing and assessing petroleum contamination at the former AST sites and along the associated fuel distribution system where evidence of petroleum contamination had been previously documented
- Conducting one round of groundwater sampling from existing monitoring wells
- Developing corrective action options for the petroleum contamination identified at the mine site.

The BLM assigned the Statement of Work (SOW) to MACTEC under Task Order NAD03HL17, Red Devil Mine, Contract Number NAC010004.

The field program for the restoration activities followed the SOW and current regulations (including guidance documents) listed in Section 6.0, Bibliography.

1.1 Site Description and Background

The Red Devil mercury mine site is in a remote part of western Alaska, approximately 250 miles west of Anchorage, about 2 miles southeast of the village of Red Devil (Figure 1). The legal description for the mine is Township 19 North, Range 44 West, southeast 1/4, Section 6, Seward Meridian (BLM, Request for Quotation, July 1, 2003).

The Red Devil Mine operated intermittently from 1933 until 1971. Mining operations produced more than 34,000 flasks of mercury (each flask holds approximately 2 quarts).

The site covers approximately 10 acres and is bisected by Red Devil Creek. Milling operations were situated on the east side of the creek, and the General Mine Area was on the west side of Red Devil Creek. The ore hopper, conveyor, retort, powerhouse, chemical storage sheds, ASTs, and settling ponds were located in the Milling Operations Area. Structures in the General Mine Area included the warehouse, shop building, laboratory, hoist building, and the mine portals. Residents' housing was also on the west side of the creek on a small bluff northwest of the General Mine Area.

In 2003, the only remaining structures at the site were five ASTs and the ore hopper. The World War II-era ASTs were installed in the mid-1950s to supply diesel fuel for mine operations. They were constructed of bolted steel plates. Under each tank there was a wood plank base. The ore hopper was a steel structure about 40 feet high supported by a concrete footer/foundation structure. The hopper was constructed of bolted steel plates forming a funnel approximately 20 feet in diameter. Four steel beams and cross members set in a concrete foundation supported the hopper. The concrete foundation also housed the shaker assembly and one end of the conveyor system.

1.2 Statement of Work

The project SOW included the following tasks:

- Prepare a detailed work plan and a site-specific safety and health plan that supplements the program-level plans
- Demolish and dispose of five ASTs and one ore hopper
- Conduct a petroleum release investigation
- Collect groundwater samples from five existing groundwater monitoring wells
- Prepare a report that presents the following:
  - A summary of field activities
  - Tables summarizing results from the soil and groundwater sampling

- Figures showing sample locations, results, and groundwater flow directions
- Photographs documenting the investigation
- Laboratory data
- Disposition and certificates of treatment/disposal for any waste streams shipped offsite (purge water from the monitoring wells)
- Options for corrective actions

1.3 Deviations from the Statement of Work

Deviations from the SOW are as follows:

- Traditional site access using the road near the Red Devil Post Office was restricted and posted with multiple "No Trespassing" and "No Admittance" signs. Because of the potential right-of-way issues, the field crew accessed the mine via a trail from the Red Devil Lodge. The trail was brushed out with the excavator and improved enough that four wheelers and a pickup truck could use this route to the job site.
- An exposure assessment, including air quality sampling and monitoring, was performed during the hotwork on the ASTs. The crew used supplied air during this portion of the demolition.
- Wood planking beneath the ASTs was contaminated with petroleum products and was stacked and covered and remains onsite adjacent to each former AST location.
- The base structure of the ore hopper was larger than identified in the Request for Quotation. The concrete base structure surrounded several large piers supporting the ore hopper, crusher, and conveyor assembly. Each pier was about 2 feet by 2 feet by 9 feet tall. Neither the concrete structure nor the support piers could be demolished or moved. Therefore, the concrete structure and the support piers were left in place and buried with tailings from the bench above the ore hopper.
- A 6-inch line from the Kuskokwim River to the AST at the top of the hill was identified during site activities but could not be removed with the equipment mobilized for AST demolition. Approximately 750 feet of 2- and 3-inch-diameter pipe found elsewhere onsite was placed in the disposal area.
- While the area near AST 3 was being cleared for the drill rig, several scattered derelict drums were discovered. The drums were not further characterized during the demolition work.

2.0 FIELD ACTIVITIES

Field activities were conducted at Red Devil Mine from September 10, 2003, through September 29, 2003. Tasks included demolishing and disposing of five ASTs and one ore hopper, sampling five groundwater monitoring wells, and conducting a petroleum release investigation. MACTEC staff and personnel from Winsor Construction, Inc., White Environmental Consultants Inc., and GeoTek Alaska, Inc., were onsite.

Photographs of the site and field activities are in Appendix A.

2.1 Mobilization and Demobilization

Equipment and personnel were mobilized to Red Devil by scheduled and chartered aircraft. Initially, an excavator, four-wheelers, support equipment, and an operator were ferried to Red Devil by Lynden Air Cargo Hercules aircraft. A second Hercules charter delivered the Geoprobe® drill rig and its accessories, with the backhaul being used to demobilize the excavator and other support equipment.

The remaining equipment was demobilized from Red Devil using a CASA 212 from Village Air Cargo.

Personnel traveled to and from the site by PenAir, Hageland Aircraft Services, Inc., and private charter.

2.2 Field Procedures

2.2.1 Sampling and Field Screening

Sampling procedures were conducted in accordance with the work plan, the program-level quality assurance plan, and Alaska Department of Environmental Conservation (ADEC) regulatory and guidance documents.

Soil Sampling

Soil samples associated with AST 1 were collected directly from three excavations. Soil samples associated with ASTs 2, 3, 4, and 5 were recovered from disposable Geoprobe Macro Core® Teflon liners drilled in 4-foot intervals. Field personnel donned a new pair of nitrile gloves before collecting each sample. Soil was transferred into sample containers with decontaminated stainless steel spoons.

Field screening samples were collected as grab samples. Soil was transferred into a quart-sized, plastic, resealable bag until the bag was one-third to one-half full. The soil was warmed to between 55 and 70 degrees Fahrenheit (°F) to allow headspace vapors to develop. After the soil reached the desired temperature, established by touch, the bag was agitated and the probe of the photoionization detector (PID) was inserted. Readings were taken for approximately 30 seconds, and the maximum value was recorded in the log book. This soil was discarded at the mine site near the AST where it was collected.

Soil samples for laboratory analysis were collected from the excavations or Geoprobe liners and placed directly into laboratory-provided containers. The samples were then placed in a cooler and kept at approximately 4 degrees Celsius (°C) until delivered to the analytical laboratory.

Groundwater Sampling

Five existing groundwater monitoring wells were sampled using low flow/micropurge techniques. Foot valves and dedicated disposable tubing were used to purge each groundwater monitoring well, measure water quality parameters, and collect the analytical laboratory samples.

Water quality parameters were measured with a Horiba U-10 meter. At approximately 1-gallon intervals, pH, dissolved oxygen, turbidity, temperature, conductivity, and salinity values were recorded.

Groundwater samples were placed directly into laboratory-supplied sample containers. The groundwater samples were turbid and were not filtered before filling laboratory-provided containers.

2.2.2 Decontamination Procedures

Decontamination procedures for soil sampling equipment consisted of an Alconox wash followed by deionized water rinses. The equipment then air-dried before use.

Groundwater sampling equipment was dedicated at each monitoring well and was properly disposed of after use. No decontamination was performed on dedicated equipment.

2.2.3 Tank Demolition Procedures

The tanks were inspected and emptied of residual fluid during site activities in 2000.

After monitoring the tanks for flammable vapors and oxygen content, workers used a plasma torch to cut and dismantle each AST. First, an access hole was cut in the tank sidewall, allowing workers to inspect the tank. After the inspection (looking for sludge or liquid and testing the air quality), a second cut was made horizontally around the tank, approximately one-third of the way down from the top. The excavator then pulled this "ring" (including the tank roof) to the ground as a single unit. The dismantled ASTs were cut into manageable-sized pieces and buried in the onsite disposal area.

An exposure assessment was performed during the first 3 days of demolition activities. White Environmental Consultants, Inc., sampled and monitored air quality during all hotwork. The demolition crew used supplied air during the assessment. Results from the exposure assessment proved that lead was not a hazard; however, the

crew continued to use supplied air because of fumes created during hotwork activities.

Each AST was built over a wood plank base. This base consisted of layered, interlocked 1-inch by 8-inch wood planking. Most of this material was stained and smelled like diesel fuel. The BLM did not want the contaminated wood debris buried onsite with the AST metal; therefore, the wood was stacked and covered with plastic near each former AST pad. No samples of the wood were collected.

2.3 AST Demolition and Disposal

Five ASTs were used at the Red Devil Mine. The tanks were installed in the mid-1950s. Information for each AST is presented below.

Tank Number	Height (feet)	Diameter (feet)	Approximate Storage Capacity (gallons)	Surface area (sq. ft.)
AST 1	16.0	29.8	84,000	2,893
AST 2	16.0	23.5	52,000	2,049
AST 3	24.0	29.8	125,000	3,642
AST 4	16.0	23.5	52,000	2,049
AST 5	16.0	23.5	52,000	2,049

Note: The tank steel was approximately 3/16 inch thick

2.3.1 Demolition

Five field-constructed steel ASTs were cut and dismantled with a plasma torch. Tank cutting procedures are described in Section 2.2, Field Procedures.

Demolition of the ASTs began on September 11, 2003, with the following schedule:

AST 5	September 11-12
AST 4	September 12-14
AST 3	September 12-15
AST 2	September 15-18
AST 1	September 18-20

2.3.2 Disposal

AST metal (approximately 12,680 square feet) was buried in a disposal area onsite. Approximately 750 linear feet of pipeline was also placed in the disposal area. The wood planking from under each tank was stacked and covered next to each former AST pad.

The metal-disposal area was excavated near Monitoring Well (MW) 1 (Figure 2). This site was chosen because it was large enough to bury all of the demolition debris, was easily accessible by the heavy equipment, and did not limit or block the access road to the AST sites.

The disposal area was excavated in soil consisting of gravelly sand with a trace of finer-grained material. The completed disposal area measured approximately 55 feet long, 15 feet wide, and 12 feet deep. After demolition materials were placed in the excavated disposal area, the disposal area was capped with approximately 3 feet of soil and graded to promote positive drainage and limit the potential for erosion.

2.4 Ore Hopper Demolition and Disposal

The ore hopper and support structure was approximately 40 feet high. The entire assembly included a funnel-shaped bin (the ore hopper) mounted on four steel-beam supports set in a concrete support structure, or foundation structure. The hopper was approximately 20 feet in diameter, constructed of bolted steel plates tapering into the shaker assembly. Four steel I-beam legs with cross members supported the hopper. The steel legs were set in concrete piers at least 2 feet by 2 feet by 9 feet tall. The piers were enclosed in a concrete foundation structure along with an ore crusher/shaker system and conveyor assembly.

2.4.1 Demolition

Demolition of the ore hopper took place in several stages starting on September 14, 2003. The metal support beams were cut and the funnel-shaped hopper assembly was pulled to the ground. The

metal was then cut into sections and placed in the disposal site.

The excavator was used to pull over, knock down, or pulverize the concrete structure supporting the ore hopper and the four large concrete piers supporting the ore hopper, the crusher and the conveyor assemblies. Concrete debris was left in place and covered by tailings from the bench above the ore hopper. Final grading occurred on September 23, 2003.

2.4.2 Disposal

Approximately 1,400 square feet of metal from the ore hopper, ore crusher, supports, and conveyor assembly was placed in the disposal area. Debris from inside the support structure and broken concrete (less than 10 cubic yards) was also placed in the disposal area.

Most of the concrete structure remained in place. It was buried with tailings from the bench above the ore hopper. Photographs in Appendix A show the final cover at this site.

2.5 Petroleum Release Investigation

MACTEC performed a petroleum release investigation to identify if petroleum products had affected soils near and under the fuel storage and distribution systems. Twelve soil borings and three excavations were completed as part of this task. After samples were collected, the excavations were backfilled with the excavated materials, and the soil borings were grouted to the surface with bentonite slurry. Sample locations are shown in Figure 3.

The AST at the top of the hill (AST 1) was sampled by using the excavator and trenching techniques. Soil was excavated near the center of the former AST, downslope toward the Kuskokwim River and downslope toward Red Devil Creek. Groundwater was not encountered in the excavations.

The four ASTs on the lower bench (ASTs 2, 3, 4, and 5) were sampled with a Geoprobe 6610DT drill rig. The rig is a self-propelled, track-mounted drill that combines direct-push coring methods with hollow stem augers. It uses a static weight of 5,020 pounds combined with percussion (36,000 pounds) as energy for the advancement of a push rod. Continuous soil samples are recovered from a Macro-Core® Teflon liner (approximately 2 inches diameter by 4 feet long) advanced with the push rod. The liners were split, and samples were taken from the entire length of the core. A photograph of the sample core is in Appendix A. Groundwater was not encountered in any of the soil borings.

Field screening and analytical laboratory samples were collected from excavations and soil borings. Borings were placed directly in the footprint of each of the former ASTs, downslope toward the Kuskokwim River, and toward Red Devil Creek. Twenty-two project soil samples and three quality control (QC) soil samples were submitted for laboratory analyses.

Because the field-screening samples could not be warmed at the site, they were transported to the lodge, brought to temperature, and then the highest PID readings were recorded in the logbook.

Analytical samples were collected from the sides of the excavation and from split Teflon liners in the borings. Samples were placed into laboratory-provided containers, stored in a cooler with ice substitute, and maintained at about 4°C until transport to the laboratory.

Descriptions of the sampling activities for each area are presented below. Excavation and boring logs are presented in Appendix B.

2.5.1 AST 1

AST 1 is at the top of the hill on the east side of Red Devil Creek. Because this tank sits at the highest point on a bedrock outcrop, three excavations were completed instead of soil borings. The first excavation was near the center of the former AST (AST 1C); the second excavation was placed downslope from the former AST toward the river (AST 1RS); the final excavation was also downslope of the former AST toward Red Devil Creek and above AST 2 (AST 1W).

At AST 1C, 6 inches of fill, probably tailings, covered fractured bedrock. The excavation was terminated at 2 feet below ground surface (bgs) in fairly competent fractured bedrock. The orientation of the bedrock and its joint/fracture system in the excavation and along the bedrock wall rising behind the AST pad dips away from the Kuskokwim River and Red Devil Creek. No hydrocarbon staining or odors were noted in the excavation. One soil sample (03RDV30SL) and three field-screening samples were collected from this excavation.

At AST 1RS, approximately 2 feet of black soil overlaid 6 inches of organic material, above fractured bedrock, which was encountered at the bottom of the excavation. The surface soil is probably material removed from the foundation area of the AST and pushed over the side. The 6 inches of organic material had easily identifiable moss, tundra, and leaves; this is probably the original ground surface before AST construction. The excavation was terminated at 3 feet bgs.

No hydrocarbon staining or odors were noted during excavation activities or while sampling; however, when backfilling the hole a slight hydrocarbon odor was noted. The source could not be discerned. One soil sample (03RDV31SL) and four field-screening samples were collected from this excavation.

At AST 1W, fractured bedrock was encountered at less than 1 foot bgs on the south side of the excavation toward AST 1. The rest of the excavation was black soil with organic material down to 2 feet bgs. The excavation was terminated in fractured bedrock. No hydrocarbon staining or odors were noted. One soil sample (03RDV32SL) and two field-screening samples were collected.

2.5.2 AST 2

At AST 2, soil borings were completed with the use of direct-push coring. The first soil boring (AST 2C) was placed near the center of the former AST; the second boring (AST 2RS) was placed across the access road and downslope toward the Kuskokwim River; the final boring (AST 2W) was downslope from the former AST 2 toward Red Devil Creek and upslope from AST 3.

Boring AST 2C was advanced to a depth of 20 feet bgs. The top 6 inches of the 0-to-4-foot interval consisted of organic material with angular rock fragments in a brown gray sandy matrix. The rest of the interval consisted of a brown gray sand with angular rock pieces. The same material was recovered from the 4-to-8-foot and 8-to-12-foot intervals, with the amount of fractured rock increasing with depth. Near 13 feet bgs, a significant increase in the hammer pressure was needed to advance the core. An increase in the amount of fractured bedrock was noted at the bottom of this core and in the 16-to-20-foot interval.

A slight hydrocarbon odor was noted in the 16-to-20-foot-bgs interval. Two soil samples, 03RDV33SL (0 to 4 feet bgs) and 03RDV34SL (8 to 12 feet bgs), and seven field-screening samples were collected from this boring.

Boring AST 2RS was terminated at 20 feet bgs. Approximately 1 foot of organic material with the brown gray sandy gravel was noted in the 0-to-4-foot-bgs interval. The rest of the boring consisted of the brown gray sand with angular rock fragments. No hydrocarbon staining or odors were noted in this boring. One soil sample, 03RDV35SL (8-to-12-foot-bgs interval), and five field-screening samples were collected from this boring.

Boring AST 2W was terminated at 15 feet bgs because of refusal. The boring consisted of brown gray sand with angular rock fragments. No hydrocarbon staining or odors were noted in this boring. One soil sample, 03RDV44SL (4-to-8-foot-bgs interval), and three field-screening samples were collected from this boring.

2.5.3 AST 3

The first soil boring (AST 3C) at AST 3 was placed near the center of the tank footprint; the second boring (AST 3RS) was placed across the access road upgradient of the Kuskokwim River; the final boring (AST 3W) was also downslope from the former AST and in the access road upslope of AST 4.

Boring AST 3C was advanced until refusal at approximately 19 feet bgs. This boring consisted of a brown gray sand with angular rock pieces. The amount of silt and rock fragments increased in the cores with depth. At approximately 15 feet bgs a significant increase in the hammer pressure was needed to advance the core. A slight hydrocarbon odor was noted the entire depth of this boring. Two soil samples, 03RDV36SL (0 to 4 feet bgs) and 03RDV37SL (15 to 19 feet bgs), and five field-screening samples were collected from this boring.

Boring AST 3RS was terminated at 14 feet bgs in fractured bedrock. Brown gray gravelly sand was encountered the entire length of the boring, with the amount of rock increasing with depth until refusal at 14 feet bgs. No hydrocarbon staining was noted; however, a strong hydrocarbon odor was noted to a depth of approximately 9 feet bgs. No odor was noted below this depth. Two soil samples, 03RDV42SL (0 to 4 feet bgs) and 03RDV43SL (8 to 12 feet bgs), and three field-screening samples were collected from this boring.

Boring AST 3W was terminated at 13 feet bgs because of refusal. The boring consisted of brown gray sand with angular rock fragments. No hydrocarbon staining or odors were noted in this boring. One soil sample, 03RDV45SL (8 to 12 feet bgs), and four field-screening samples were collected from this boring.

2.5.4 AST 4

At AST 4, the first soil boring (AST 4C) was placed near the center of the former AST footprint; the second boring (AST 4RS) was placed across the access road, down the slope toward Red Devil Creek; the final boring (AST 4W) was also down the slope from the former AST and upslope from AST 5.

Boring AST 4C was advanced to 20 feet bgs. The boring consisted of brown gray sand with angular rock pieces for the entire length of the boring. More angular rock was noted in the 0-to-4-foot interval, indicated by poor recovery in the core. A slight hydrocarbon odor was noted to approximately 11 feet bgs. No hydrocarbon odor was detected between 12 and 16 feet bgs, and a slight hydrocarbon odor was again noted at the top of the 16-to-20-foot-bgs interval. Two soil samples, 03RDV38SL (4 to 8 feet bgs) and 03RDV39SL (8 to 12 feet bgs), and five field-screening samples were collected from this boring.

Boring AST 4RS was advanced an additional 4 feet to 24 feet bgs because of the hydrocarbon odor detected in the 16-to-20-foot-bgs interval in AST 4C. Brown gray gravelly sand was encountered in the 0-to-4-foot interval. Increased organics in brown gray sand with a few rock fragments were encountered between 4 and 8 feet bgs. Core samples returned to the brown gray sand with angular rock fragments in the rest of the boring, with the amount of rock fragments increasing with depth. Two analytical samples, 03RDV46SL (8 to 12 feet bgs) and 03RDV47SL (20 to 24 feet bgs), were collected. Although no hydrocarbon odor was noted in this boring, the second analytical sample was collected from the 20-to-24-foot-bgs interval to intercept any plume that might exist under AST 4. Six field-screening samples were collected from this boring.

Boring AST 4W was terminated at 20 feet bgs. The boring consisted of brown gray sand with angular rock fragments. The amount of sand decreased with depth, and the amount of angular rock fragments increased. No hydrocarbon staining or odors were noted in this boring. One soil sample and a QC sample (03RDV48SL and 03RDV49SL, respectively) were collected from the 8-to-12-foot-bgs interval. Five field-screening samples were collected from this boring.

2.5.5 AST 5

At AST 5, the first soil boring (AST 5C) was placed near the center of the former AST; the second boring (AST 5RS) was placed across the access road, down the slope toward Red Devil Creek; the final boring (AST 5W) was downslope from the former AST and on the same side of the access road as the former AST, near where the distribution pipeline may have been formerly located. This site represents the farthest downslope sample location and is downslope toward the retort area.

Boring AST 5C was advanced to 20 feet bgs. This boring had brown gray sand with angular rock pieces along the entire depth. The amount of rock fragments in the core increased with depth. A strong hydrocarbon odor was noted for the entire depth of this boring. Two soil samples, 03RDV40SL (4 to 8 feet bgs) and 03RDV41SL (16 to 20 feet bgs), and five field-screening samples were collected from this boring.

Boring AST 5RS was terminated at 24 feet bgs in fractured bedrock. Brown gray sandy gravel was encountered from 0 to 4 feet bgs. Between 4 and 12 feet bgs, the material had more organics and less rock. Very little resistance was needed to push the rod in this material. The rest of the boring was the typical brown gray sand with rock fragments, the amount of rock increasing with depth. No hydrocarbon odor was noted; however, because of the strong hydrocarbon odor noted under AST 5, two soil samples, 03RDV53SL (16 to 20 feet bgs) and 03RDV54SL (20 to 24 feet bgs), were collected from this boring. One QC sample, 03RDV55SL, was also recovered from the 20-to-24-foot-bgs interval.

Boring AST 5W was extended to 24 feet bgs because of the strong hydrocarbon odor from under AST 5 and because this is the lowest elevation being drilled to delineate any plume. The boring consisted of brown gray sand with angular rock fragments. No hydrocarbon odors were noted until approximately 20 feet bgs. Two soil samples, 03RDV50SL (16 to 20 feet bgs) and 03RDV52SL (20 to 24 feet bgs), one QC sample, 03RDV51SL (20 to 24 feet bgs), and six field-screening samples were collected from this boring.

2.6 Groundwater Sampling

Dedicated disposal equipment was used for groundwater sampling. Purge water was transported to Emerald Alaska for treatment and disposal. A Certificate of Disposal is presented in Appendix C.

As water was purged from the wells, water quality parameters were measured and recorded in the logbook at approximately 1-gallon intervals. All wells produced turbid water even after several well volumes were removed. All groundwater samples were collected and placed unfiltered directly into laboratory-provided containers.

Sample 03RDVMW4 was collected from MW04 on September 20, 2003. More than 15 well volumes were removed before sampling. All parameters except the turbidity had stabilized at the time of sampling.

Three well volumes were purged from MW01 before collecting sample 03RDVMW1 on September 22, 2003. Quality control sample 03RDVMW10 was collected at the same time and submitted for analysis.

Sample 03RDVMW3 was collected from MW03 on September 20, 2003. Approximately 10 well volumes were removed before sampling.

Sample 03RDVMW6 was collected from MW06 on September 22, 2003. Approximately six well volumes were purged before sampling.

On September 23, 2003, MW07 was purged and did not recharge. Approximately 0.5 gallon of water was removed initially. After 6 hours the well had recharged enough for the collection of sample 03RDVMW7; however, because of the slow recharge only 0.5 liter was submitted for diesel-range organics and residual-range organics (DRO/RRO) analysis.

3.0 LABORATORY RESULTS

3.1 Analytical Program

Sample numbers, locations, depths, and requested chemical analyses are summarized in Tables 1 and 2 and the sample record log in Appendix D. Soil sample locations (and analytical results) are presented in Figure 3. Figure 4 presents groundwater information.

The project laboratory was Analytica Alaska in Anchorage, Alaska; Analytica–SE in Juneau, Alaska; and Analytica Environmental Laboratories in Thornton, Colorado. Sample preparation and chemical analyses were performed by using methods described in *Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods* (U.S.

Environmental Protection Agency [EPA], 1996) and State of Alaska Methods 101, 102, and 103.

Soil Analysis

- Gasoline-range organics (GRO) by State of Alaska Method AK101
- DRO by State of Alaska Method AK102
- RRO by State of Alaska Method AK103
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B
- Polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270C

Groundwater Water Analysis

- GRO by State of Alaska Method AK101
- DRO by State of Alaska Method AK102
- RRO by State of Alaska Method AK103
- BTEX by EPA Method 8021B
- Inorganic compounds (metals – antimony and arsenic) by EPA Method 6020
- Inorganic compounds (metals – mercury) by EPA Method 7470A

3.2 Data Quality Assessment

MACTEC assessed data quality for all project and QC samples collected during the investigation. The results of the data quality assessment and checklists are in Appendix D. On the basis of MACTEC's data quality assessment, the data are considered acceptable.

3.3 Analytical Results

The analytical data and the regulatory cleanup levels for soil and groundwater samples are summarized in Tables 1 and 2 and Figures 3 and 4.

Soil samples collected from each excavation or boring had DRO, RRO, and BTEX analysis performed. Samples from the borings placed within the footprint of each AST also underwent PAH analysis. One sample at each AST site was also tested for GRO. A total of 23 project samples and 2 QC samples were analyzed.

Soil sample results were compared to cleanup levels established by the ADEC in Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75). Site specific parameters that influence the migration to groundwater and ingestion exposure pathway were used to develop alternative cleanup levels (Appendix E).

Groundwater samples were collected from the five existing monitoring wells; one QC sample was also collected from MW01. All samples were analyzed for GRO, DRO, RRO, BTEX, and antimony, arsenic, and mercury.

Groundwater results were compared to criteria established in ADEC 18 AAC 75, Table C.

3.3.1 Soil Results

A total of 23 project samples and 2 QC samples were analyzed. Sample results are summarized in Table 1 and presented in Figure 3. Analytical laboratory results are in Appendix D.

AST 1

Sample 03RDV30SL, collected from below the center of the AST, was analyzed for DRO (200 milligrams per kilogram [mg/kg]), RRO (not detected above the practical quantitation limit [ND]), and BTEX (ND, 0.16 mg/kg, 0.15 mg/kg, and 0.81 mg/kg, respectively). Reported concentrations were below cleanup levels.

Sample 03RDV31SL, collected from excavation AST 1RS, was analyzed for DRO (200 mg/kg), RRO (12 mg/kg), GRO (83 mg/kg), BTEX (ND, 0.089 mg/kg, ND, and 0.40 mg/kg, respectively), and PAHs (ND except for naphthalene at 0.4 mg/kg). Reported concentrations were below ADEC cleanup levels.

Sample 03RDV32SL, collected from excavation AST 1W, was analyzed for DRO (ND), RRO (ND), and BTEX (ND except for xylene at 0.021 mg/kg). Reported concentrations were below ADEC cleanup levels.

AST 2

Two samples were collected from boring AST 2C at 2.0 feet bgs and 10.0 feet bgs. Sample 03RDV33SL, collected at 2.0 feet bgs, was analyzed for DRO (82 mg/kg), RRO (9.8 mg/kg), GRO (ND), and BTEX (ND, 0.0099 mg/kg, ND, and 0.024 mg/kg, respectively). Sample 03RDV34SL, collected at 10.0 feet bgs, was analyzed for DRO (9.7 mg/kg), RRO (ND), and BTEX (0.016 mg/kg, 0.14 mg/kg, 0.060 mg/kg, and 0.33 mg/kg, respectively). Reported concentrations were below ADEC cleanup levels.

Sample 03RDV35SL, collected from Boring AST 2RS, was analyzed for DRO (ND), RRO (ND), and BTEX. BTEX concentrations were reported ND, except for toluene, which was detected at 0.014 mg/kg. Reported concentrations were below cleanup levels.

Sample 03RDV44SL, collected from Boring AST 3W, was analyzed for DRO, RRO, and BTEX. Reported concentrations were ND, with the exception of xylene, which was detected at 0.037 mg/kg. Reported concentrations were below cleanup levels.

AST 3

Two samples were collected from Boring AST 3C at 2.0 feet bgs and 17.0 feet bgs. Sample 03RDV36SL, collected at 2.0 feet bgs, was analyzed for DRO (210 mg/kg), RRO (ND), GRO (59 mg/kg), BTEX (ND, 0.16 mg/kg, 0.081 mg/kg, and 0.63 mg/kg, respectively), and PAHs (ND except for naphthalene at 0.150 mg/kg and phenanthrene at 0.100 mg/kg). Sample 03RDV37SL, collected at 17.0 feet bgs, was analyzed for DRO (9.2 mg/kg), RRO (ND), and BTEX (0.053 mg/kg, 0.020 mg/kg, 0.16 mg/kg, and 0.29 mg/kg, respectively). Reported concentrations were below ADEC cleanup levels.

Two samples were collected from Boring AST 3RS at 5.0 feet bgs and 10.0 feet bgs. Sample 03RDV42SL was analyzed for DRO (18 mg/kg), RRO (ND), GRO (ND), BTEX (ND except for xylene at 0.026 mg/kg), and PAHs (ND except for naphthalene at 0.14 mg/kg). Sample 03RDV43SL was analyzed for DRO (ND), RRO (ND), and BTEX (ND except for toluene at 0.011 mg/kg). Reported concentrations were below cleanup levels.

Sample 03RDV45SL, collected from Boring AST 3W, was analyzed for DRO (ND), RRO (ND), and BTEX (ND for all analytes). Reported concentrations were below cleanup levels.

AST 4

Two samples were collected from Boring AST 4C at 6.0 feet bgs and 10.0 feet bgs Sample 03RDV38SL, 6.0 feet bgs, was analyzed for DRO (3,000 mg/kg), RRO (ND), GRO (53 mg/kg), BTEX (ND, 0.096 mg/kg, 0.18 mg/kg, and 1.2 mg/kg, respectively), and PAHs (ND except for naphthalene at 0.054 mg/kg and phenanthrene at 0.077 mg/kg). The concentration of DRO exceeded the ADEC cleanup level (1,190 mg/kg). Sample 03RDV39SL, collected at 10.0 feet bgs, was analyzed for DRO (83mg/kg), RRO (ND), and BTEX (ND, 0.030 mg/kg, 0.025 mg/kg, and 0.18 mg/kg, respectively). Reported concentrations were below ADEC cleanup levels.

Two samples were collected from Boring AST 4RS at 10.0 feet bgs and 22.0 feet bgs. Both samples, 03RDV46SL and 03RDV47SL, were analyzed for DRO, RRO, and BTEX. Concentrations for all analytes were reported as ND except for xylene (0.048 mg/kg) in sample 03RDV47SL. Reported concentrations were below cleanup criteria

Sample 03RDV48SL, collected from Boring AST 4W at 10.0 feet bgs, was analyzed for DRO, RRO, and BTEX. Reported concentrations were ND except for toluene (0.029 mg/kg) and xylene (0.069 mg/kg). Reported concentrations were below ADEC cleanup criteria.

AST 5

Two samples were collected from Boring AST 5C at 6.0 feet bgs and 18.0 feet bgs. Sample

03RDV40SL, collected at 6.0 feet bgs, was analyzed for DRO (3,400 mg/kg), RRO (ND), GRO (120 mg/kg), BTEX (ND, 0.14 mg/kg, 0.17 mg/kg and 2.3 mg/kg, respectively), and PAHs (ND except for naphthalene at 0.260 mg/kg and phenanthrene at 0.150 mg/kg). DRO and GRO concentrations exceeded the ADEC cleanup levels of 1,190 mg/kg and 100 mg/kg, respectively. Sample 03RDV41SL, collected at 18.0 feet bgs, was analyzed for DRO (47 mg/kg), RRO (ND), and BTEX (ND [0.013], 0.061 mg/kg, 0.063 mg/kg, and 0.42 mg/kg, respectively). Reported concentrations were below the cleanup levels.

Two project samples were collected from Boring AST 5RS at 18.0 feet bgs and 22.0 feet bgs; one QC sample was collected at 22.0 feet bgs. Sample 03RDV53SL, collected at 18.0 feet bgs, was analyzed for DRO (10 mg/kg), RRO (ND), and BTEX (ND, 0.015 mg/kg, ND, and 0.037 mg/kg, respectively). Sample 03RDV54SL, collected at 22.0 feet bgs, was analyzed for DRO (ND), RRO (ND), GRO (ND), BTEX (ND, 0.013 mg/kg, ND, and 0.03 mg/kg, respectively. QC sample 03RDV55SL was analyzed for DRO (ND), RRO (ND), GRO (ND), and BTEX (ND except xylene at 0.035 mg/kg). Reported concentrations were below ADEC cleanup criteria.

Two samples were collected from Boring AST 5W. Sample 03RDV50SL, collected at 18.0 feet bgs, was analyzed for DRO (ND), RRO (13 mg/kg), and BTEX (ND except for xylene at 0.047 mg/kg). Sample 03RDV52SL, collected at 22.0 feet bgs, was analyzed for DRO (ND), RRO (ND), and BTEX (ND except for xylene at 0.045 mg/kg). Quality control sample 03RDV51SL was collected at 18.0 feet bgs and analyzed for DRO (20 mg/kg), RRO (15 mg/kg), and BTEX (ND, 0.018 mg/kg, ND, and 0.053 mg/kg, respectively). Reported concentrations were below ADEC cleanup levels.

3.3.2 Groundwater Results

Five existing monitoring wells were sampled; one QC sample was collected from MW01. Results are presented in Table 2. The analytical laboratory reports are included in Appendix D.

Sample 03RDVMW1, collected from MW01, was analyzed for GRO (ND), DRO (ND), RRO (0.30 milligrams per liter [mg/L]), BTEX (ND for all analytes), antimony (0.0080 mg/L), arsenic (0.0330 mg/L), and mercury (ND). The concentration of antimony exceeded the ADEC cleanup level of 0.006 mg/L. Quality control sample 03RDVMW10 was analyzed for GRO (ND), DRO (ND), RRO (0.25 mg/L), BTEX (ND for all analytes), antimony (0.0070 mg/L), arsenic (0.0340 mg/L), and mercury (0.0037 mg/L). The concentration of antimony and mercury exceeded the ADEC cleanup levels of 0.006 mg/L and 0.002 mg/L, respectively.

Sample 03RDVMW3, collected from MW03, was analyzed for GRO (ND), DRO (ND), RRO (0.24 mg/L), BTEX (ND for all analytes), antimony (0.7510 mg/L), arsenic (0.1480 mg/L), and mercury (0.001 mg/L). The concentrations of antimony and arsenic exceeded the ADEC cleanup levels of 0.006 mg/L and 0.05 mg/L, respectively.

Sample 03RDVMW4, collected from MW04, was analyzed for GRO (ND), DRO (0.25 mg/L), RRO (0.48 mg/L), BTEX (ND for all analytes), antimony (0.0435 mg/L), arsenic (0.0209 mg/L), and mercury (ND). The concentration of antimony exceeded the ADEC cleanup level of 0.006 mg/L.

Sample 03RDVMW6, collected from MW06, was analyzed for GRO (ND), DRO (ND), RRO (0.25mg/L), BTEX (ND for all analytes), antimony (0.0150 mg/L), arsenic (0.0360 mg/L), and mercury (ND). The concentration of antimony exceeded the ADEC cleanup level of 0.006 mg/L.

Sample 03RDVMW7, collected from MW07, was analyzed for GRO (ND), DRO (ND), RRO (ND), BTEX (ND for all analytes), antimony (ND), arsenic (ND), and mercury (0.011 mg/L). The concentration of mercury exceeded the ADEC cleanup level of 0.002 mg/L.

4.0 CONCLUSIONS

All project tasks were completed according to the SOW and project plan documents with the exceptions noted in Section 1.3. A summary of each task is presented below.

4.1 AST Demolition and Disposal

Demolition of the five ASTs began on September 11, 2003, and was completed on September 20, 2003.

- Tank cutting activities were conducted by crews using plasma torches. Crews used supplied air during all hotwork.
- An exposure assessment was performed during cutting operations; findings indicated that lead was not a hazard.
- The wood plank base beneath each tank was removed, stacked, and covered with Visqueen alongside each former AST location.
- The disposal area for tank steel and piping is near MW01 and measures approximately 55 feet long, 15 feet wide, and 12 feet deep.
- Approximately 12,700 square feet of tank metal was placed in the onsite disposal area.
- The disposal area was capped with more than 3 feet of soil and graded to promote positive drainage and minimize the likelihood of erosion.

4.2 Ore Hopper Demolition

The ore hopper stood approximately 40 feet tall above a concrete foundation structure with pier blocks.

- Demolition of the ore hopper started on September 14, 2003, and continued in several stages.
- Approximately 1,400 square feet of ore hopper metal was placed in the disposal area.
- Less than 10 cubic yards of concrete was placed in the disposal area.
- Tailings from the bench above the ore hopper were used to bury the building foundation.
- Final grading over the foundation building occurred on September 23, 2003.

4.3 Petroleum Release Investigation

The information presented in this section includes a discussion of results for samples collected in 2000 and the results from our 2003 release investigation.

Previous work (completed in 2000) included inspecting the ASTs and fuel distribution lines for residual fuels or fluids and taking shallow surface samples near a valve on each AST, at visible joints in the fuel distribution lines, and in areas of visible surface staining. Findings included the following:

- Up to 2 inches of rainwater (no sheen or odor) was inside the ASTs.
- The pipeline from the Kuskokwim River to AST 1 had approximately 55 gallons of fuel recovered. This was transported offsite for energy recovery.
- Fuel distribution lines from the ASTs to the modern retort building were broken or disconnected at several points and in poor condition. No residual fuels were noted in the pipe sections.
- Twenty-two soil samples (maximum depth of approximately 3 feet bgs) were collected at the ASTs and fuel distribution lines and analyzed for DRO, RRO, GRO, and BTEX. Three samples were analyzed for PAHs. GRO, RRO, toluene, ethylbenzene, total xylenes, and PAHs were not detected at concentrations exceeding ADEC soil Method 3 cleanup levels. One sample, 00RDV11SL, had a benzene concentration of 0.095 mg/kg, which exceeds the ADEC alternate cleanup level of 0.087 mg/kg. DRO concentrations were above the ADEC alternate cleanup level of 1,190 mg/kg in 16 of the 22 samples. DRO concentrations above the cleanup level ranged from 1,910 mg/kg to 22,900 mg/kg.

In 2000, field crews inspected former fuel piping runs from the power plant north to the shop

building, mess hall, warehouse, and other mine buildings on the north side of Red Devil Creek. Fuel lines that were discovered were empty. No signs of impacts attributable to fuels were observed during inspection of piping runs in this area.

In 2003, soil samples were collected from excavations or borings under the ASTs and downgradient toward the Kuskokwim River and Red Devil Creek to identify possible petroleum contamination.

Findings include the following:

- The concentration of DRO exceeded the ADEC alternate cleanup level in two samples: one collected below AST 5 and one collected below AST 4. Both samples were collected from approximately 6 feet bgs.

Areas of concern are identified at the Kuskokwim River end of the pipeline, at the tank farm, and along the pipeline route toward the former retort area. Figure 5 presents the estimated areas and volumes where contaminants exceed the ADEC cleanup levels.

4.4 Groundwater Sampling

Groundwater sampling was performed in five existing monitoring wells in September 2003. Samples were analyzed for GRO, DRO, RRO, BTEX, arsenic, antimony, and mercury. Table 2 presents the analytical results and regulatory cleanup criteria. Figure 4 shows results and groundwater elevation information.

- DRO was detected in monitoring well MW04; however, the concentration was below ADEC cleanup levels.

- RRO was detected in four of five wells; however, there were no exceedances of ADEC cleanup levels.

- Antimony, arsenic, and mercury were detected at concentrations above ADEC cleanup levels.

A comparison between the 2003 data and data obtained in 2000 was performed. Concentrations of antimony decreased in all wells. Arsenic concentrations decreased in four of the monitoring wells but increased in MW06 (from 25.4 to 36.0 micrograms per liter [µg/L]). Mercury concentrations decreased in MW01, MW03, and MW04, stayed the same in MW06 (ND), and increased in MW07 (from 5.48 µg/L to 11.0 µg/L). No petroleum hydrocarbon analysis was performed in 2000; therefore, no comparison could be made.

5.0 CORRECTIVE ACTION

Remediation of the former tank farm will likely include excavating and treating approximately 2,300 cubic yards of petroleum-impacted soil by thermal desorption or land spreading.

Treatment of the contaminated soil will be in accordance with EPA and ADEC regulatory guidance.

Before site cleanup activities begin, a schedule of fieldwork and project planning documents will be submitted for regulatory approval. Submittals include a sampling and analysis plan, a waste management plan, and a cleanup plan. Included in the cleanup plan are site control plans, an air quality compliance discussion, and a detailed description of the cleanup technique (thermal desorption or land spreading).

Contaminated soil will be stockpiled before treatment. The stockpile will meet the requirements in 18 AAC 75.370, Soil Storage and Disposal. The stockpile will be placed more than 100 feet from all surface water and public, Class C, or private water systems. The liner will be of 20-mil-thick, oil-resistant material (18 AAC 75.360, Table D, Long-term Storage of Petroleum Contaminated Soil, 180 Days to 2 Years). The cover will be 6-mil, reinforced polyethylene liner material lapped over the bottom liner to prevent water running through soil. The stockpile will be inspected and maintained regularly.

Soil treatment will be by thermal desorption or onsite bioremediation (landspread). The alternative selected will depend on the final volume of soil and the BLM's goals for management of the site. Before the start of site activities, compliance criteria and

approvals as determined in 18 AAC 75.365 will be in place.

Post-treatment soil samples will be collected and analyzed in accordance with 18 AAC 78.605 post-treatment sample requirements. The treated material will then be spread onsite and graded to promote positive drainage and minimize the likelihood of erosion.

All stockpile construction materials will be removed for offsite disposal or recycling.

The contractor responsible for this work will be responsible for meeting all regulatory and guidance criteria.

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Table 1. Soil Results for 2003 Petroleum Release Investigation, Red Devil Mine, Alaska

			Sample Number	03RDV30SL	03RDV31SL	03RDV32SL	03RDV33SL	03RDV34SL	03RDV35SL	03RDV36SL	03RDV37SL	03RDV38SL
			Sample Date	9/25/2003	9/25/2003	9/25/2003	9/26/2003	9/26/2003	9/26/2003	9/26/2003	9/26/2003	9/26/2003
			Location	AST 1 CENTER	AST 1 RIVER SIDE	AST 1 WEST	AST 2 CENTER	AST 2 CENTER	AST 2 RIVERSIDE	AST 3 CENTER	AST 3 CENTER	AST 4 CENTER
			Depth (feet bgs)	1.5	2.6	1.9	2.0	10.0	10.0	2.0	17.0	6.0
			Sample Type	PR	PR	PR	PR	PR	PR	PR	PR	PR
			Associated QC									
			Final PID Screening Level (ppm)	4167	9999	309	209	617	31	225	281	290
Analyte	**Method**	**Units**	**Cleanup Criteria[a]**									
Organic Compounds												
GRO	AK101	mg/kg	1,380	--	83	--	ND (2.1)	--	--	59	--	53
DRO	AK102	mg/kg	1,190	200	200	ND(4.1)	82	9.7	ND(4.8)	210	9.2	**3,000**
RRO	AK103	mg/kg	10,000	ND (8.6)	12	ND(8.2)	9.8	ND(8.2)	ND(9.6)	ND(7.7)	ND(8.5)	ND(82)
Benzene	EPA 8021B	mg/kg	0.087	ND (0.017)	ND (0.071)	ND (0.0098)	ND (0.0096)	0.016	ND (0.013)	ND (0.052)	0.053	ND (0.048)
Toluene	EPA 8021B	mg/kg	25.2	0.16	0.089	ND (0.0098)	0.0099	0.14	0.014	0.16	0.020	0.096
Ethylbenzene	EPA 8021B	mg/kg	25.7	0.15	ND (0.071)	ND (0.0098)	ND (0.0096)	0.060	ND (0.013)	0.081	0.16	0.18
Total Xylenes	EPA 8021B	mg/kg	362	0.81	0.40	0.021	0.024	0.33	ND (0.027)	0.63	0.29	1.2
Polynuclear Aromatic Hydrocarbons												
Naphthalene	EPA 8270C	mg/kg	21	--	0.400 J	--	--	--	--	0.150 J	--	0.054 J
Phenanthrene	EPA 8270C	mg/kg	4,300	--		--	--	--	--	0.100 J	--	0.077 J

--	Not analyzed	mg/kg	Milligrams per kilogram
bgs	Below ground surface	ND	Not detected at or above the reporting limit in parentheses
DRO	Diesel-range organics	PID	Photoionization detector
EPA	U.S. Environmental Protection Agency	ppm	Parts per million
GRO	Gasoline-range organics	PR	Project sample
J	Analyte was detected above Method Detection Limit but below Practical Quantitation Limit.	QC	Quality control sample
		RRO	Residual-range organics

a. Cleanup levels are from Alaska Department of Environmental Conservation, Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75). A summary of these cleanup levels and how they were developed is included in Appendix E.

Note: Results that exceed the cleanup level are shown in bold.

Table 1. Soil Results for 2003 Petroleum Release Investigation, Red Devil Mine, Alaska

			Sample Number	03RDV39SL	03RDV40SL	03RDV41SL	03RDV42SL	03RDV43SL	03RDV44SL	03RDV45SL	03RDV46SL	03RDV47SL
			Sample Date	9/26/2003	9/26/2003	9/26/2003	9/26/2003	9/26/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003
			Location	AST 4 CENTER	AST 5 CENTER	AST 5 CENTER	AST 3 RIVERSIDE	AST 3 RIVERSIDE	AST 2 WEST	AST 3 WEST	AST 4 RIVERSIDE	AST 4 RIVERSIDE
			Depth (feet bgs)	10.0	6.0	18.0	5.0	10.0	6.0	10.0	10.0	22.0
			Sample Type	PR	PR	PR	PR	PR	PR	PR	PR	PR
			Associated QC									
			Final PID Screening Level (ppm)	99	230	163	30	4	57	26	29	20
Analyte	**Method**	**Units**	**Cleanup Criteria[a]**									
Organic Compounds												
GRO	AK101	mg/kg	1,380	--	120	--	ND(2.3)	--	--	--	--	--
DRO	AK102	mg/kg	1,190	83	**3,400**	47	18	ND(4.4)	ND(4.2)	ND(4.1)	ND(4.2)	ND(4.2)
RRO	AK103	mg/kg	10,000	ND(8.2)	ND(85)	ND(8.5)	ND(9.3)	ND(8.9)	ND(8.5)	ND(8.1)	ND(8.4)	ND(8.5)
Benzene	EPA 8021B	mg/kg	0.087	ND (0.017)	ND (0.044)	ND (0.013)	ND (0.011)	ND (0.0094)	ND (0.015)	ND (0.013)	ND (0.015)	ND (0.017)
Toluene	EPA 8021B	mg/kg	25.2	0.030	0.14	0.061	ND (0.011)	0.011	ND (0.015)	ND (0.013)	ND (0.015)	ND (0.017)
Ethylbenzene	EPA 8021B	mg/kg	25.7	0.025	0.17	0.063	ND (0.011)	ND (0.0094)	ND (0.015)	ND (0.013)	ND (0.015)	ND (0.017)
Total Xylenes	EPA 8021B	mg/kg	362	0.18	2.30	0.42	0.026	ND (0.019)	0.037	ND (0.026)	ND (0.030)	0.048
Polynuclear Aromatic Hydrocarbons												
Naphthalene	EPA 8270C	mg/kg	21	--	0.260 J	--	0.140 J	--	--	--	--	--
Phenanthrene	EPA 8270C	mg/kg	4,300	--	0.150 J	--		--	--	--	--	--

--	Not analyzed	mg/kg	Milligrams per kilogram
bgs	Below ground surface	ND	Not detected at or above the reporting limit in parentheses
DRO	Diesel-range organics	PID	Photoionization detector
EPA	U.S. Environmental Protection Agency	ppm	Parts per million
GRO	Gasoline-range organics	PR	Project sample
J	Analyte was detected above Method Detection Limit but below Practical Quantitation Limit.	QC	Quality control sample
		RRO	Residual-range organics

a. Cleanup levels are from Alaska Department of Environmental Conservation, Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75). A summary of these cleanup levels and how they were developed is included in Appendix E.

Note: Results that exceed the cleanup level are shown in bold.

Table 1. Soil Results for 2003 Petroleum Release Investigation, Red Devil Mine, Alaska

			Sample Number	03RDV48SL	03RDV49SL	03RDV50SL	03RDV51SL	03RDV52SL	03RDV53SL	03RDV54SL	03RDV55SL
			Sample Date	9/27/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003	9/27/2003
			Location	AST 4 WEST	AST 4 WEST	AST 5 WEST	AST 5 WEST	AST 5 WEST	AST 5 RIVERSIDE	AST 5 RIVERSIDE	AST 5 RIVERSIDE
			Depth (feet bgs)	10.0	10.0	18.0	18.0	22.0	18.0	22.0	22.0
			Sample Type	PR	QC	PR	QC	PR	PR	PR	QC
			Associated QC	03RDV49SL		03RDV51SL				03RDV55SL	
			Final PID Screening Level (ppm)	25	25	40	40	23	30	32	32
Analyte	**Method**	**Units**	**Cleanup Criteria[a]**								
Organic Compounds											
GRO	AK101	mg/kg	1,380	–	–	–	–	–	–	ND(2.8)	ND(3.5)
DRO	AK102	mg/kg	1,190	ND(4.3)		ND(4.4)	20	ND(4.2)	10	ND(4.5)	ND(4.3)
RRO	AK103	mg/kg	10,000	ND (8.7)		13	15	ND(8.5)	ND(8.7)	ND(9.0)	ND(8.5)
Benzene	EPA 8021B	mg/kg	0.087	ND (0.019)		ND (0.016)	ND (0.016)	ND (0.018)	ND (0.014)	ND (0.013)	ND (0.016)
Toluene	EPA 8021B	mg/kg	25.2	0.029		ND (0.016)	0.018	ND (0.018)	0.015	0.013	ND (0.016)
Ethylbenzene	EPA 8021B	mg/kg	25.7	ND (0.019)		ND (0.016)	ND (0.016)	ND (0.018)	ND (0.014)	ND (0.013)	ND (0.016)
Total Xylenes	EPA 8021B	mg/kg	362	0.069		0.047	0.053	0.045	0.037	0.030	0.035
Polynuclear Aromatic Hydrocarbons											
Naphthalene	EPA 8270C	mg/kg	21	–		–	–	–	–	–	–
Phenanthrene	EPA 8270C	mg/kg	4,300			–	–	–	–	–	–

–	Not analyzed	mg/kg	Milligrams per kilogram
bgs	Below ground surface	ND	Not detected at or above the reporting limit in parentheses
DRO	Diesel-range organics	PID	Photoionization detector
EPA	U.S. Environmental Protection Agency	ppm	Parts per million
GRO	Gasoline-range organics	PR	Project sample
J	Analyte was detected above Method Detection Limit but below Practical Quantitation Limit.	QC	Quality control sample
		RRO	Residual-range organics

a. Cleanup levels are from Alaska Department of Environmental Conservation, Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75). A summary of these cleanup levels and how they were developed is included in Appendix E.

Prepared/Date: 6/11/04
Checked/Date: 6/11/04

Note: Results that exceed the cleanup level are shown in bold.

Table 2. Groundwater Analytical Results, Red Devil Mine, Alaska

			Sample Number	03RDVMW1	03RDVMW3	03RDVMW4	03RDVMW6	03RDVMW7	03RDVMW10
			Sample Date	9/22/2003	9/20/2003	9/20/2003	9/22/2003	9/23/2003	9/22/2003
			Location	West side of Red Devil Creek, near retort	West side of Red Devil Creek, near settling pond	East side of Red Devil Creek	East side of Red Devil Creek	West side of Red Devil Creek, west of retort/ore hopper	West side of Red Devil Creek, near retort
			Sample Type	PR	PR	PR	PR	PR	QC
			Associated QC	03RDVMW10					
Analyte	**Method**	**Units**	**Cleanup Criteria**						
GRO	AK101	mg/L	1.3	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
DRO	AK102	mg/L	1.5	ND (0.11)	ND (0.11)	0.25	ND (0.11)	ND (0.17)	ND (0.11)
RRO	AK103	mg/L	1.1	0.30	0.24	0.48	0.25	ND (0.33)	0.25
Benzene	EPA 8021B	µg/L	5	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Toluene	EPA 8021B	µg/L	1,000	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Ethylbenzene	EPA 8021B	µg/L	700	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Total Xylenes	EPA 8021B	µg/L	10,000	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Antimony	EPA 6020	mg/L	0.006	**0.0080**	**0.7510**	**0.0435**	**0.0150**	ND (0.0010)	**0.0070**
Arsenic	EPA 6020	mg/L	0.05	0.0330	**0.1480**	0.0209	0.0360	ND (0.0010)	0.0340
Mercury	EPA 7470A	mg/L	0.002	ND(0.00020)	0.001	ND(0.00020)	ND(0.00020)	**0.011**	**0.0037**

AK	Alaska Method
DRO	Diesel-range organics
EPA	U.S. Environmental Protection Agency
GRO	Gasoline-range organics
µg/L	Micrograms per liter
mg/L	Milligrams per liter
ND	Not detected at or above the reporting limit in parentheses
PR	Project sample
QC	Quality control sample
RRO	Residual-range organics

a. Cleanup levels are from Alaska Department of Environmental Conservation, Title 18, Alaska Administrative Code, Chapter 75 (18 AAC 75) Table C.
Note: Results that exceed the cleanup level are shown in bold.

Prepared/Date: 6/10/04
Checked/Date: 6/10/04

FIGURES

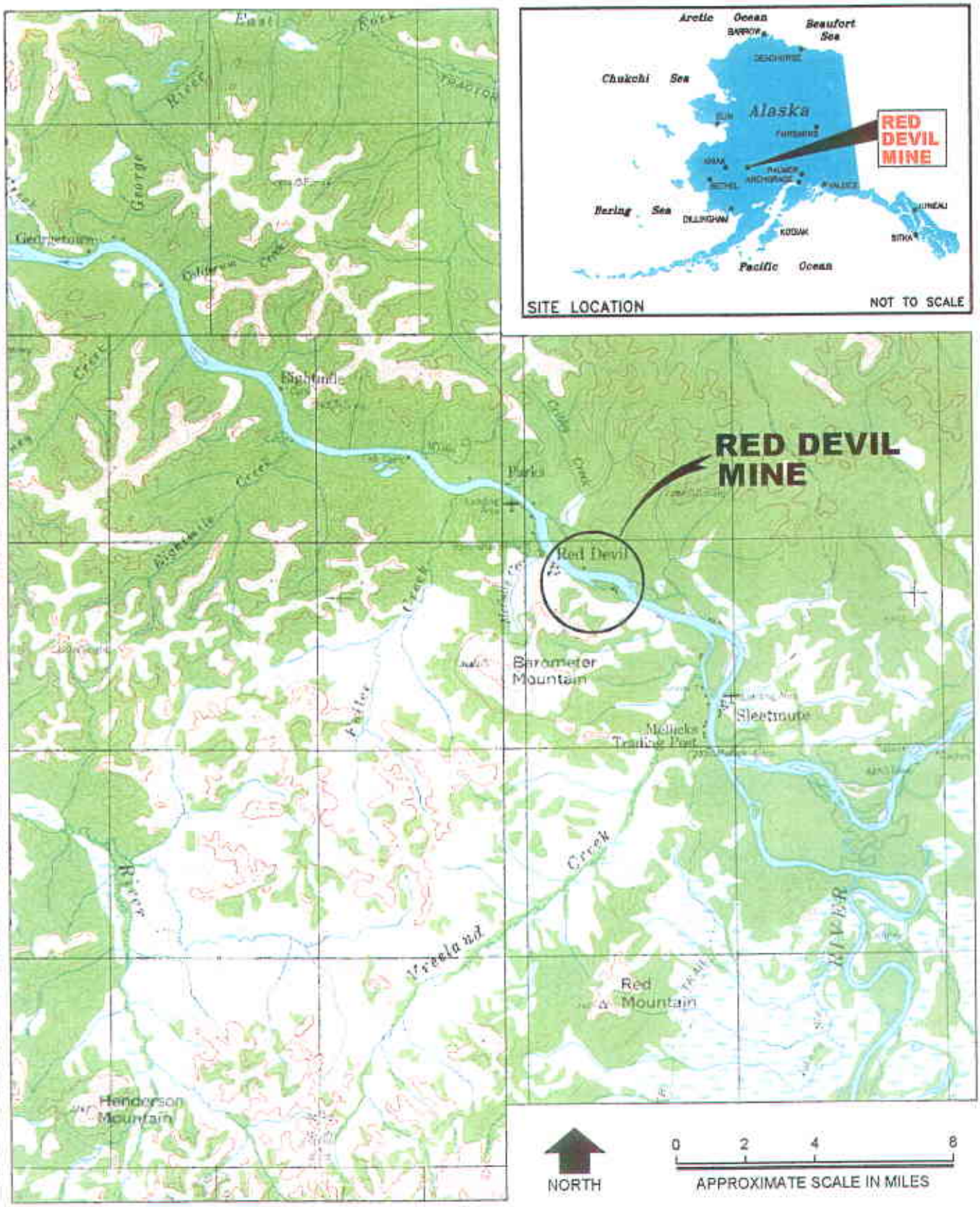

FIGURE 1

Site Location and Vicinity Maps

AST/Ore Hopper Demolition
and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

MACTEC
Engineering and Consulting, Inc.

DRAWN	PROJECT NUMBER	APPROVED	DATE
JP	4034030008	BDL	8/2003

File: 4034030008o1.dwg
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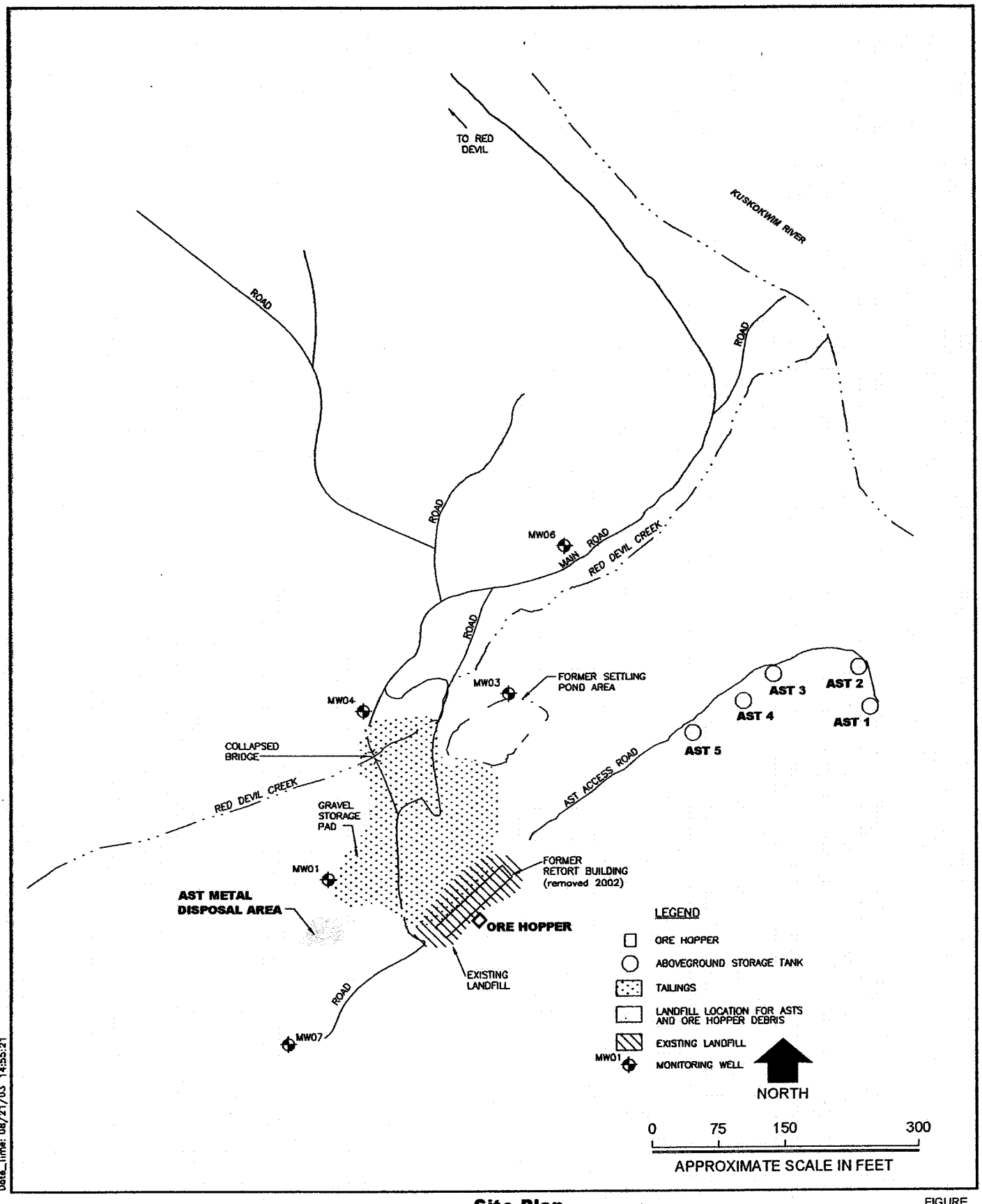
Date_Time: 08/21/03 14:29:15



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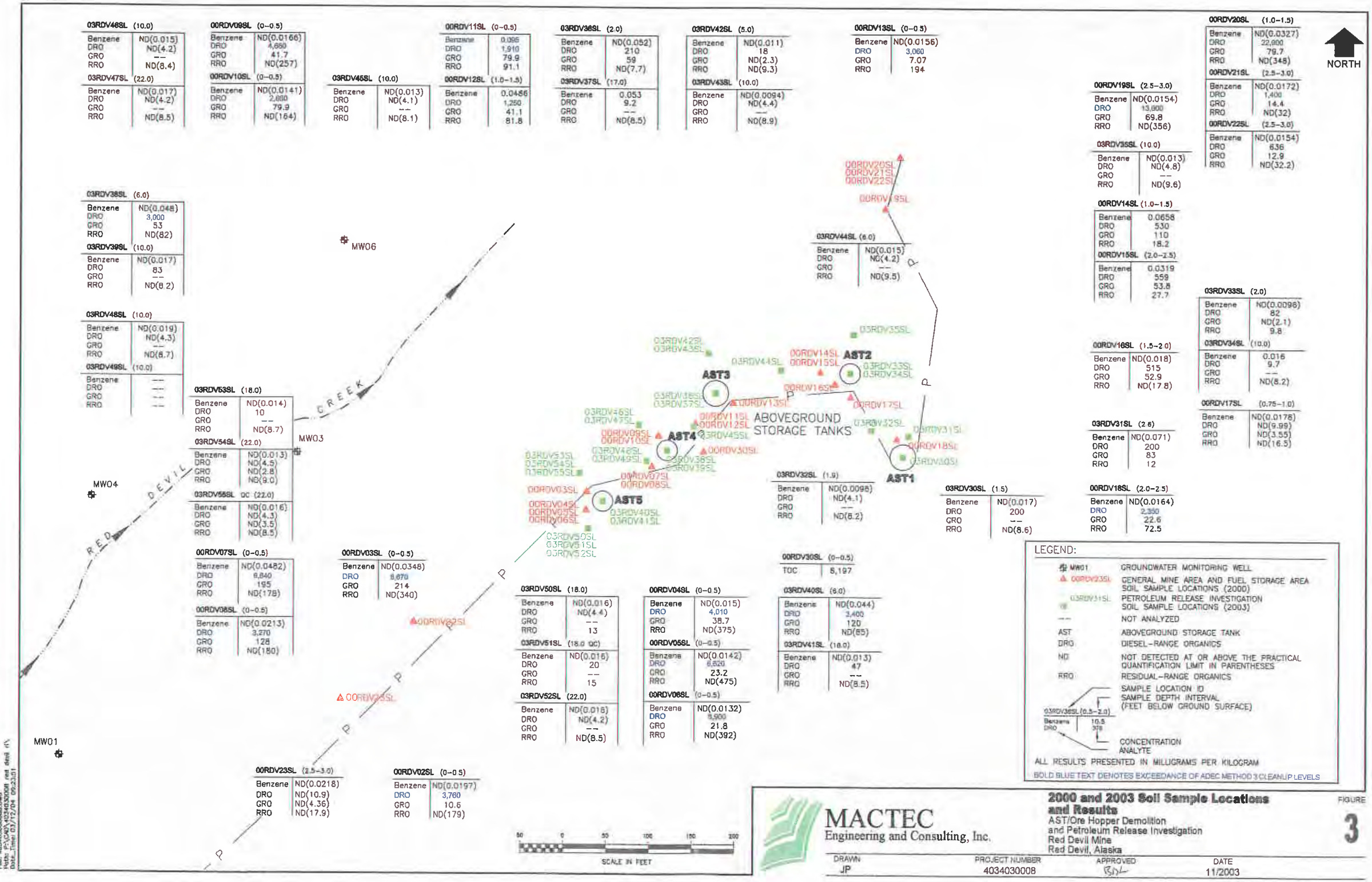
MACTEC
Engineering and Consulting, Inc.

Site Plan

AST/Ore Hopper Demolition
and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

FIGURE
2

DRAWN	PROJECT NUMBER	APPROVED	DATE
JP	4034030008	BDL	8/2003

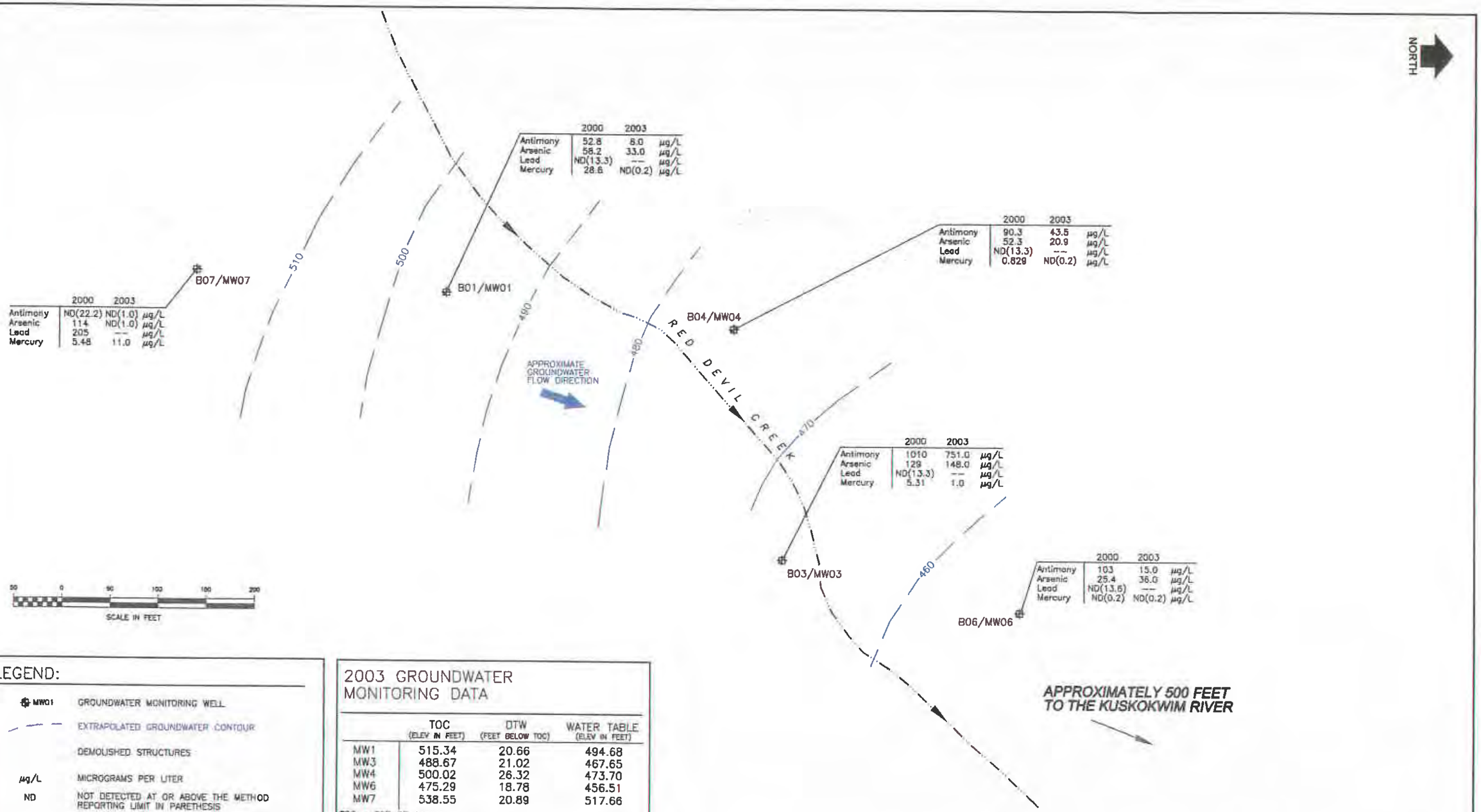


MACTEC
Engineering and Consulting, Inc.

2000 and 2003 Soil Sample Locations and Results
AST/Ore Hopper Demolition
and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

FIGURE **3**

DRAWN	PROJECT NUMBER	APPROVED	DATE
JP	4034030008	BJL	11/2003



LEGEND:

MW01	GROUNDWATER MONITORING WELL
	EXTRAPOLATED GROUNDWATER CONTOUR
	DEMOLISHED STRUCTURES
µg/L	MICROGRAMS PER LITER
ND	NOT DETECTED AT OR ABOVE THE METHOD REPORTING LIMIT IN PARETHESIS
--	NOT ANALYZED

2003 GROUNDWATER MONITORING DATA

	TOC (ELEV IN FEET)	DTW (FEET BELOW TOC)	WATER TABLE (ELEV IN FEET)
MW1	515.34	20.66	494.68
MW3	488.67	21.02	467.65
MW4	500.02	26.32	473.70
MW6	475.29	18.78	456.51
MW7	538.55	20.89	517.66

TOC = TOP OF CASING
DTW = DEPTH TO WATER

Note:
Groundwater contours are based on water elevations from monitoring wells (measured during well sampling in September 2003), Red Devil Creek, and local topography. Groundwater levels will fluctuate seasonally and groundwater generally flows towards the Kuskokwim River.

Monitoring well elevations and contours are based on an assumed elevation of 500.00 feet assigned to control monument "RDM-03 2000" during 2000 survey.

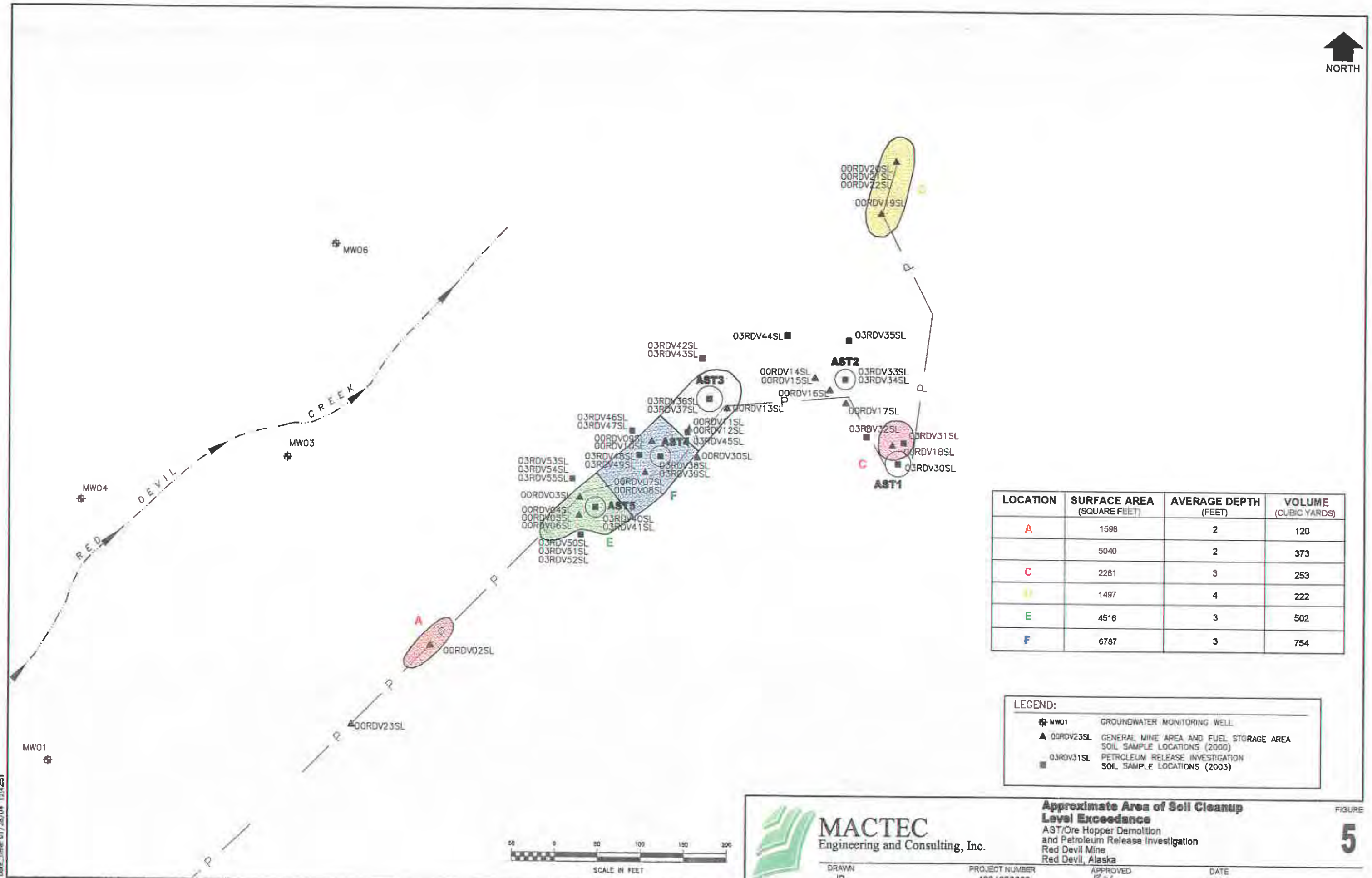
File: 4034030008e5.dwg
Path: P:\CAD\4034030008 red devil r\
Date_Time: 12/01/03 09:58:25

MACTEC
Engineering and Consulting, Inc.

Groundwater Elevation Map and Sample Analytical Results 2000 and 2003
AST/Ore Hopper Demolition
and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

FIGURE 4

DRAWN	PROJECT NUMBER	APPROVED	DATE
JP	4034030008		11/2003



LOCATION	SURFACE AREA (SQUARE FEET)	AVERAGE DEPTH (FEET)	VOLUME (CUBIC YARDS)
A	1598	2	120
	5040	2	373
C	2281	3	253
D	1497	4	222
E	4516	3	502
F	6787	3	754

LEGEND:

MW01	GROUNDWATER MONITORING WELL
00RDV23SL	GENERAL MINE AREA AND FUEL STORAGE AREA SOIL SAMPLE LOCATIONS (2000)
03RDV31SL	PETROLEUM RELEASE INVESTIGATION SOIL SAMPLE LOCATIONS (2003)

MACTEC
Engineering and Consulting, Inc.

Approximate Area of Soil Cleanup Level Exceedance
AST/Ore Hopper Demolition
and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

FIGURE 5

DRAWN	PROJECT NUMBER	APPROVED	DATE
JP	4034030008	BOL	1/2004

File: 4034030008.dwg
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Date_Time: 01/28/04 12:42:51

APPENDIX A

APPENDIX A

PHOTOGRAPH LOG

AST 1, access panel cut out for inspection

AST 1, removing tank bottom

AST 2 before demolition

AST 2 during demolition

Former AST 3, metal removed during demolition

AST 3 after tank removal, cutting tank bottom

AST 4 Demolition

AST 4 demolition continued

AST 5 Demolition

AST 5, wood planking beneath tank

Ore hopper

Ore hopper foundation structure

Ore hopper site after demolition

AST metal disposal area under construction

AST metal in disposal area

Disposal area during fieldwork

Petroleum release investigation trench at AST 1

Petroleum release investigation drilling with Geoprobe 6610DT

Core sample from Geoprobe

Site overview after demolition and investigation

APPENDIX B

APPENDIX B

EXCAVATION AND BORING LOGS

EXCAVATION AST 1C

Drilling Co. Winsor Const. Drill Rig 420D Cat Backhoe
Field Engineer R. Farrage/C. Croley
Elevation _____ Date Drilled 9/25/2003
Northing (ft) _____ Easting (ft) _____

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples	
		0		
247				**SILTY GRAVELLY SAND (SM)** fill/tailings used to level ground for AST
2341		1		**SANDY GRAVEL w/ SILT (GP)**
4167	03RDV30SL			fractured bedrock
		2		
		3		

EXCAVATION AST 1RS (outboard)

Drilling Co. Winsor Const. Drill Rig 420D Cat Backhoe
Field Engineer R. Farrage/C. Croley
Elevation _____ Date Drilled 9/25/2003
Northing (ft) _____ Easting (ft) _____

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples	
		0		
122				**SILTY GRAVELLY SAND (SM)** brown black soil
312		1		
309				
9999	03RDV31SL	2		**GRAVELLY SANDY SILT (ML)** brown black soil with recognizable mosses and leaves (probably original ground surface before AST construction) and occasional iron oxide layers (2.0-2.2' bgs)
		3		**SILTY SAND (SM)**
				SANDY GRAVEL w/ SILT (GP) highly weathered fractured bedrock
		4		

EXCAVATION AST 1W (inboard)

Drilling Co. Winsor Const. Drill Rig 420D Cat Backhoe
Field Engineer R. Farrage/C. Croley
Elevation _____ Date Drilled 9/25/2003
Northing (ft) _____ Easting (ft) _____

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples	
		0		
312				**SILTY GRAVELLY SAND (SM)** brown black organic rich soil
		1		
309	03RDV32SL	2		**SILTY SANDY GRAVEL (GM)**
				SANDY GRAVEL w/ SILT (GP) fractured bedrock
		3		
		4		

File: 4034030008a7.dwg
Path: P:\CAD\4034030008 red devil n\
Date_Time: 02/25/04 08:58:15

MACTEC
Engineering and Consulting, Inc.

Excavation Logs 1C, 1RS, and 1W

AST/Ore Hopper Demolition
and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

FIGURE **B-1**

DRAWN	PROJECT NUMBER	APPROVED	DATE
JP	4034030008	RD	12/00

LOG OF BORING AST 2C

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/26/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
209	03RDV33SL	0	GRAVELLY SAND (SP) brown black organic rich soil with recognizable leaves and moss; GRAVELLY SAND (SP) brown gray sand with and rock fragments up to 1/2" (fill tailings)
318		5	increase in hammer pressure to advance push rod
617	03RDV34SL	10	
252		15	significant increase in hammer pressure to advance push rod
198			
857			SANDY GRAVEL with SILT (GP) highly weathered fractured bedrock
1220		20	

LOG OF BORING AST 2RS

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/26/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
10.1		0	SILTY GRAVELLY SAND (SM) with organic material (fill/tailings); GRAVELLY SAND (SP) brown gray sand with angular rock fragments (fill/tailings)
25.1		5	easier advance of push rod than in 0-4 foot and 8-12 foot intervals, less dense (fill/tailings)
30.6	03RDV35SL	10	
10.1		15	
10.2			SANDY GRAVEL (GP) gray fractured bedrock
		20	

LOG OF BORING AST 2W

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/27/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
		0	GRAVELLY SAND (SP) brown gray sand with angular rock fragments up to 1" diameter (fill/tailings)
57.2	03RDV44SL	5	
21.3		10	
18.0		15	auger refusal
		20	

LOG OF BORING AST 3C

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/26/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
225	03RDV36SL	0	GRAVELLY SAND (SP) brown gray sand with angular rock fragments (fill/tailings)
298		5	
445		10	
397		15	significant increase in hammer pressure needed to advance push rod
281	03RDV37SL		SILTY GRAVELLY SAND (SM)
			auger refusal
		20	

LOG OF BORING AST 3RS

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/26/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
581		0	GRAVELLY SAND with SILT (SP) brown gray sand with angular rock fragments (fill/tailings)
29.9	03RDV42SL	5	
4.0	03RDV43SL	10	
		15	auger refusal
		20	

LOG OF BORING AST 3W

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/27/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
		0	GRAVELLY SAND with SILT (SP) brown gray sand with angular rock fragments (fill/tailings)
25.3		5	
21.0			
25.9	03RDV45SL	10	
30.2			SANDY GRAVEL with SILT (GP) highly weathered fractured bedrock; auger refusal
		15	
		20	

LOG OF BORING AST 4C

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/26/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
		0	SANDY GRAVEL (GP) brown gray sand with angular rock fragments (fill/tailings)
302		5	GRAVELLY SAND with SILT (SP) brown gray sand with angular rock fragments (fill/tailings)
290	03RDV38SL		
99	03RDV39SL	10	
85			
		15	
60			
		20	

LOG OF BORING AST 4RS

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/27/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
		0	GRAVELLY SAND with SILT (SP) brown gray sand with angular rock fragments (fill/tailings)
50.7		5	SILTY GRAVELLY SAND (SM) brown gray organic rich sand with minimal rock fragments
50.0			
29.2	03RDV46SL	10	GRAVELLY SAND (SP) brown gray sand with angular rock fragments; the amount of rock with depth increases
27.8			
		15	
22.1			
		20	
20.2	03RDV47SL		
		25	

LOG OF BORING AST 4W

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/27/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
		0	GRAVELLY SAND with SILT (SP) brown gray sand with angular rock fragments (fill/tailings)
43.2		5	
57.9			
25.3	03RDV48SL (03RDV49SL duplicate)	10	
29.2			
		15	
21.0			
		20	

LOG OF BORING AST 5C

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/26/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
		0	GRAVELLY SAND with SILT (SP) brown gray sand with angular rock fragments (fill/tailings)
249		5	
230	03RDV40SL		
201		10	
69			
		15	
163	03RDV41SL		
		20	

LOG OF BORING AST 5RS

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/27/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
		0	GRAVELLY SAND (SP) brown gray sand with angular rock fragments
97.2			
			very little resistance, soft easy push
		5	SILTY GRAVELLY SAND (SM) brown gray organic rich sands with minimal rock fragments
50.9			
49.9		10	
			GRAVELLY SAND with SILT (SP) brown gray sand with rock fragments, the amount of gravel increases with depth
36.1		15	
29.9	03RDV53SL		
		20	
32.2	03RDV54SL (03RDV55SL duplicate)		SANDY GRAVEL with SILT (GP) fractured bedrock
		25	

LOG OF BORING AST 5W

Drilling Co. Geotek | Drill Rig GeoProbe 6610 DT
Driller K. Rogers | Field Engineer --
Elevation | Date Drilled 9/27/2003
Northing (ft) | Easting (ft)

Field Screening PID (ppm)	Sample Number	Depth (ft)	Samples
		0	GRAVELLY SAND with SILT (SP) brown gray sand with angular rock fragments, the amount of rock fragments increases with depth
90.6			
62.3		5	
65.2		10	
43.9		15	
40.1	03RDV50SL (03RDV51SL duplicate)		
22.7	03RDV52SL	20	
		25	

Note:
Geoprobe 6610DT soil probing (direct push) machine that uses a static weight (5020 lbs) combined with percussion (36,000 lbs) as energy for the advancement of push rod. Geoprobe Macro-Core is a solid barrel direct push device for collecting continuous core samples. The Macro-Core soil samples are collected in a Teflon, PVC or PETG liner.

MACTEC
Engineering and Consulting, Inc.

Boring Logs

AST/Ore Hopper Demolition
and Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

FIGURE **B-2**

DRAWN	PROJECT NUMBER	APPROVED	DATE
JP	4034030008	BDL	01/01

File: 4034030008a7.dwg
Path: P:\CAD\4034030008 red devil n\
Date_Time: 02/25/04 08:58:15

APPENDIX C

APPENDIX C

CERTIFICATE OF DISPOSAL

Emerald Alaska Inc
800 East Ship Creek
Anchorage, AK 99501
(907) 258-1558 fax (907) 258-3049
www.emeraldnw.com

Certificate of Disposal / Recycle

Generator: Bureau of Land Management
Red Devil Mine
6881 Abbott Loop Road
Anchorage, AK 99507

MACTEC
601 East 57th Place
Anchorage, AK 99518

Document: Manifest #02011

Date of Disposal / Recycle: March 29, 2004

Line Item	Description	Profile Number	Quantity
1a	Material Not Regulated by DOT (Purge Water)	AK02906	60 Gallons

Roxanne Pedersen

Roxanne Pedersen, Facility Operator

April 2, 2004

APPENDIX D

APPENDIX D

DATA QUALITY ASSESSMENT AND ANALYTICAL RESULTS

Red Devil AST
Bureau of Land Management
MACTEC Project 4034030008

Sample Number	Date	Time	Depth (feet, BGS)	Location	Sample Type	Associated Sample Number	AK102/103 (DRO/RRO)	AK101 (GRO)	EPA 8021 (BTEX)	EPA 8270C (PAHs)	AK101/EPA 8021B (GRO/BTEX)	SW6020 (Metals)	SW7470A (Mercury)	Lab	Tared Containers AK101(GRO)	Tared Containers EPA8021 (BTEX)
03RDV30SL	9/25/2003	10:20	1.5	AST 1 Center	PR		X		X					Analytica		16409
03RDV31SL	9/25/2003	10:35	2.6	AST 1 OUTBOARD RIVER SIDE	PR		X	X	X	X				Analytica	16179	16179
03RDV32SL	9/25/2003	11:10	1.9	AST 1 INBOARD ABOVE TANK 2	PR		X		X					Analytica		16175
03RDV33SL	9/26/2003	10:00	2.0	AST 2 CENTER	PR		X	X	X					Analytica	16119	16119
03RDV34SL	9/26/2003	10:45	10.0	AST 2 CENTER	PR		X		X					Analytica		16543
03RDV35SL	9/26/2003	13:50	10.0	AST 2 RIVERSIDE	PR		X		X					Analytica		16120
03RDV36SL	9/26/2003	14:45	2.0	AST 3 CENTER	PR		X	X	X	X				Analytica	16170	16170
03RDV37SL	9/26/2003	16:15	17.0	AST 3 CENTER	PR		X		X					Analytica		16548
03RDV38SL	9/26/2003	16:30	6.0	AST 4 CENTER	PR		X	X	X	X				Analytica	16501	16501
03RDV39SL	9/26/2003	16:50	10.0	AST 4 CNETER	PR		X		X					Analytica		16158
03RDV40SL	9/26/2003	17:30	6.0	AST 5 CENTER	PR		X	X	X	X				Analytica	16535	16535
03RDV41SL	9/26/2003	18:12	18.0	AST 5 CENTER	PR		X		X					Analytica		16529
03RDV42SL	9/26/2003	18:30	5.0	AST 3 RIVERSIDE	PR		X	X	X	X				Analytica	16093	16093
03RDV43SL	9/26/2003	18:45	10.0	AST 3 RIVERSIDE	PR		X		X					Analytica		16542
03RDV44SL	9/27/2003	9:55	6.0	AST 2 WEST	PR		X		X					Analytica		16177
03RDV45SL	9/27/2003	10:30	10.0	AST 3 WEST	PR		X		X					Analytica		16178
03RDV46SL	9/27/2003	10:55	10.0	AST 4 RIVERSIDE	PR		X		X					Analytica		16165
03RDV47SL	9/27/2003	11:20	22.0	AST 4 RIVERSIDE	PR		X		X					Analytica		16186
03RDV48SL	9/27/2003	13:40	10.0	AST 4 WEST	PR	03RDV49SL	X		X					Analytica		16079
03RDV49SL	9/27/2003		10.0	AST 4 WEST	QC	JARS WERE BROKEN										
03RDV50SL	9/27/2003	15:15	18.0	AST 5 WEST	PR	03RDV51SL	X		X					Analytica		16168
03RDV51SL	9/27/2003	15:17	18.0	AST 5 WEST	QC		X		X					Analytica		16180
03RDV52SL	9/27/2003	15:40	22.0	AST 5 WEST	PR		X		X					Analytica		16500
03RDV53SL	9/27/2003	16:20	18.0	AST 5 RIVERSIDE	PR		X		X					Analytica		16185
03RDV54SL	9/27/2003	16:30	22.0	AST 5 RIVERSIDE	PR	03RDV55SL	X	X	X					Analytica	16181	16181
03RDV55SL	9/27/2003	16:32	22.0	AST 5 RIVERSIDE	QC		X	X	X					Analytica	16536	16536
Trip Blank	9/28/2003				TB			X	X					Analytica		
03RDVMW1	9/22/2003	17:25		W. side of RDV Creek, near retort	PR	03RDVMW10	X				X	X	X	Analytica		
03RDVMW3	9/20/2003	16:14		W. side of RDV Creek, near settling pond	PR		X				X	X	X	Analytica		
03RDVMW4	9/20/2003	13:55		E. side of RDV Creek	PR		X				X	X	X	Analytica		
03RDVMW6	9/22/2003	15:42		E. side of RDV Creek	PR		X				X	X	X	Analytica		
03RDVMW7	9/23/2003	16:35		W. side of RDV Creek, W of retort/ore hopper	PR		X				X	X	X	Analytica		
03RDVMW10	9/22/2003	17:28		W. side of RDV Creek, near retort	QC		X				X	X	X	Analytica		
Trip Blank	9/22/2003				TB						X			Analytica		

MACTEC

Client Bureau of Land Management (BLM) Laboratory Analytica Alaska

MACTEC Project 4034030008 Data Report Number/Date A0310016 / 10-30-2003

LABORATORY DATA REVIEW CHECKLIST

		YES	NO	NOT APPLICABLE
1.	Laboratory analytical data report appears complete (all data results present for all samples submitted for analysis) and there are no apparent transcription errors:	X		
2.	Samples analyzed within applicable holding times (based on date of sample collection):*	X		
3.	Trip blanks, field blanks or laboratory method blanks are free of blank contamination:	X		
4.	If field duplicate samples collected, calculated results meet Relative Percent Difference guidelines: **		X	
5.	Surrogate recoveries (organic analyses only) within laboratory reported recovery acceptance ranges:		X	
6.	If Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples required to meet project objectives, Percent Recoveries (%R) and Relative Percent Difference (RPD) within laboratory reported acceptance ranges:			X
7.	Reported detection limits meet project objectives (e.g., are capable of achieving applicable site standards):	X		
8.	Completed Chain-Of-Custody received noting sample/custody seal condition (with airbill, if appropriate):	X		
9.	Analytical costs within authorized budget for these services:	X		

COMMENTS:

1. Analytical data was reviewed according to the MACTEC Quality Assurance, August, 2003.

2. Field duplicates 03RDV50SL (PR) and 03RDV51SL (QC) have relative percent differences (RPD) greater than 50 percent for Diesel Range Organics (DRO) (127.87 percent), (DRO was not detected at or below 4.4 mg/kg in project sample 03RDV50SL, and was detected at 20mg/kg in QC sample 03RDV51SL) See attached RPD calculations.

3. For test Method AK101 samples 03RDV31SL, 03RDV36SL, 03RDV38SL, and 03RDV40SL contained high levels of hydrocarbons that required the sample extracts to be diluted. At the diluted level it was not feasible to recover and detect GRO surrogates Bromofluorobenzene (0%), and Bromofluorobenzene (PID) (0%) above the high background contamination. These surrogate results are flagged with DIL to indicate loss by dilution. These diluted surrogates samples are considered in control with the methodology and no further action was taken.

4. No samples of this delivery were requested or selected as batch MD/MSD.

Notes: 1. This checklist is intended for use with the laboratory reporting formats typical of most projects. If "no" is answered to one or more of the above checklist questions 1 through 7, a more detailed Data Validation may be required, and a person knowledgeable in Data Validation protocols should be consulted. This checklist should not be used if the project scope requires Data Validation from the onset.

2. * = Based upon EPA Guidance and the applicable analytical method references. See reverse side of checklist for details.

3. ** = Based upon EPA Guidance. Use these criteria on duplicate and sample results which exceed five times the reported detection limit. See reverse side of checklist for details.

Checked by: Scott Finnegan Date: 2/18/2004

GENERAL DATA REVIEW CRITERIA

Typical Holding Times for Water Samples:*

Volatile Organic Compounds (EPA Method 8260/624)	14 days to analysis when preserved with HCl (7 days if not preserved)
Semi-volatile Organic Compounds (EPA Method 8270)	7 days to extraction, 40 days to analysis
Pesticides/PCBs (EPA Method 8081/8082)	7 days to extraction, 40 days to analysis
Metals (except Mercury)	180 days to analysis when preserved with HNO_3
Mercury	28 days to analysis
Cyanide	14 days to analysis

Typical Relative Percent Difference (RPD) Guidelines:**

	Aqueous	Soil
Volatile Organic Compounds (EPA Method 8260/624)	<30	<50
Semi-volatile Organic Compounds (EPA Method 8270)	<30	<50
Pesticides/PCBs (EPA Method 8081/8082)	<30	<50
Metals and Cyanide	<30	<50

Notes:

RPD calculated as:

$$RPD = [\,|A-B|\,] / [\,(A+B)/2\,] \times 100$$

where:

RPD = Relative Percent Difference
A = Sample Result
B = Duplicate Sample Result

* = Based upon EPA Guidance and the applicable analytical method references.

** = Based upon EPA Guidance. Use these criteria on duplicate and sample results that exceed five times the reported detection limit.

RED DEVIL ASTs SOIL
FIELD DUPLICATE RELATIVE PERCENT DIFFERENCES

Analayte	03RDV50SL	03RDV51SL	RPD
DRO			
	ND(4.4)	20	127.87
RRO			
	13	15	-14.29
VOC's (BTEX)			
Benzene	ND(0.016)	ND(0.016)	OK
Ethylbenzene	ND(0.016)	ND(0.016)	OK
Toluene	ND(0.016)	0.018	OK
Xylenes, Total	0.047	0.053	-12.00

Analayte	03RDV54SL	03RDV55SL	RPD
DRO			
	ND(4.5)	ND(4.3)	OK
RRO			
	ND(9.0)	ND(8.5)	OK
VOC's (BTEX)			
Benzene	ND(0.0013)	ND(0.0016)	OK
Ethylbenzene	ND(0.0013)	ND(0.0016)	OK
Toluene	0.013	ND(0.0016)	OK
Xylenes, Total	0.03	0.035	-15.38

Analytica Alaska Incorporated
website:
www.analyticagroup.com

ANALYTICA
Environmental Laboratories

10/30/2003

Mactec Engineering & Consulting Inc.
601 E. 57th Place
Anchorage, AK 99518
Attn: Bryan Lund

Work Order #: A0310016
Date: 10/30/2003
Work ID: Red Devil AST Removal
Date Received: 10/3/2003

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0310016-01	03RDV 30 SL	A0310016-02	03RDV 31 SL
A0310016-03	03RDV 32 SL	A0310016-04	03RDV 33 SL
A0310016-05	03RDV 34 SL	A0310016-06	03RDV 35 SL
A0310016-07	03RDV 36 SL	A0310016-08	03RDV 37 SL
A0310016-09	03RDV 38 SL	A0310016-10	03RDV 39 SL
A0310016-11	03RDV 40 SL	A0310016-12	03RDV 41 SL
A0310016-13	03RDV 42 SL	A0310016-14	03RDV 43 SL
A0310016-15	03RDV 44 SL	A0310016-16	03RDV 45 SL
A0310016-17	03RDV 46 SL	A0310016-18	03RDV 47 SL
A0310016-19	03RDV 48 SL	A0310016-20	03RDV 50 SL
A0310016-21	03RDV 51 SL	A0310016-22	03RDV 52 SL
A0310016-23	03RDV 53 SL	A0310016-24	03RDV 54 SL
A0310016-25	03RDV 55 SL	A0310016-26	Trip Blank

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Gina Durkin
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.
Work Order: A0310016
(continued)

INTERNAL STANDARD AREAS:
There were no Internal Standard outliers.

SURROGATE RECOVERIES:
There were no surrogate outliers.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Case Narrative

Analytica Alaska Inc.
Work Order: A0310016

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

ADEC Method AK101 For the Determination of Gasoline Range Organics.
ADEC Method AK102 For the Determination of Diesel Range Organics.
ADEC Method AK103 For the Determination of Residual Range Organics.

Test Methods for Evaluating Solid Waste, USEPA SW-846, Third Edition, Rev. 4, Dec. 1996.

Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures, ASTM D 2216-80, July 1980.

SAMPLE RECEIPT:
There were 25 samples and GRO/BTEX trip blank received at Analytica-Anchorage (ADEC Laboratory Approval Number: UST-014) on 10/3/2003 in one cooler at a temperature of 5.4°C. Samples were received in good condition and in order per chain of custody.

8270 sample fractions were transferred for analysis at Analytica Environmental Laboratories (AEL); 12189 Pennsylvania St. Thornton, CO 80241 where they were received at a temperature of 3.3°C in good condition and in order per chain of custody.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN
A summary of our review is shown below, organized by test:

Test Method: ADEC AK102/103 - (DRO & RRO) - Solid

HOLDING TIMES:
Holding times were met for this Test.

INSTRUMENT CALIBRATIONS:
Initial calibration and CCV samples met method criteria.

SURROGATE RECOVERIES:
There were no surrogate outliers.

METHOD BLANK OUTLIERS:
There were no MB outliers; no target analytes detected in the MB above the PQL.

LCS/LCSD OUTLIERS:
There are no LCS/LCSD outliers.

MS/MSD OUTLIERS:
No samples of this delivery were requested or selected as batch MS/MSD.

Test Method: GRO by ADEC AK101 & BTEX by 8021B - Solid

HOLDING TIMES:
Holding times were met for this Test.

INSTRUMENT CALIBRATIONS:
Initial calibration and CCV samples met method criteria.

SURROGATE RECOVERIES:

Case Narrative

Analytica Alaska Inc.
Work Order: A0310016
(continued)

The following samples had high levels of hydrocarbon contamination that required the sample extracts be diluted to bring the extract concentration within the instrument calibration range and to prevent damage to the instrument from overloading the detector with hydrocarbon. At the diluted level, it was not feasible to recover and detect the spiked concentration of surrogate Bromoflourobenzene above the high background contamination present in the sample. These unrecovered surrogate results are flagged with DIL to indicate loss by dilution. These diluted surrogate samples are considered in control with the methodology and no further action was taken. Reporting limits for BTEX compounds are similarly elevated by this necessary dilution of the sample extract.

Sample	LabID	Surrogate	Recovery	LCL	UCL	
03RDV 31 SL	A0310016-02A	Bromofluorobenzene(PID)	0	50	150	Complete
03RDV 31 SL	A0310016-02A	Bromofluorobenzene	0	50	150	Complete
03RDV 36 SL	A0310016-07A	Bromofluorobenzene	0	50	150	Complete
03RDV 36 SL	A0310016-07A	Bromofluorobenzene(PID)	0	50	150	Complete
03RDV 38 SL	A0310016-09A	Bromofluorobenzene	0	50	150	Complete
03RDV 38 SL	A0310016-09A	Bromofluorobenzene(PID)	0	50	150	Complete
03RDV 40 SL	A0310016-11A	Bromofluorobenzene	0	50	150	Complete
03RDV 40 SL	A0310016-11A	Bromofluorobenzene(PID)	0	50	150	Complete

METHOD BLANK OUTLIERS:
There were no MB outliers; no target analytes were detected in the MB above the PQL.

LCS/LCSD OUTLIERS:
There are no LCS/LCSD outliers.

MS/MSD OUTLIERS:
No samples of this delivery were requested or selected as batch MS/MSD.

Test Method: SW8270C - Semivolatile Organics by GC/MS - PAH - Solid

HOLDING TIMES:
Holding times were met for this Test.

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
All sample extracts was processed through a Gel Permentation Cleanup procedure to remove organic interferences.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

CONTINUING CALIBRATIONS:
One of the targets show %D values greater than 20% in the opening CCV shown below. The CCC's and the SPCC's are in control. The average %D in the CCV is less than 15%. Thus this CCV meets criteria. The results out of the 20% window are shown below.

RunDate	Analyte	Recovery	LCL	UCL
10/28/2003 12:39:00 AM	Pyrene	121.	80	120

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 30 SL

Matrix: Soil

Collection Date: 9/25/2003 10:20:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-01B	Analysis Date:	10/9/2003 9:40:00PM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100962.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	8.12
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.36 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	200		mg/Kg	4.3	0.66	1
Residual Range Organics	n/a	ND		mg/Kg	8.6	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.4		mg/Kg	0.20	0.040	2.1	64.4	50	150	1
Squalane	111-01-3	1.3		mg/Kg	0.28	0.055	2.1	62.0	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-01B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.33 g	Prep Extract Vol:	9.57 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	8.1		%	0.046	0.0093	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-01A	Analysis Date:	10/8/2003 10:17:00AM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100807.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	8.12
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	25.08 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.017	0.0019	1
Ethylbenzene	100-41-4	0.15		mg/Kg	0.017	0.0018	
Toluene	108-88-3	0.16		mg/Kg	0.017	0.0023	
Xylenes, Total	1330-20-7	0.81		mg/Kg	0.035	0.0050	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.5		mg/Kg	0.43	0.054	2.7	91.2	50	150	1
Difluorobenzene(PID)	540-36-3	1.4		mg/Kg	0.017	0.0022	1.4	103	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 31 SL

Matrix: Soil

Collection Date: 9/25/2003 10:35:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-02B	Analysis Date:	10/9/2003 10:08:00PM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100963.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	15
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.77 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	**200**		mg/Kg	4.6	0.70	1
Residual Range Organics	n/a	**12**		mg/Kg	9.1	1.4	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**1.5**		mg/Kg	0.21	0.043	2.3	**65.4**	50	150	1
Squalane	111-01-3	**1.5**		mg/Kg	0.29	0.059	2.3	**64.7**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-02B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.30 g	Prep Extract Vol:	8.90 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	15		%	0.043	0.0087	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-02A	Analysis Date:	10/8/2003 10:47:00AM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100808.D
Prep Method ID:	5035	Dilution Factor:	4
Prep Batch Number:	A031008003	Percent Moisture	15
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	26.36 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.071	0.0079	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.071	0.0073	
Gasoline Range Organics	n/a	**83**		mg/Kg	16	2.2	
Toluene	108-88-3	**0.089**		mg/Kg	0.071	0.0095	
Xylenes, Total	1330-20-7	**0.40**		mg/Kg	0.14	0.020	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:	
Bromofluorobenzene	1072-85-1	ND		mg/Kg	1.8	0.22	2.8	**0.00**	50	150	1	DIL
Bromofluorobenzene(PID)	1072-85-1	ND		mg/Kg	1.8	0.22	2.8	**0.00**	50	150		DIL

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 36 SL

Matrix: Soil

Collection Date: 9/26/2003 2:45:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-07B	Analysis Date:	10/10/2003 2:14:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100972.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	4.13
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	26.96 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	**210**		mg/Kg	3.9	0.60	1
Residual Range Organics	n/a	ND		mg/Kg	7.7	1.2	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**1.7**		mg/Kg	0.18	0.036	1.9	**88.6**	50	150	1
Squalane	111-01-3	**1.7**		mg/Kg	0.25	0.050	1.9	**86.4**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-07B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.14 g	Prep Extract Vol:	9.76 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	**4.1**		%	0.048	0.0096	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-07A	Analysis Date:	10/8/2003 1:14:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100813.D
Prep Method ID:	5035	Dilution Factor:	4
Prep Batch Number:	A031008003	Percent Moisture	4.13
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	32.23 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.052	0.0057	1
Ethylbenzene	100-41-4	**0.081**		mg/Kg	0.052	0.0053	
Gasoline Range Organics	n/a	**59**		mg/Kg	11	1.6	
Toluene	108-88-3	**0.16**		mg/Kg	0.052	0.0069	
Xylenes, Total	1330-20-7	**0.63**		mg/Kg	0.10	0.015	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:	
Bromofluorobenzene	1072-85-1	ND		mg/Kg	1.3	0.16	2.0	**0.00**	50	150	1	DIL
Bromofluorobenzene(PID)	1072-85-1	ND		mg/Kg	1.3	0.16	2.0	**0.00**	50	150		DIL

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 36 SL

Matrix: Soil

Collection Date: 9/26/2003 2:45:00PM

Lab Sample Number:	A0310016-07A	Analysis Date:	10/8/2003 1:14:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100813.D
Prep Method ID:	5035	Dilution Factor:	4
Prep Batch Number:	A031008003	Percent Moisture	4.13
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	32.23 g	Prep Extract Vol:	25.00 ml

Difluorobenzene	540-36-3	**3.5**	mg/Kg	0.052	0.0065	4.0	**87.6**	50	150	1
Difluorobenzene(PID)	540-36-3	**4.2**	mg/Kg	0.052	0.0065	4.0	**104**	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0310016-07C	Analysis Date:	10/28/2003 4:04:00AM
Prep Date:	10/8/2003	Instrument:	MS1BNA
Analytical Method ID:	SW8270C - Semivolatile Organics by GC/MS - PAH	File Name:	03102729.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T031009004	Percent Moisture	4.13
Report Basis:	Dry Weight Basis	Analyst Initials:	bs
Sample prep wt./vol:	30.13 g	Prep Extract Vol:	2.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Acenaphthene	83-32-9	ND		ug/Kg	170	27	1
Acenaphthylene	208-96-8	ND		ug/Kg	170	29	
Anthracene	120-12-7	ND		ug/Kg	170	27	
Benzo(a)anthracene	56-55-3	ND		ug/Kg	170	18	
Benzo(a)pyrene	50-32-8	ND		ug/Kg	170	20	
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	170	24	
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	170	53	
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	170	40	
Chrysene	218-01-9	ND		ug/Kg	170	19	
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	170	54	
Fluoranthene	206-44-0	ND		ug/Kg	170	22	
Fluorene	86-73-7	ND		ug/Kg	170	26	
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	170	49	
Naphthalene	91-20-3	**150**	J	ug/Kg	170	21	
Phenanthrene	85-01-8	**100**	J	ug/Kg	170	21	
Pyrene	129-00-0	ND		ug/Kg	170	29	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
2-Fluorobiphenyl	321-60-8	**1,800**		ug/Kg	170	21	3,500	**53.4**	36	121	1
D14-Terphenyl	92-94-4D	**2,500**		ug/Kg	170	21	3,500	**71.0**	30	134	
D5-Nitrobenzene	98-95-3D	**1,600**		ug/Kg	170	26	3,500	**44.8**	30	122	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 37 SL

Matrix: Soil

Collection Date: 9/26/2003 4:15:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-08B	Analysis Date:	10/10/2003 2:41:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100973.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	6.01
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.03 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	**9.2**		mg/Kg	4.3	0.66	1
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**1.6**		mg/Kg	0.20	0.040	2.1	**73.4**	50	150	1
Squalane	111-01-3	**1.5**		mg/Kg	0.27	0.055	2.1	**71.0**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-08B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.13 g	Prep Extract Vol:	10.52 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	**6.0**		%	0.047	0.0095	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-08A	Analysis Date:	10/8/2003 1:44:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100814.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	6.01
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	30.26 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	**0.053**		mg/Kg	0.014	0.0016	1
Ethylbenzene	100-41-4	**0.16**		mg/Kg	0.014	0.0014	
Toluene	108-88-3	**0.020**		mg/Kg	0.014	0.0019	
Xylenes, Total	1330-20-7	**0.29**		mg/Kg	0.028	0.0040	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	**2.0**		mg/Kg	0.35	0.044	2.2	**90.5**	50	150	1
Difluorobenzene(PID)	540-36-3	**1.1**		mg/Kg	0.014	0.0018	1.1	**105**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 38 SL

Matrix: Soil

Collection Date: 9/26/2003 4:30:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-09B	Analysis Date:	10/10/2003 12:16:00PM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100994.D
Prep Method ID:	3550	Dilution Factor:	10
Prep Batch Number:	A031008004	Percent Moisture	6.35
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	26.09 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	**3,000**		mg/Kg	41	6.3	1
Residual Range Organics	n/a	ND		mg/Kg	82	13	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	ND		mg/Kg	1.9	0.38	2.0	**73.0**	50	150	1 DIL
Squalane	111-01-3	ND		mg/Kg	2.6	0.53	2.0	**60.2**	50	150	DIL

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-09B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.04 g	Prep Extract Vol:	10.40 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	**6.3**		%	0.047	0.0094	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-09A	Analysis Date:	10/8/2003 2:15:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100815.D
Prep Method ID:	5035	Dilution Factor:	4
Prep Batch Number:	A031008003	Percent Moisture	6.35
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	35.77 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.048	0.0053	1
Ethylbenzene	100-41-4	**0.18**		mg/Kg	0.048	0.0049	
Gasoline Range Organics	n/a	**53**		mg/Kg	10	1.5	
Toluene	108-88-3	**0.096**		mg/Kg	0.048	0.0064	
Xylenes, Total	1330-20-7	**1.2**		mg/Kg	0.096	0.014	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	ND		mg/Kg	1.2	0.15	1.9	**0.00**	50	150	1 DIL
Bromofluorobenzene(PID)	1072-85-1	ND		mg/Kg	1.2	0.15	1.9	**0.00**	50	150	DIL

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 38 SL

Matrix: Soil

Collection Date: 9/26/2003 4:30:00PM

Lab Sample Number:	A0310016-09A	Analysis Date:	10/8/2003 2:15:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100815.D
Prep Method ID:	5035	Dilution Factor:	4
Prep Batch Number:	A031008003	Percent Moisture	6.35
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	35.77 g	Prep Extract Vol:	25.00 ml

Difluorobenzene	540-36-3	**3.3**	mg/Kg	0.048	0.0060	3.7	**89.8**	50	150	1
Difluorobenzene(PID)	540-36-3	**3.8**	mg/Kg	0.048	0.0060	3.7	**101**	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0310016-09C	Analysis Date:	10/28/2003 4:38:00AM
Prep Date:	10/8/2003	Instrument:	MS1BNA
Analytical Method ID:	SW8270C - Semivolatile Organics by GC/MS - PAH	File Name:	03102730.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T031009004	Percent Moisture	6.35
Report Basis:	Dry Weight Basis	Analyst Initials:	bs
Sample prep wt./vol:	30.02 g	Prep Extract Vol:	2.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Acenaphthene	83-32-9	ND		ug/Kg	180	27	1
Acenaphthylene	208-96-8	ND		ug/Kg	180	30	
Anthracene	120-12-7	ND		ug/Kg	180	28	
Benzo(a)anthracene	56-55-3	ND		ug/Kg	180	18	
Benzo(a)pyrene	50-32-8	ND		ug/Kg	180	20	
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	180	24	
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	180	54	
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	180	41	
Chrysene	218-01-9	ND		ug/Kg	180	20	
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	180	55	
Fluoranthene	206-44-0	ND		ug/Kg	180	22	
Fluorene	86-73-7	ND		ug/Kg	180	26	
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	180	50	
Naphthalene	91-20-3	**54**	J	ug/Kg	180	21	
Phenanthrene	85-01-8	**77**	J	ug/Kg	180	21	
Pyrene	129-00-0	ND		ug/Kg	180	29	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
2-Fluorobiphenyl	321-60-8	**2,000**		ug/Kg	180	22	3,600	**55.4**	36	121	1
D14-Terphenyl	92-94-4D	**2,600**		ug/Kg	180	22	3,600	**72.9**	30	134	
D5-Nitrobenzene	98-95-3D	**1,700**		ug/Kg	180	27	3,600	**46.7**	30	122	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 39 SL

Matrix: Soil

Collection Date: 9/26/2003 4:50:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-10B	Analysis Date:	10/10/2003 3:09:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100974.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	8.34
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	26.46 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Diesel Range Organics	n/a	83		mg/Kg	4.1	0.64	1
Residual Range Organics	n/a	ND		mg/Kg	8.2	1.3	

Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.5		mg/Kg	0.19	0.039	2.1	73.7	50	150	1
Squalane	111-01-3	1.4		mg/Kg	0.26	0.053	2.1	69.6	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-10B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.73 g	Prep Extract Vol:	9.91 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Moisture	na	8.3		%	0.046	0.0092	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-10A	Analysis Date:	10/8/2003 2:45:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100816.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	8.34
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	25.70 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.017	0.0019	1
Ethylbenzene	100-41-4	0.025		mg/Kg	0.017	0.0017	
Toluene	108-88-3	0.030		mg/Kg	0.017	0.0023	
Xylenes, Total	1330-20-7	0.18		mg/Kg	0.034	0.0049	

Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.5		mg/Kg	0.42	0.053	2.7	92.9	50	150	1
Difluorobenzene(PID)	540-36-3	1.4		mg/Kg	0.017	0.0021	1.3	102	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 40 SL

Matrix: Soil

Collection Date: 9/26/2003 5:30:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-11B	Analysis Date:	10/10/2003 11:48:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100993.D
Prep Method ID:	3550	Dilution Factor:	10
Prep Batch Number:	A031008004	Percent Moisture	8.09
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.69 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	**3,400**		mg/Kg	42	6.5	1
Residual Range Organics	n/a	ND		mg/Kg	85	13	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**2.1**		mg/Kg	2.0	0.40	2.1	**97.6**	50	150	1
Squalane	111-01-3	ND		mg/Kg	2.7	0.54	2.1	**81.0**	50	150	DIL

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-11B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.82 g	Prep Extract Vol:	10.02 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	**8.1**		%	0.046	0.0093	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-11A	Analysis Date:	10/8/2003 3:15:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100817.D
Prep Method ID:	5035	Dilution Factor:	4
Prep Batch Number:	A031008003	Percent Moisture	8.09
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	39.29 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.044	0.0049	1
Ethylbenzene	100-41-4	**0.17**		mg/Kg	0.044	0.0045	
Gasoline Range Organics	n/a	**120**		mg/Kg	9.7	1.4	
Toluene	108-88-3	**0.14**		mg/Kg	0.044	0.0059	
Xylenes, Total	1330-20-7	**2.3**		mg/Kg	0.089	0.013	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	ND		mg/Kg	1.1	0.14	1.7	**0.00**	50	150	1 DIL
Bromofluorobenzene(PID)	1072-85-1	ND		mg/Kg	1.1	0.14	1.7	**0.00**	50	150	DIL

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 40 SL

Matrix: Soil

Collection Date: 9/26/2003 5:30:00PM

Lab Sample Number:	A0310016-11A	Analysis Date:	10/8/2003 3:15:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100817.D
Prep Method ID:	5035	Dilution Factor:	4
Prep Batch Number:	A031008003	Percent Moisture	8.09
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	39.29 g	Prep Extract Vol:	25.00 ml

Difluorobenzene	540-36-3	**3.1**	mg/Kg	0.044	0.0055	3.5	**89.7**	50	150	1	
Difluorobenzene(PID)	540-36-3	**3.5**	mg/Kg	0.044	0.0055	3.5	**102**	50	150		

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0310016-11C	Analysis Date:	10/28/2003 5:12:00AM
Prep Date:	10/8/2003	Instrument:	MS1BNA
Analytical Method ID:	SW8270C - Semivolatile Organics by GC/MS - PAH	File Name:	03102731.D
Prep Method ID:	3550B	Dilution Factor:	2
Prep Batch Number:	T031009004	Percent Moisture	8.09
Report Basis:	Dry Weight Basis	Analyst Initials:	bs
Sample prep wt./vol:	30.05 g	Prep Extract Vol:	2.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Acenaphthene	83-32-9	ND		ug/Kg	370	56	1
Acenaphthylene	208-96-8	ND		ug/Kg	370	61	
Anthracene	120-12-7	ND		ug/Kg	370	57	
Benzo(a)anthracene	56-55-3	ND		ug/Kg	370	37	
Benzo(a)pyrene	50-32-8	ND		ug/Kg	370	41	
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	370	50	
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	370	110	
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	370	84	
Chrysene	218-01-9	ND		ug/Kg	370	40	
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	370	110	
Fluoranthene	206-44-0	ND		ug/Kg	370	46	
Fluorene	86-73-7	ND		ug/Kg	370	54	
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	370	100	
Naphthalene	91-20-3	**260**	J	ug/Kg	370	43	
Phenanthrene	85-01-8	**150**	J	ug/Kg	370	43	
Pyrene	129-00-0	ND		ug/Kg	370	60	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
2-Fluorobiphenyl	321-60-8	**2,000**		ug/Kg	370	44	3,600	**56.0**	36	121	1
D14-Terphenyl	92-94-4D	**2,800**		ug/Kg	370	44	3,600	**76.6**	30	134	
D5-Nitrobenzene	98-95-3D	**2,500**		ug/Kg	370	55	3,600	**69.6**	30	122	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 41 SL

Matrix: Soil

Collection Date: 9/26/2003 6:12:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-12B	Analysis Date:	10/10/2003 3:36:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100975.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	8.24
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.55 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Diesel Range Organics	n/a	47		mg/Kg	4.3	0.66	1
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3	

Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.9		mg/Kg	0.20	0.040	2.1	89.7	50	150	1
Squalane	111-01-3	1.9		mg/Kg	0.27	0.055	2.1	88.1	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-12B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.69 g	Prep Extract Vol:	9.88 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Moisture	na	8.2		%	0.046	0.0093	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-12A	Analysis Date:	10/8/2003 4:45:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100820.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	8.24
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	32.67 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.013	0.0015	1
Ethylbenzene	100-41-4	0.063		mg/Kg	0.013	0.0014	
Toluene	108-88-3	0.061		mg/Kg	0.013	0.0018	
Xylenes, Total	1330-20-7	0.42		mg/Kg	0.027	0.0038	

Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	1.8		mg/Kg	0.33	0.042	2.1	85.3	50	150	1
Difluorobenzene(PID)	540-36-3	1.1		mg/Kg	0.013	0.0017	1.0	104	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 42 SL

Matrix: Soil

Collection Date: 9/26/2003 6:30:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-13B	Analysis Date:	10/10/2003 4:04:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100976.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	15
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.42 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	18		mg/Kg	4.6	0.72	1
Residual Range Organics	n/a	ND		mg/Kg	9.3	1.4	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.5		mg/Kg	0.22	0.044	2.3	**64.3**	50	150	1
Squalane	111-01-3	1.5		mg/Kg	0.30	0.060	2.3	**64.1**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-13B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.91 g	Prep Extract Vol:	9.38 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	15		%	0.043	0.0086	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-13A	Analysis Date:	10/9/2003 12:26:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100910.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	15
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	44.46 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.011	0.0012	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.011	0.0011	
Gasoline Range Organics	n/a	ND		mg/Kg	2.3	0.33	
Toluene	108-88-3	ND		mg/Kg	0.011	0.0014	
Xylenes, Total	1330-20-7	**0.026**		mg/Kg	0.021	0.0030	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	1.3		mg/Kg	0.27	0.033	1.7	**76.9**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	1.4		mg/Kg	0.27	0.033	1.7	**82.9**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 42 SL

Matrix: Soil

Collection Date: 9/26/2003 6:30:00PM

Lab Sample Number:	A0310016-13A	Analysis Date:	10/9/2003 12:26:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100910.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	15
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	44.46 g	Prep Extract Vol:	25.00 ml

Difluorobenzene	540-36-3	**0.74**	mg/Kg	0.011	0.0013	0.83	**89.3**	50	150	1
Difluorobenzene(PID)	540-36-3	**0.85**	mg/Kg	0.011	0.0013	0.83	**102**	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0310016-13C	Analysis Date:	10/28/2003 5:47:00AM
Prep Date:	10/8/2003	Instrument:	MS1BNA
Analytical Method ID:	SW8270C - Semivolatile Organics by GC/MS - PAH	File Name:	03102732.D
Prep Method ID:	3550B	Dilution Factor:	2
Prep Batch Number:	T031009004	Percent Moisture	15
Report Basis:	Dry Weight Basis	Analyst Initials:	bs
Sample prep wt./vol:	30.06 g	Prep Extract Vol:	2.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Acenaphthene	83-32-9	ND		ug/Kg	400	61	1
Acenaphthylene	208-96-8	ND		ug/Kg	400	66	
Anthracene	120-12-7	ND		ug/Kg	400	62	
Benzo(a)anthracene	56-55-3	ND		ug/Kg	400	40	
Benzo(a)pyrene	50-32-8	ND		ug/Kg	400	45	
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	400	54	
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	400	120	
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	400	91	
Chrysene	218-01-9	ND		ug/Kg	400	43	
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	400	120	
Fluoranthene	206-44-0	ND		ug/Kg	400	50	
Fluorene	86-73-7	ND		ug/Kg	400	58	
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	400	110	
Naphthalene	91-20-3	**140**	J	ug/Kg	400	47	
Phenanthrene	85-01-8	ND		ug/Kg	400	47	
Pyrene	129-00-0	ND		ug/Kg	400	65	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
2-Fluorobiphenyl	321-60-8	**1,900**		ug/Kg	400	48	3,900	**49.2**	36	121	1
D14-Terphenyl	92-94-4D	**2,800**		ug/Kg	400	48	3,900	**71.7**	30	134	
D5-Nitrobenzene	98-95-3D	**2,600**		ug/Kg	400	60	3,900	**66.0**	30	122	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Report Section: Client Sample Report

Client Sample Name: **03RDV 43 SL**

Matrix: Soil

Collection Date: 9/26/2003 6:45:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-14B	Analysis Date:	10/14/2003 12:05:00AM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101370.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture	8.62
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	24.69 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.4	0.68	1
Residual Range Organics	n/a	ND		mg/Kg	8.9	1.4	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**1.6**		mg/Kg	0.21	0.042	2.2	**70.2**	50	150	1
Squalane	111-01-3	**1.6**		mg/Kg	0.28	0.057	2.2	**73.2**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-14B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.88 g	Prep Extract Vol:	10.94 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	**8.6**		%	0.046	0.0092	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-14A	Analysis Date:	10/8/2003 5:45:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100822.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	8.62
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	46.71 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.0094	0.0010	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.0094	0.00096	
Toluene	108-88-3	**0.011**		mg/Kg	0.0094	0.0013	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.019	0.0027	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	**1.4**		mg/Kg	0.23	0.029	1.5	**93.7**	50	150	1
Difluorobenzene(PID)	540-36-3	**0.75**		mg/Kg	0.0094	0.0012	0.73	**103**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 44 SL

Matrix: Soil

Collection Date: 9/27/2003 9:55:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-15B
Prep Date: 10/8/2003
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)
Prep Method ID: 3550
Prep Batch Number: A031008004
Report Basis: Dry Weight Basis
Sample prep wt./vol: 25.57 g

Analysis Date: 10/10/2003 7:42:00AM
Instrument: Roo
File Name: R3100983.D
Dilution Factor: 1
Percent Moisture 7.53
Analyst Initials: HW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.2	0.65	1
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.7		mg/Kg	0.20	0.040	2.1	**79.1**	50	150	1
Squalane	111-01-3	1.7		mg/Kg	0.27	0.054	2.1	**81.0**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-15B
Prep Date: 10/8/2003
Analytical Method ID: ASTM D2216 - % moisture
Prep Method ID: D2216
Prep Batch Number: A031010007
Report Basis: As Received
Sample prep wt./vol: 10.81 g

Analysis Date: 10/9/2003 9:15:00AM
Instrument: SCALE
File Name:
Dilution Factor: 1
Percent Moisture
Analyst Initials: JS
Prep Extract Vol: 10.07 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	7.5		%	0.047	0.0093	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-15A
Prep Date: 10/8/2003
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX
Prep Method ID: 5035
Prep Batch Number: A031008003
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.73 g

Analysis Date: 10/8/2003 6:14:00PM
Instrument: Natasha
File Name: N3100823.D
Dilution Factor: 1
Percent Moisture 7.53
Analyst Initials: SG
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.015	0.0016	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.015	0.0015	
Toluene	108-88-3	ND		mg/Kg	0.015	0.0020	
Xylenes, Total	1330-20-7	**0.037**		mg/Kg	0.029	0.0042	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.2		mg/Kg	0.36	0.045	2.3	**97.0**	50	150	1
Difluorobenzene(PID)	540-36-3	1.2		mg/Kg	0.015	0.0018	1.1	**105**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Report Section: Client Sample Report

Client Sample Name: **03RDV 45 SL**

Matrix: Soil

Collection Date: 9/27/2003 10:30:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-16B
Prep Date: 10/8/2003
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)
Prep Method ID: 3550
Prep Batch Number: A031008004
Report Basis: Dry Weight Basis
Sample prep wt./vol: 26.67 g

Analysis Date: 10/10/2003 8:10:00AM
Instrument: Roo
File Name: R3100984.D
Dilution Factor: 1
Percent Moisture 7.62
Analyst Initials: HW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.1	0.63	1
Residual Range Organics	n/a	ND		mg/Kg	8.1	1.2	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.6		mg/Kg	0.19	0.038	2.0	77.2	50	150	1
Squalane	111-01-3	1.6		mg/Kg	0.26	0.052	2.0	78.6	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-16B
Prep Date: 10/8/2003
Analytical Method ID: ASTM D2216 - % moisture
Prep Method ID: D2216
Prep Batch Number: A031010007
Report Basis: As Received
Sample prep wt./vol: 11.30 g

Analysis Date: 10/9/2003 9:15:00AM
Instrument: SCALE
File Name:
Dilution Factor: 1
Percent Moisture
Analyst Initials: JS
Prep Extract Vol: 10.51 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	7.6		%	0.047	0.0093	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0310016-16A
Prep Date: 10/8/2003
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX
Prep Method ID: 5035
Prep Batch Number: A031008003
Report Basis: Dry Weight Basis
Sample prep wt./vol: 32.70 g

Analysis Date: 10/9/2003 12:56:00PM
Instrument: Natasha
File Name: N3100911.D
Dilution Factor: 1
Percent Moisture 7.62
Analyst Initials: SG
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.013	0.0015	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.013	0.0014	
Toluene	108-88-3	ND		mg/Kg	0.013	0.0018	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.026	0.0038	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.0		mg/Kg	0.33	0.041	2.1	97.0	50	150	1
Difluorobenzene(PID)	540-36-3	1.1		mg/Kg	0.013	0.0017	1.0	103	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 46 SL

Matrix: Soil

Collection Date: 9/27/2003 10:55:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-17B	Analysis Date:	10/10/2003 8:37:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100985.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	8.69
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.98 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.2	0.65	1
Residual Range Organics	n/a	ND		mg/Kg	8.4	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.2		mg/Kg	0.20	0.040	2.1	**57.9**	50	150	1
Squalane	111-01-3	1.3		mg/Kg	0.27	0.054	2.1	**59.8**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-17B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.88 g	Prep Extract Vol:	10.02 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	8.7		%	0.046	0.0092	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-17A	Analysis Date:	10/8/2003 7:14:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100825.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	8.69
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	29.43 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.015	0.0016	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.015	0.0015	
Toluene	108-88-3	ND		mg/Kg	0.015	0.0020	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.030	0.0043	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.3		mg/Kg	0.37	0.047	2.3	**100**	50	150	1
Difluorobenzene(PID)	540-36-3	1.2		mg/Kg	0.015	0.0019	1.2	**103**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 47 SL

Matrix: Soil

Collection Date: 9/27/2003 11:20:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-18B	Analysis Date:	10/10/2003 9:04:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100986.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	11
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	26.30 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.2	0.66	1
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**1.7**		mg/Kg	0.20	0.040	2.1	**80.1**	50	150	1
Squalane	111-01-3	**1.8**		mg/Kg	0.27	0.055	2.1	**83.8**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-18B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.95 g	Prep Extract Vol:	9.91 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	**10**		%	0.045	0.0090	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-18A	Analysis Date:	10/9/2003 1:26:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100912.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	11
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	26.74 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.017	0.0018	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.017	0.0017	
Toluene	108-88-3	ND		mg/Kg	0.017	0.0022	
Xylenes, Total	1330-20-7	**0.048**		mg/Kg	0.033	0.0048	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	**2.5**		mg/Kg	0.42	0.052	2.6	**95.9**	50	150	1
Difluorobenzene(PID)	540-36-3	**1.3**		mg/Kg	0.017	0.0021	1.3	**102**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 48 SL

Matrix: Soil

Collection Date: 9/27/2003 1:40:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-19B	Analysis Date:	10/10/2003 9:31:00AM
Prep Date:	10/8/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3100987.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031008004	Percent Moisture	9.48
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.49 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.3	0.67	1
Residual Range Organics	n/a	ND		mg/Kg	8.7	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.7		mg/Kg	0.20	0.041	2.2	**76.2**	50	150	1
Squalane	111-01-3	1.7		mg/Kg	0.28	0.056	2.2	**80.2**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-19B	Analysis Date:	10/9/2003 9:15:00AM
Prep Date:	10/8/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010007	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.95 g	Prep Extract Vol:	10.01 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	9.5		%	0.046	0.0091	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-19A	Analysis Date:	10/9/2003 1:56:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100913.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	9.48
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	22.77 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.019	0.0021	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.019	0.0020	
Toluene	108-88-3	**0.029**		mg/Kg	0.019	0.0026	
Xylenes, Total	1330-20-7	**0.069**		mg/Kg	0.039	0.0056	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	3.0		mg/Kg	0.49	0.061	3.0	**98.4**	50	150	1
Difluorobenzene(PID)	540-36-3	1.6		mg/Kg	0.019	0.0024	1.5	**103**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 50 SL

Matrix: Soil

Collection Date: 9/27/2003 3:15:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-20B	Analysis Date:	10/13/2003 8:54:00PM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101363.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture	9.93
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.43 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.4	0.67	1
Residual Range Organics	n/a	13		mg/Kg	8.7	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.8		mg/Kg	0.20	0.041	2.2	82.4	50	150	1
Squalane	111-01-3	2.0		mg/Kg	0.28	0.056	2.2	91.9	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-20B	Analysis Date:	10/10/2003 9:50:00AM
Prep Date:	10/9/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010006	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.38 g	Prep Extract Vol:	10.34 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	9.9		%	0.045	0.0091	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-20A	Analysis Date:	10/9/2003 2:26:00PM
Prep Date:	10/8/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100914.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031008003	Percent Moisture	9.93
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	28.17 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0017	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016	
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021	
Xylenes, Total	1330-20-7	0.047		mg/Kg	0.032	0.0045	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	2.3		mg/Kg	0.39	0.049	2.5	91.5	50	150	1
Difluorobenzene(PID)	540-36-3	1.3		mg/Kg	0.016	0.0020	1.2	102	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 51 SL

Matrix: Soil

Collection Date: 9/27/2003 3:17:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-21B	Analysis Date:	10/13/2003 9:21:00PM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101364.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture	9.80
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.37 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	**20**		mg/Kg	4.4	0.68	1
Residual Range Organics	n/a	**15**		mg/Kg	8.7	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**1.8**		mg/Kg	0.21	0.041	2.2	**84.2**	50	150	1
Squalane	111-01-3	**2.0**		mg/Kg	0.28	0.056	2.2	**89.8**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-21B	Analysis Date:	10/10/2003 9:50:00AM
Prep Date:	10/9/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010006	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	12.14 g	Prep Extract Vol:	11.04 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	**9.8**		%	0.045	0.0091	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-21A	Analysis Date:	10/9/2003 2:56:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100915.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture	9.80
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	28.31 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0017	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016	
Toluene	108-88-3	**0.018**		mg/Kg	0.016	0.0021	
Xylenes, Total	1330-20-7	**0.053**		mg/Kg	0.031	0.0045	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	**2.2**		mg/Kg	0.39	0.049	2.4	**91.6**	50	150	1
Difluorobenzene(PID)	540-36-3	**1.2**		mg/Kg	0.016	0.0020	1.2	**101**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 52 SL

Matrix: Soil

Collection Date: 9/27/2003 3:40:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-22B	Analysis Date:	10/13/2003 9:48:00PM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101365.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture	8.94
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.96 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.2	0.65	1
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**1.6**		mg/Kg	0.20	0.040	2.1	**73.3**	50	150	1
Squalane	111-01-3	**1.7**		mg/Kg	0.27	0.054	2.1	**78.5**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-22B	Analysis Date:	10/10/2003 9:50:00AM
Prep Date:	10/9/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010006	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.26 g	Prep Extract Vol:	10.34 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	**8.9**		%	0.046	0.0092	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-22A	Analysis Date:	10/9/2003 3:32:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100916.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture	8.94
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	24.86 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.018	0.0019	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.018	0.0018	
Toluene	108-88-3	ND		mg/Kg	0.018	0.0024	
Xylenes, Total	1330-20-7	**0.045**		mg/Kg	0.035	0.0051	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	**2.6**		mg/Kg	0.44	0.055	2.8	**92.8**	50	150	1
Difluorobenzene(PID)	540-36-3	**1.4**		mg/Kg	0.018	0.0022	1.4	**102**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 53 SL

Matrix: Soil

Collection Date: 9/27/2003 4:20:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-23B	Analysis Date:	10/13/2003 10:16:00PM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101366.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture	10
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.50 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	**10**		mg/Kg	4.4	0.68	1
Residual Range Organics	n/a	ND		mg/Kg	8.7	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**1.6**		mg/Kg	0.21	0.041	2.2	**74.6**	50	150	1
Squalane	111-01-3	**1.6**		mg/Kg	0.28	0.056	2.2	**75.3**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-23B	Analysis Date:	10/10/2003 9:50:00AM
Prep Date:	10/9/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010006	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.31 g	Prep Extract Vol:	10.25 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	**10**		%	0.045	0.0091	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-23A	Analysis Date:	10/9/2003 4:02:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	Aromatic VOCs by GC/FID via method 8021B - BTEX	File Name:	N3100917.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture	10
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	32.06 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.014	0.0015	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.014	0.0014	
Toluene	108-88-3	**0.015**		mg/Kg	0.014	0.0019	
Xylenes, Total	1330-20-7	**0.037**		mg/Kg	0.028	0.0040	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	**2.1**		mg/Kg	0.35	0.043	2.2	**94.6**	50	150	1
Difluorobenzene(PID)	540-36-3	**1.1**		mg/Kg	0.014	0.0017	1.1	**102**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 54 SL

Matrix: Soil

Collection Date: 9/27/2003 4:30:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-24B	Analysis Date:	10/13/2003 10:43:00PM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101367.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture	12
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	25.22 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.5	0.69	1
Residual Range Organics	n/a	ND		mg/Kg	9.0	1.4	

Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.9		mg/Kg	0.21	0.042	2.2	**85.2**	50	150	1
Squalane	111-01-3	2.0		mg/Kg	0.29	0.058	2.2	**90.6**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-24B	Analysis Date:	10/10/2003 9:50:00AM
Prep Date:	10/9/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010006	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	11.49 g	Prep Extract Vol:	10.28 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Moisture	na	12		%	0.045	0.0089	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-24A	Analysis Date:	10/9/2003 5:32:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100920.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture	12
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	35.68 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.013	0.0014	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.013	0.0013	
Gasoline Range Organics	n/a	ND		mg/Kg	2.8	0.39	
Toluene	108-88-3	**0.013**		mg/Kg	0.013	0.0017	
Xylenes, Total	1330-20-7	**0.030**		mg/Kg	0.025	0.0036	

Surrogate	CASNo	Result	Flags	Units	POL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	1.8		mg/Kg	0.32	0.040	2.0	**89.0**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	2.0		mg/Kg	0.32	0.040	2.0	**103**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 54 SL

Matrix: Soil

Collection Date: 9/27/2003 4:30:00PM

Lab Sample Number:	A0310016-24A	Analysis Date:	10/9/2003 5:32:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100920.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture	12
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	35.68 g	Prep Extract Vol:	25.00 ml

Difluorobenzene	540-36-3	**0.84**	mg/Kg	0.013	0.0016	0.99	**85.2**	50	150	1
Difluorobenzene(PID)	540-36-3	**1.1**	mg/Kg	0.013	0.0016	0.99	**106**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: 03RDV 55 SL

Matrix: Soil

Collection Date: 9/27/2003 4:32:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-25B	Analysis Date:	10/13/2003 11:10:00PM
Prep Date:	10/10/2003	Instrument:	Roo
Analytical Method ID:	ADEC AK102/103 - (DRO & RRO)	File Name:	R3101368.D
Prep Method ID:	3550	Dilution Factor:	1
Prep Batch Number:	A031010004	Percent Moisture	11
Report Basis:	Dry Weight Basis	Analyst Initials:	HW
Sample prep wt./vol:	26.39 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.3	0.66	1
Residual Range Organics	n/a	ND		mg/Kg	8.5	1.3	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.5		mg/Kg	0.20	0.040	2.1	72.0	50	150	1
Squalane	111-01-3	1.6		mg/Kg	0.27	0.055	2.1	74.3	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-25B	Analysis Date:	10/10/2003 9:50:00AM
Prep Date:	10/9/2003	Instrument:	SCALE
Analytical Method ID:	ASTM D2216 - % moisture	File Name:	
Prep Method ID:	D2216	Dilution Factor:	1
Prep Batch Number:	A031010006	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	JS
Sample prep wt./vol:	10.92 g	Prep Extract Vol:	9.79 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	11		%	0.045	0.0090	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-25A	Analysis Date:	10/9/2003 6:02:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100921.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture	11
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	28.16 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016	
Gasoline Range Organics	n/a	ND		mg/Kg	3.5	0.49	
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021	
Xylenes, Total	1330-20-7	0.035		mg/Kg	0.032	0.0046	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	2.4		mg/Kg	0.40	0.050	2.5	95.1	50	150	1
Bromofluorobenzene(PID)	1072-85-1	2.5		mg/Kg	0.40	0.050	2.5	100	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Report Section: Client Sample Report

Client Sample Name: **03RDV 55 SL**

Matrix: Soil

Collection Date: 9/27/2003 4:32:00PM

Lab Sample Number:	A0310016-25A	Analysis Date:	10/9/2003 6:02:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100921.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture	11
Report Basis:	Dry Weight Basis	Analyst Initials:	SG
Sample prep wt./vol:	28.16 g	Prep Extract Vol:	25.00 ml

Difluorobenzene	540-36-3	**1.1**	mg/Kg	0.016	0.0020	1.3	**89.6**	50	150	1
Difluorobenzene(PID)	540-36-3	**1.3**	mg/Kg	0.016	0.0020	1.3	**103**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Client Sample Report

Client Sample Name: Trip Blank

Matrix: Soil

Collection Date: 9/27/2003 4:32:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0310016-26A	Analysis Date:	10/9/2003 6:31:00PM
Prep Date:	10/9/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100922.D
Prep Method ID:	5035	Dilution Factor:	1
Prep Batch Number:	A031009001	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	SG
Sample prep wt./vol:	23.74 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.017	0.0019	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.017	0.0017	
Gasoline Range Organics	n/a	ND		mg/Kg	3.7	0.52	
Toluene	108-88-3	ND		mg/Kg	0.017	0.0023	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.034	0.0048	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	2.6		mg/Kg	0.42	0.053	2.6	**100**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	3.0		mg/Kg	0.42	0.053	2.6	**113**	50	150	
Difluorobenzene	540-36-3	1.1		mg/Kg	0.017	0.0021	1.3	**85.6**	50	150	
Difluorobenzene(PID)	540-36-3	1.4		mg/Kg	0.017	0.0021	1.3	**107**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Solid

Collection Date: 10/8/2003 12:00:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031008004-MB
Prep Date: 10/8/2003
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)
Prep Method ID: 3550
Prep Batch Number: A031008004
Report Basis: Dry Weight Basis
Sample prep wt./vol: 25.00 g

Analysis Date: 10/9/2003 7:51:00PM
Instrument: Roo
File Name: R3100958.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: HW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	4.0	0.62	1
Residual Range Organics	n/a	ND		mg/Kg	8.0	1.2	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.3		mg/Kg	0.19	0.038	2.0	65.2	50	150	1
Squalane	111-01-3	1.4		mg/Kg	0.26	0.051	2.0	67.6	50	150	

Lab Sample Number: A031010004-MB
Prep Date: 10/10/2003
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)
Prep Method ID: 3550
Prep Batch Number: A031010004
Report Basis: Dry Weight Basis
Sample prep wt./vol: 25.84 g

Analysis Date: 10/13/2003 7:32:00PM
Instrument: Roo
File Name: R3101360.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: HW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/Kg	3.9	0.60	1
Residual Range Organics	n/a	ND		mg/Kg	7.7	1.2	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	1.6		mg/Kg	0.18	0.036	1.9	82.3	50	150	1
Squalane	111-01-3	1.7		mg/Kg	0.25	0.050	1.9	89.9	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031010006-MB
Prep Date: 10/9/2003
Analytical Method ID: ASTM D2216 - % moisture
Prep Method ID: D2216
Prep Batch Number: A031010006
Report Basis: Dry Weight Basis
Sample prep wt./vol: 11.11 g

Analysis Date: 10/10/2003 9:50:00AM
Instrument: SCALE
File Name:
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: JS
Prep Extract Vol: 11.11 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	ND		%	0.050	0.010	1

Lab Sample Number: A031010007-MB
Prep Date: 10/8/2003
Analytical Method ID: ASTM D2216 - % moisture
Prep Method ID: D2216

Analysis Date: 10/9/2003 9:15:00AM
Instrument: SCALE
File Name:
Dilution Factor: 1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Solid

Collection Date: 10/10/2003 5:21:31PM

Prep Batch Number: A031010007

Report Basis: Dry Weight Basis

Sample prep wt./vol: 11.02 g

Percent Moisture: NA

Analyst Initials: JS

Prep Extract Vol: 11.01 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Moisture	na	ND		%	0.050	0.010	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031008003-MB

Prep Date: 10/8/2003

Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B

Prep Method ID: 5035

Prep Batch Number: A031008003

Report Basis: Dry Weight Basis

Sample prep wt./vol: 25.00 g

Analysis Date: 10/8/2003 8:47:00AM

Instrument: Natasha

File Name: N3100804.D

Dilution Factor: 1

Percent Moisture: NA

Analyst Initials: SG

Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016	
Gasoline Range Organics	n/a	ND		mg/Kg	3.5	0.49	
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.032	0.0046	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**2.6**		mg/Kg	0.40	0.050	2.5	**103**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**2.6**		mg/Kg	0.40	0.050	2.5	**105**	50	150	
Difluorobenzene	540-36-3	**1.2**		mg/Kg	0.016	0.0020	1.3	**92.3**	50	150	
Difluorobenzene(PID)	540-36-3	**1.3**		mg/Kg	0.016	0.0020	1.3	**102**	50	150	

Lab Sample Number: A031009001-MB

Prep Date: 10/9/2003

Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B

Prep Method ID: 5035

Prep Batch Number: A031009001

Report Basis: Dry Weight Basis

Sample prep wt./vol: 25.00 g

Analysis Date: 10/9/2003 8:42:00AM

Instrument: Natasha

File Name: N3100904.D

Dilution Factor: 1

Percent Moisture: NA

Analyst Initials: SG

Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016	
Gasoline Range Organics	n/a	ND		mg/Kg	3.5	0.49	
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.032	0.0046	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**2.5**		mg/Kg	0.40	0.050	2.5	**102**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**2.6**		mg/Kg	0.40	0.050	2.5	**103**	50	150	
Difluorobenzene	540-36-3	**1.1**		mg/Kg	0.016	0.0020	1.3	**89.5**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Solid

Collection Date: 10/9/2003 12:00:00AM

Lab Sample Number: A031009001-MB
Prep Date: 10/9/2003
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B
Prep Method ID: 5035
Prep Batch Number: A031009001
Report Basis: Dry Weight Basis
Sample prep wt./vol: 25.00 g

Analysis Date: 10/9/2003 8:42:00AM
Instrument: Natasha
File Name: N3100904.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: SG
Prep Extract Vol: 25.00 ml

Difluorobenzene(PID)	540-36-3	**1.3**	mg/Kg	0.016	0.0020	1.3	**103**	50	150	1

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031008003-MB
Prep Date: 10/8/2003
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX
Prep Method ID: 5035
Prep Batch Number: A031008003
Report Basis: Dry Weight Basis
Sample prep wt./vol: 25.00 g

Analysis Date: 10/8/2003 8:47:00AM
Instrument: Natasha
File Name: N3100804.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: SG
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016	
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.032	0.0046	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	**2.6**		mg/Kg	0.40	0.050	2.5	**105**	50	150	1
Difluorobenzene(PID)	540-36-3	**1.3**		mg/Kg	0.016	0.0020	1.3	**102**	50	150	

Lab Sample Number: A031009001-MB
Prep Date: 10/9/2003
Analytical Method ID: Aromatic VOCs by GC/FID via method 8021B - BTEX
Prep Method ID: 5035
Prep Batch Number: A031009001
Report Basis: Dry Weight Basis
Sample prep wt./vol: 25.00 g

Analysis Date: 10/9/2003 8:42:00AM
Instrument: Natasha
File Name: N3100904.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: SG
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		mg/Kg	0.016	0.0018	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.016	0.0016	
Toluene	108-88-3	ND		mg/Kg	0.016	0.0021	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.032	0.0046	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene(PID)	1072-85-1	**2.6**		mg/Kg	0.40	0.050	2.5	**103**	50	150	1
Difluorobenzene(PID)	540-36-3	**1.3**		mg/Kg	0.016	0.0020	1.3	**103**	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T031009004-MB

Analysis Date: 10/26/2003 6:40:00AM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Solid

Collection Date: 10/8/2003 3:30:00PM

Prep Date:	10/8/2003	Instrument:	MS1BNA
Analytical Method ID:	SW8270C - Semivolatile Organics by GC/MS - PAH	File Name:	03102539.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T031009004	Percent Moisture	NA
Report Basis:	Dry Weight Basis	Analyst Initials:	bs
Sample prep wt./vol:	30.07 g	Prep Extract Vol:	2.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Acenaphthene	83-32-9	ND		ug/Kg	170	26	1
Acenaphthylene	208-96-8	ND		ug/Kg	170	28	
Anthracene	120-12-7	ND		ug/Kg	170	26	
Benzo(a)anthracene	56-55-3	ND		ug/Kg	170	17	
Benzo(a)pyrene	50-32-8	ND		ug/Kg	170	19	
Benzo(b)fluoranthene	205-99-2	ND		ug/Kg	170	23	
Benzo(g,h,i)perylene	191-24-2	ND		ug/Kg	170	51	
Benzo(k)fluoranthene	207-08-9	ND		ug/Kg	170	39	
Chrysene	218-01-9	ND		ug/Kg	170	18	
Dibenzo(a,h)anthracene	53-70-3	ND		ug/Kg	170	51	
Fluoranthene	206-44-0	ND		ug/Kg	170	21	
Fluorene	86-73-7	ND		ug/Kg	170	25	
Indeno(1,2,3-cd)pyrene	193-39-5	ND		ug/Kg	170	47	
Naphthalene	91-20-3	ND		ug/Kg	170	20	
Phenanthrene	85-01-8	ND		ug/Kg	170	20	
Pyrene	129-00-0	ND		ug/Kg	170	28	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
2-Fluorobiphenyl	321-60-8	**1,700**		ug/Kg	170	20	3,300	**51.0**	36	121	1
D14-Terphenyl	92-94-4D	**2,500**		ug/Kg	170	20	3,300	**74.3**	30	134	
D5-Nitrobenzene	98-95-3D	**1,400**		ug/Kg	170	25	3,300	**41.5**	30	122	

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **A031010007**

SAMPLE DUPLICATE REPORT

Analysis: ASTM D2216 - % moisture

Base Sample: A0310016-19B
Prep Date: 10/8/2003

Samp. Anal. Date: 10/9/2003 9:15:00AM

Units: %

DUP Anal. Date: 10/9/2003 9:15:00AM

Matrix: Soil

Analyte Name	SampResult	DUPRes.	RPD	RPDLim	Flag
Moisture	9.48	9.97	5.0	20	

Prep Batch: **A031008004**

LCS/LCSD REPORT

Analysis: ADEC AK102/103 - (DRO & RRO)

MB: A031008004-MB
Prep Date: 10/8/2003

MB Anal. Date: 10/9/2003 7:51:00PM

Units: mg/Kg

LCS Anal. Date: 10/9/2003 8:18:00PM LCSD Anal. Date: 10/9/2003 8:46:00PM

Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	66.8	67.6	78.3	79.6	85.4	84.9	1.2	60 - 120	20	
Residual Range Organics	ND	66.9	74.9	78.3	79.6	85.5	94.1	11.3	60 - 120	20	

Prep Batch: **A031010004**

LCS/LCSD REPORT

Analysis: ADEC AK102/103 - (DRO & RRO)

MB: A031010004-MB
Prep Date: 10/10/2003

MB Anal. Date: 10/13/2003 7:32:00PM

Units: mg/Kg

LCS Anal. Date: 10/13/2003 7:59:00PM LCSD Anal. Date: 10/13/2003 8:27:00PM

Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	63.9	69.1	76.4	78.6	83.6	87.9	7.8	60 - 120	20	
Residual Range Organics	ND	69.9	80.4	76.4	78.6	91.5	102.3	14.0	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **A031008003**

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/FID via method 8021B - BTEX

MB: A031008003-MB

Prep Date: 10/8/2003

MB Anal. Date: 10/8/2003 8:47:00AM

Units: mg/Kg

LCS Anal. Date: 10/8/2003 9:17:00AM LCSD Anal. Date: 10/8/2003 9:47:00AM Matrix: Soil

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.374	0.371	0.345	0.345	108.5	107.6	0.8	60 - 120	20	
Toluene	ND	1.90	1.86	2.11	2.11	89.9	88.0	2.1	60 - 120	20	
Ethylbenzene	ND	0.572	0.571	0.507	0.507	112.8	112.6	0.2	60 - 120	20	
Xylenes, Total	ND	2.77	2.74	2.48	2.48	111.7	110.5	1.1	60 - 120	20	

Prep Batch: **A031009001**

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/FID via method 8021B - BTEX

MB: A031009001-MB

Prep Date: 10/9/2003

MB Anal. Date: 10/9/2003 8:42:00AM

Units: mg/Kg

LCS Anal. Date: 10/9/2003 9:12:00AM LCSD Anal. Date: 10/9/2003 9:41:00AM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.389	0.362	0.345	0.345	112.8	105.0	7.2	60 - 120	20	
Toluene	ND	1.95	1.84	2.11	2.11	92.3	87.1	5.8	60 - 120	20	
Ethylbenzene	ND	0.549	0.560	0.507	0.507	108.3	110.4	2.0	60 - 120	20	
Xylenes, Total	ND	2.72	2.77	2.48	2.48	109.7	111.7	1.8	60 - 120	20	

Prep Batch: **A031008003**

LCS/LCSD REPORT

Analysis: GRO by ADEC AK101 & BTEX by 8021B

MB: A031008003-MB

Prep Date: 10/8/2003

MB Anal. Date: 10/8/2003 8:47:00AM

Units: mg/Kg

LCS Anal. Date: 10/8/2003 9:17:00AM LCSD Anal. Date: 10/8/2003 9:47:00AM Matrix: Soil

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.374	0.371	0.345	0.345	108.5	107.6	0.8	60 - 120	20	
Toluene	ND	1.90	1.86	2.11	2.11	89.9	88.0	2.1	60 - 120	20	
Ethylbenzene	ND	0.572	0.571	0.507	0.507	112.8	112.6	0.2	60 - 120	20	

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **A031008003**

LCS/LCSD REPORT

Analysis: GRO by ADEC AK101 & BTEX by 8021B

MB: A031008003-MB

Prep Date: 10/8/2003

MB Anal. Date: 10/8/2003 8:47:00AM

Units: mg/Kg

LCS Anal. Date: 10/8/2003 9:17:00AM LCSD Anal. Date: 10/8/2003 9:47:00AM Matrix: Soil

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Xylenes, Total	ND	2.77	2.74	2.48	2.48	111.7	110.5	1.1	60 - 120	20	
Gasoline Range Organics	ND	21.3	22.9	27.5	27.5	77.5	83.3	7.2	60 - 120	20	

Prep Batch: **A031009001**

LCS/LCSD REPORT

Analysis: GRO by ADEC AK101 & BTEX by 8021B

MB: A031009001-MB

Prep Date: 10/9/2003

MB Anal. Date: 10/9/2003 8:42:00AM

Units: mg/Kg

LCS Anal. Date: 10/9/2003 9:12:00AM LCSD Anal. Date: 10/9/2003 9:41:00AM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.389	0.362	0.345	0.345	112.8	105.0	7.2	60 - 120	20	
Toluene	ND	1.95	1.84	2.11	2.11	92.3	87.1	5.8	60 - 120	20	
Ethylbenzene	ND	0.549	0.560	0.507	0.507	108.3	110.4	2.0	60 - 120	20	
Xylenes, Total	ND	2.72	2.77	2.48	2.48	109.7	111.7	1.8	60 - 120	20	
Gasoline Range Organics	ND	21.6	22.8	27.5	27.5	78.5	82.9	5.4	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Project Number:

Prep Batch: **T031009004**

QUALITY CONTROL REPORT

LCS REPORT

Analysis: SW8270C - Semivolatile Organics by GC/MS - PAH

MB: T031009004-MB

Prep Date: 10/8/2003

MB Anal. Date: 10/26/2003 6:40:00AM

Units: ug/Kg

LCS Anal. Date: 10/26/2003 7:14:00AM

Matrix: Solid

Analyte Name	SampResult	LCSRes.	SPLev	Recov.	Recov Lim	RPDLim	Flag
Naphthalene	ND	1,220	1,670	73.3	45 - 136		
Acenaphthylene	ND	1,430	1,670	85.9	48 - 133		
Acenaphthene	ND	1,530	1,670	91.9	43 - 122		
Fluorene	ND	1,570	1,670	94.3	58 - 130		
Phenanthrene	ND	1,360	1,670	81.7	54 - 140		
Anthracene	ND	1,450	1,670	87.1	59 - 131		
Fluoranthene	ND	1,330	1,670	79.9	51 - 140		
Pyrene	ND	1,600	1,670	96.1	40 - 127		
Benzo(a)anthracene	ND	1,390	1,670	83.5	58 - 118		
Chrysene	ND	2,190	1,670	131.5	55 - 139		
Benzo(b)fluoranthene	ND	1,480	1,670	88.9	41 - 133		
Benzo(k)fluoranthene	ND	1,640	1,670	98.5	49 - 138		
Benzo(a)pyrene	ND	1,450	1,670	87.1	40 - 138		
Indeno(1,2,3-cd)pyrene	ND	1,710	1,670	102.7	48 - 125		
Dibenzo(a,h)anthracene	ND	1,460	1,670	87.7	50 - 129		
Benzo(g,h,i)perylene	ND	1,300	1,670	78.1	50 - 125		

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

SURROGATE RECOVERY SUMMARY REPORT

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **ADEC AK102/103 - (DRO & RRO)**

Lab Sample #: A0310016-01B | Dilution: 1
Analysis Date: 10/9/2003 9:40:00PM | Client Sample: 03RDV 30 SL
Batch Number: A031008004 | Data File: R3100962.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	64	50	150		Complete
Squalane	62	50	150		Complete

Lab Sample #: A0310016-02B | Dilution: 1
Analysis Date: 10/9/2003 10:08:00PM | Client Sample: 03RDV 31 SL
Batch Number: A031008004 | Data File: R3100963.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	65	50	150		Complete
Squalane	65	50	150		Complete

Lab Sample #: A0310016-03B | Dilution: 1
Analysis Date: 10/9/2003 10:35:00PM | Client Sample: 03RDV 32 SL
Batch Number: A031008004 | Data File: R3100964.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	83	50	150		Complete
Squalane	88	50	150		Complete

Lab Sample #: A0310016-04B | Dilution: 1
Analysis Date: 10/10/2003 12:52:00AM | Client Sample: 03RDV 33 SL
Batch Number: A031008004 | Data File: R3100969.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	66	50	150		Complete
Squalane	63	50	150		Complete

Lab Sample #: A0310016-05B | Dilution: 1
Analysis Date: 10/10/2003 1:19:00AM | Client Sample: 03RDV 34 SL
Batch Number: A031008004 | Data File: R3100970.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	79	50	150		Complete
Squalane	78	50	150		Complete

Lab Sample #: A0310016-07B | Dilution: 1
Analysis Date: 10/10/2003 2:14:00AM | Client Sample: 03RDV 36 SL
Batch Number: A031008004 | Data File: R3100972.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	89	50	150		Complete
Squalane	86	50	150		Complete

Lab Sample #: A0310016-08B | Dilution: 1
Analysis Date: 10/10/2003 2:41:00AM | Client Sample: 03RDV 37 SL
Batch Number: A031008004 | Data File: R3100973.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	73	50	150		Complete
Squalane	71	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **ADEC AK102/103 - (DRO & RRO)**

Lab Sample #: A0310016-10B | Dilution: 1
Analysis Date: 10/10/2003 3:09:00AM | Client Sample: **03RDV 39 SL**
Batch Number: A031008004 | Data File: R3100974.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	74	50	150		Complete
Squalane	70	50	150		Complete

Lab Sample #: A0310016-12B | Dilution: 1
Analysis Date: 10/10/2003 3:36:00AM | Client Sample: **03RDV 41 SL**
Batch Number: A031008004 | Data File: R3100975.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	90	50	150		Complete
Squalane	88	50	150		Complete

Lab Sample #: A0310016-13B | Dilution: 1
Analysis Date: 10/10/2003 4:04:00AM | Client Sample: **03RDV 42 SL**
Batch Number: A031008004 | Data File: R3100976.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	64	50	150		Complete
Squalane	64	50	150		Complete

Lab Sample #: A0310016-15B | Dilution: 1
Analysis Date: 10/10/2003 7:42:00AM | Client Sample: **03RDV 44 SL**
Batch Number: A031008004 | Data File: R3100983.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	79	50	150		Complete
Squalane	81	50	150		Complete

Lab Sample #: A0310016-16B | Dilution: 1
Analysis Date: 10/10/2003 8:10:00AM | Client Sample: **03RDV 45 SL**
Batch Number: A031008004 | Data File: R3100984.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	77	50	150		Complete
Squalane	79	50	150		Complete

Lab Sample #: A0310016-17B | Dilution: 1
Analysis Date: 10/10/2003 8:37:00AM | Client Sample: **03RDV 46 SL**
Batch Number: A031008004 | Data File: R3100985.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	58	50	150		Complete
Squalane	60	50	150		Complete

Lab Sample #: A0310016-18B | Dilution: 1
Analysis Date: 10/10/2003 9:04:00AM | Client Sample: **03RDV 47 SL**
Batch Number: A031008004 | Data File: R3100986.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	80	50	150		Complete
Squalane	84	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **ADEC AK102/103 - (DRO & RRO)**

Lab Sample #: A0310016-19B | Dilution: 1
Analysis Date: 10/10/2003 9:31:00AM | Client Sample: **03RDV 48 SL**
Batch Number: A031008004 | Data File: R3100987.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	76	50	150		Complete
Squalane	80	50	150		Complete

Lab Sample #: A0310016-11B | Dilution: 10
Analysis Date: 10/10/2003 11:48:00AM | Client Sample: **03RDV 40 SL**
Batch Number: A031008004 | Data File: R3100993.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	98	50	150		Complete
Squalane	81	50	150	UNDER QUANT LIMIT	Complete

Lab Sample #: A0310016-09B | Dilution: 10
Analysis Date: 10/10/2003 12:16:00PM | Client Sample: **03RDV 38 SL**
Batch Number: A031008004 | Data File: R3100994.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	73	50	150	UNDER QUANT LIMIT	Complete
Squalane	60	50	150	UNDER QUANT LIMIT	Complete

Lab Sample #: A0310016-20B | Dilution: 1
Analysis Date: 10/13/2003 8:54:00PM | Client Sample: **03RDV 50 SL**
Batch Number: A031010004 | Data File: R3101363.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	82	50	150		Complete
Squalane	92	50	150		Complete

Lab Sample #: A0310016-21B | Dilution: 1
Analysis Date: 10/13/2003 9:21:00PM | Client Sample: **03RDV 51 SL**
Batch Number: A031010004 | Data File: R3101364.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	84	50	150		Complete
Squalane	90	50	150		Complete

Lab Sample #: A0310016-22B | Dilution: 1
Analysis Date: 10/13/2003 9:48:00PM | Client Sample: **03RDV 52 SL**
Batch Number: A031010004 | Data File: R3101365.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	73	50	150		Complete
Squalane	79	50	150		Complete

Lab Sample #: A0310016-23B | Dilution: 1
Analysis Date: 10/13/2003 10:16:00PM | Client Sample: **03RDV 53 SL**
Batch Number: A031010004 | Data File: R3101366.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	75	50	150		Complete
Squalane	75	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **ADEC AK102/103 - (DRO & RRO)**

Lab Sample #: A0310016-24B | Dilution: 1
Analysis Date: 10/13/2003 10:43:00PM | Client Sample: **03RDV 54 SL**
Batch Number: A031010004 | Data File: R3101367.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	85	50	150		Complete
Squalane	91	50	150		Complete

Lab Sample #: A0310016-25B | Dilution: 1
Analysis Date: 10/13/2003 11:10:00PM | Client Sample: **03RDV 55 SL**
Batch Number: A031010004 | Data File: R3101368.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	72	50	150		Complete
Squalane	74	50	150		Complete

Lab Sample #: A0310016-06B | Dilution: 1
Analysis Date: 10/13/2003 11:38:00PM | Client Sample: **03RDV 35 SL**
Batch Number: A031010004 | Data File: R3101369.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	62	50	150		Complete
Squalane	66	50	150		Complete

Lab Sample #: A0310016-14B | Dilution: 1
Analysis Date: 10/14/2003 12:05:00AM | Client Sample: **03RDV 43 SL**
Batch Number: A031010004 | Data File: R3101370.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	70	50	150		Complete
Squalane	73	50	150		Complete

Lab Sample #: A031008004-MB | Dilution: 1
Analysis Date: 10/9/2003 7:51:00PM | Client Sample: **MB**
Batch Number: A031008004 | Data File: R3100958.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	65	60	120		Complete
Squalane	68	60	120		Complete

Lab Sample #: A031010004-MB | Dilution: 1
Analysis Date: 10/13/2003 7:32:00PM | Client Sample: **MB**
Batch Number: A031010004 | Data File: R3101360.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	82	60	120		Complete
Squalane	90	60	120		Complete

Lab Sample #: A031008004-LCS | Dilution: 1
Analysis Date: 10/9/2003 8:18:00PM | Client Sample: **LCS**
Batch Number: A031008004 | Data File: R3100959.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	81	60	120		Complete
Squalane	87	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **ADEC AK102/103 - (DRO & RRO)**

Lab Sample #: A031010004-LCS | Dilution: 1
Analysis Date: 10/13/2003 7:59:00PM | Client Sample: **LCS**
Batch Number: A031010004 | Data File: R3101361.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	89	60	120		Complete
Squalane	91	60	120		Complete

Lab Sample #: A031008004-LCSD | Dilution: 1
Analysis Date: 10/9/2003 8:46:00PM | Client Sample: **LCSD**
Batch Number: A031008004 | Data File: R3100960.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	79	60	120		Complete
Squalane	84	60	120		Complete

Lab Sample #: A031010004-LCSD | Dilution: 1
Analysis Date: 10/13/2003 8:27:00PM | Client Sample: **LCSD**
Batch Number: A031010004 | Data File: R3101362.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	93	60	120		Complete
Squalane	96	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **Aromatic VOCs by GC/FID via method 8021B - BTEX**

Lab Sample #: A0310016-01A | Dilution: 25
Analysis Date: 10/8/2003 10:17:00AM | Client Sample: **03RDV 30 SL**
Batch Number: A031008003 | Data File: N3100807.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	91	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-03A | Dilution: 25
Analysis Date: 10/8/2003 11:16:00AM | Client Sample: **03RDV 32 SL**
Batch Number: A031008003 | Data File: N3100809.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	82	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-05A | Dilution: 25
Analysis Date: 10/8/2003 12:15:00PM | Client Sample: **03RDV 34 SL**
Batch Number: A031008003 | Data File: N3100811.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	91	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Lab Sample #: A0310016-06A | Dilution: 25
Analysis Date: 10/8/2003 12:45:00PM | Client Sample: **03RDV 35 SL**
Batch Number: A031008003 | Data File: N3100812.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	94	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-08A | Dilution: 25
Analysis Date: 10/8/2003 1:44:00PM | Client Sample: **03RDV 37 SL**
Batch Number: A031008003 | Data File: N3100814.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	91	50	150		Complete
Difluorobenzene(PID)	105	50	150		Complete

Lab Sample #: A0310016-10A | Dilution: 25
Analysis Date: 10/8/2003 2:45:00PM | Client Sample: **03RDV 39 SL**
Batch Number: A031008003 | Data File: N3100816.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	93	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-12A | Dilution: 25
Analysis Date: 10/8/2003 4:45:00PM | Client Sample: **03RDV 41 SL**
Batch Number: A031008003 | Data File: N3100820.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	85	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **Aromatic VOCs by GC/FID via method 8021B - BTEX**

Lab Sample #: A0310016-14A | Dilution: 25
Analysis Date: 10/8/2003 5:45:00PM | Client Sample: **03RDV 43 SL**
Batch Number: A031008003 | Data File: N3100822.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	94	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-15A | Dilution: 25
Analysis Date: 10/8/2003 6:14:00PM | Client Sample: **03RDV 44 SL**
Batch Number: A031008003 | Data File: N3100823.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	97	50	150		Complete
Difluorobenzene(PID)	105	50	150		Complete

Lab Sample #: A0310016-17A | Dilution: 25
Analysis Date: 10/8/2003 7:14:00PM | Client Sample: **03RDV 46 SL**
Batch Number: A031008003 | Data File: N3100825.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	100	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-16A | Dilution: 25
Analysis Date: 10/9/2003 12:56:00PM | Client Sample: **03RDV 45 SL**
Batch Number: A031008003 | Data File: N3100911.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	97	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-18A | Dilution: 25
Analysis Date: 10/9/2003 1:26:00PM | Client Sample: **03RDV 47 SL**
Batch Number: A031008003 | Data File: N3100912.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	96	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-19A | Dilution: 25
Analysis Date: 10/9/2003 1:56:00PM | Client Sample: **03RDV 48 SL**
Batch Number: A031008003 | Data File: N3100913.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	98	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-20A | Dilution: 25
Analysis Date: 10/9/2003 2:26:00PM | Client Sample: **03RDV 50 SL**
Batch Number: A031008003 | Data File: N3100914.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	92	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **Aromatic VOCs by GC/FID via method 8021B - BTEX**

Lab Sample #: A0310016-21A | Dilution: 25
Analysis Date: 10/9/2003 2:56:00PM | Client Sample: **03RDV 51 SL**
Batch Number: A031009001 | Data File: N3100915.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	92	50	150		Complete
Difluorobenzene(PID)	101	50	150		Complete

Lab Sample #: A0310016-22A | Dilution: 25
Analysis Date: 10/9/2003 3:32:00PM | Client Sample: **03RDV 52 SL**
Batch Number: A031009001 | Data File: N3100916.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	93	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-23A | Dilution: 25
Analysis Date: 10/9/2003 4:02:00PM | Client Sample: **03RDV 53 SL**
Batch Number: A031009001 | Data File: N3100917.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	95	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A031008003-MB | Dilution: 25
Analysis Date: 10/8/2003 8:47:00AM | Client Sample: **MB**
Batch Number: A031008003 | Data File: N3100804.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	105	60	120		Complete
Difluorobenzene(PID)	102	60	120		Complete

Lab Sample #: A031009001-MB | Dilution: 25
Analysis Date: 10/9/2003 8:42:00AM | Client Sample: **MB**
Batch Number: A031009001 | Data File: N3100904.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	103	60	120		Complete
Difluorobenzene(PID)	103	60	120		Complete

Lab Sample #: A031008003-LCS | Dilution: 25
Analysis Date: 10/8/2003 9:17:00AM | Client Sample: **LCS**
Batch Number: A031008003 | Data File: N3100805.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	93	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #: A031009001-LCS | Dilution: 25
Analysis Date: 10/9/2003 9:12:00AM | Client Sample: **LCS**
Batch Number: A031009001 | Data File: N3100905.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene(PID)	93	60	120		Complete
Difluorobenzene(PID)	98	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **GRO by ADEC AK101 & BTEX by 8021B**

Lab Sample #: A0310016-13A | Dilution: 25
Analysis Date: 10/9/2003 12:26:00PM | Client Sample: **03RDV 42 SL**
Batch Number: A031008003 | Data File: N3100910.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	77	50	150		Complete
Bromofluorobenzene(PID)	83	50	150		Complete
Difluorobenzene	89	50	150		Complete
Difluorobenzene(PID)	102	50	150		Complete

Lab Sample #: A0310016-24A | Dilution: 25
Analysis Date: 10/9/2003 5:32:00PM | Client Sample: **03RDV 54 SL**
Batch Number: A031009001 | Data File: N3100920.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	89	50	150		Complete
Bromofluorobenzene(PID)	103	50	150		Complete
Difluorobenzene	85	50	150		Complete
Difluorobenzene(PID)	106	50	150		Complete

Lab Sample #: A0310016-25A | Dilution: 25
Analysis Date: 10/9/2003 6:02:00PM | Client Sample: **03RDV 55 SL**
Batch Number: A031009001 | Data File: N3100921.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	95	50	150		Complete
Bromofluorobenzene(PID)	100	50	150		Complete
Difluorobenzene	90	50	150		Complete
Difluorobenzene(PID)	103	50	150		Complete

Lab Sample #: A0310016-26A | Dilution: 25
Analysis Date: 10/9/2003 6:31:00PM | Client Sample: **Trip Blank**
Batch Number: A031009001 | Data File: N3100922.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	100	50	150		Complete
Bromofluorobenzene(PID)	113	50	150		Complete
Difluorobenzene	86	50	150		Complete
Difluorobenzene(PID)	107	50	150		Complete

Lab Sample #: A031008003-MB | Dilution: 25
Analysis Date: 10/8/2003 8:47:00AM | Client Sample: **MB**
Batch Number: A031008003 | Data File: N3100804.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	103	60	120		Complete
Bromofluorobenzene(PID)	105	60	120		Complete
Difluorobenzene	92	60	120		Complete
Difluorobenzene(PID)	102	60	120		Complete

Lab Sample #: A031009001-MB | Dilution: 25
Analysis Date: 10/9/2003 8:42:00AM | Client Sample: **MB**
Batch Number: A031009001 | Data File: N3100904.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **GRO by ADEC AK101 & BTEX by 8021B**

Lab Sample #: A031009001-MB | Dilution: 25
Analysis Date: 10/9/2003 8:42:00AM | Client Sample: **MB**
Batch Number: A031009001 | Data File: N3100904.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	102	60	120		Complete
Bromofluorobenzene(PID)	103	60	120		Complete
Difluorobenzene	90	60	120		Complete
Difluorobenzene(PID)	103	60	120		Complete

Lab Sample #: A031008003-LCS | Dilution: 25
Analysis Date: 10/8/2003 9:17:00AM | Client Sample: **LCS**
Batch Number: A031008003 | Data File: N3100805.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	111	60	120		Complete
Bromofluorobenzene(PID)	93	60	120		Complete
Difluorobenzene	87	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #: A031009001-LCS | Dilution: 25
Analysis Date: 10/9/2003 9:12:00AM | Client Sample: **LCS**
Batch Number: A031009001 | Data File: N3100905.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	111	60	120		Complete
Bromofluorobenzene(PID)	93	60	120		Complete
Difluorobenzene	87	60	120		Complete
Difluorobenzene(PID)	98	60	120		Complete

Lab Sample #: A031008003-LCSD | Dilution: 25
Analysis Date: 10/8/2003 9:47:00AM | Client Sample: **LCSD**
Batch Number: A031008003 | Data File: N3100806.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	113	60	120		Complete
Bromofluorobenzene(PID)	92	60	120		Complete
Difluorobenzene	89	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #: A031009001-LCSD | Dilution: 25
Analysis Date: 10/9/2003 9:41:00AM | Client Sample: **LCSD**
Batch Number: A031009001 | Data File: N3100906.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	109	60	120		Complete
Bromofluorobenzene(PID)	88	60	120		Complete
Difluorobenzene	88	60	120		Complete
Difluorobenzene(PID)	95	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **SW8270C - Semivolatile Organics by GC/MS - PAH**

Lab Sample #: A0310016-02C | Dilution: 10
Analysis Date: 10/28/2003 3:30:00AM | Client Sample: **03RDV 31 SL**
Batch Number: T031009004 | Data File: 03102728.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	62	36	121		Complete
D14-Terphenyl	72	30	134		Complete
D5-Nitrobenzene	74	30	122		Complete

Lab Sample #: A0310016-07C | Dilution: 1
Analysis Date: 10/28/2003 4:04:00AM | Client Sample: **03RDV 36 SL**
Batch Number: T031009004 | Data File: 03102729.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	53	36	121		Complete
D14-Terphenyl	71	30	134		Complete
D5-Nitrobenzene	45	30	122		Complete

Lab Sample #: A0310016-09C | Dilution: 1
Analysis Date: 10/28/2003 4:38:00AM | Client Sample: **03RDV 38 SL**
Batch Number: T031009004 | Data File: 03102730.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	55	36	121		Complete
D14-Terphenyl	73	30	134		Complete
D5-Nitrobenzene	47	30	122		Complete

Lab Sample #: A0310016-11C | Dilution: 2
Analysis Date: 10/28/2003 5:12:00AM | Client Sample: **03RDV 40 SL**
Batch Number: T031009004 | Data File: 03102731.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	56	36	121		Complete
D14-Terphenyl	77	30	134		Complete
D5-Nitrobenzene	70	30	122		Complete

Lab Sample #: A0310016-13C | Dilution: 2
Analysis Date: 10/28/2003 5:47:00AM | Client Sample: **03RDV 42 SL**
Batch Number: T031009004 | Data File: 03102732.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	49	36	121		Complete
D14-Terphenyl	72	30	134		Complete
D5-Nitrobenzene	66	30	122		Complete

Lab Sample #: T031009004-MB | Dilution: 1
Analysis Date: 10/26/2003 6:40:00AM | Client Sample: **MB**
Batch Number: T031009004 | Data File: 03102539.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	51	36	121		Complete
D14-Terphenyl	74	30	134		Complete
D5-Nitrobenzene	42	30	122		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

Test Method: **SW8270C - Semivolatile Organics by GC/MS - PAH**

Lab Sample #: T031009004-LCS | Dilution: 1
Analysis Date: 10/26/2003 7:14:00AM | Client Sample: LCS
Batch Number: T031009004 | Data File: 03102540.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	63	36	121		Complete
D14-Terphenyl	75	30	134		Complete
D5-Nitrobenzene	44	30	122		Complete

Lab Sample #: A0310015-06A-MS | Dilution: 1
Analysis Date: 10/28/2003 6:21:00AM | Client Sample: MS
Batch Number: T031009004 | Data File: 03102733.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	50	36	121		Complete
D14-Terphenyl	62	30	134		Complete
D5-Nitrobenzene	43	30	122		Complete

Lab Sample #: A0310015-06A-MSD | Dilution: 1
Analysis Date: 10/28/2003 6:56:00AM | Client Sample: MSD
Batch Number: T031009004 | Data File: 03102734.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
2-Fluorobiphenyl	48	36	121		Complete
D14-Terphenyl	57	30	134		Complete
D5-Nitrobenzene	39	30	122		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 20,069 **Lab Project Number:** A0310016

Prep Date: 10/8/2003

Lab Method Blank Id: A031008003-MB

Prep Batch ID: A031008003

Method: Aromatic VOCs by GC/FID via method 8021B - BTEX

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A031008003-LCS	LCS	N3100805.D	10/8/2003 9:17:00AM
A031008003-LCS	LCS	N3100805.D	10/8/2003 9:17:00AM
A031008003-LCSD	LCSD	N3100806.D	10/8/2003 9:47:00AM
A031008003-LCSD	LCSD	N3100806.D	10/8/2003 9:47:00AM
A0310016-01A	03RDV 30 SL	N3100807.D	10/8/2003 10:17:00AM
A0310016-02A	03RDV 31 SL	N3100808.D	10/8/2003 10:47:00AM
A0310016-03A	03RDV 32 SL	N3100809.D	10/8/2003 11:16:00AM
A0310016-04A	03RDV 33 SL	N3100810.D	10/8/2003 11:45:00AM
A0310016-05A	03RDV 34 SL	N3100811.D	10/8/2003 12:15:00PM
A0310016-06A	03RDV 35 SL	N3100812.D	10/8/2003 12:45:00PM
A0310016-07A	03RDV 36 SL	N3100813.D	10/8/2003 1:14:00PM
A0310016-08A	03RDV 37 SL	N3100814.D	10/8/2003 1:44:00PM
A0310016-09A	03RDV 38 SL	N3100815.D	10/8/2003 2:15:00PM
A0310016-10A	03RDV 39 SL	N3100816.D	10/8/2003 2:45:00PM
A0310016-11A	03RDV 40 SL	N3100817.D	10/8/2003 3:15:00PM
A0310016-12A	03RDV 41 SL	N3100820.D	10/8/2003 4:45:00PM
A0310016-14A	03RDV 43 SL	N3100822.D	10/8/2003 5:45:00PM
A0310016-15A	03RDV 44 SL	N3100823.D	10/8/2003 6:14:00PM
A0310016-17A	03RDV 46 SL	N3100825.D	10/8/2003 7:14:00PM
A0310016-13A	03RDV 42 SL	N3100910.D	10/9/2003 12:26:00PM
A0310016-16A	03RDV 45 SL	N3100911.D	10/9/2003 12:56:00PM
A0310016-18A	03RDV 47 SL	N3100912.D	10/9/2003 1:26:00PM
A0310016-19A	03RDV 48 SL	N3100913.D	10/9/2003 1:56:00PM
A0310016-20A	03RDV 50 SL	N3100914.D	10/9/2003 2:26:00PM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **20,069** **Lab Project Number:** **A0310016**

Prep Date: 10/8/2003

Lab Method Blank Id: A031008004-MB

Prep Batch ID: A031008004

Method: ADEC AK102/103 - (DRO & RRO)

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A031008004-LCS	LCS	R3100959.D	10/9/2003 8:18:00PM
A031008004-LCSD	LCSD	R3100960.D	10/9/2003 8:46:00PM
A0310016-01B	03RDV 30 SL	R3100962.D	10/9/2003 9:40:00PM
A0310016-02B	03RDV 31 SL	R3100963.D	10/9/2003 10:08:00PM
A0310016-03B	03RDV 32 SL	R3100964.D	10/9/2003 10:35:00PM
A0310016-04B	03RDV 33 SL	R3100969.D	10/10/2003 12:52:00AM
A0310016-05B	03RDV 34 SL	R3100970.D	10/10/2003 1:19:00AM
A0310016-07B	03RDV 36 SL	R3100972.D	10/10/2003 2:14:00AM
A0310016-08B	03RDV 37 SL	R3100973.D	10/10/2003 2:41:00AM
A0310016-10B	03RDV 39 SL	R3100974.D	10/10/2003 3:09:00AM
A0310016-12B	03RDV 41 SL	R3100975.D	10/10/2003 3:36:00AM
A0310016-13B	03RDV 42 SL	R3100976.D	10/10/2003 4:04:00AM
A0310016-15B	03RDV 44 SL	R3100983.D	10/10/2003 7:42:00AM
A0310016-16B	03RDV 45 SL	R3100984.D	10/10/2003 8:10:00AM
A0310016-17B	03RDV 46 SL	R3100985.D	10/10/2003 8:37:00AM
A0310016-18B	03RDV 47 SL	R3100986.D	10/10/2003 9:04:00AM
A0310016-19B	03RDV 48 SL	R3100987.D	10/10/2003 9:31:00AM
A0310016-11B	03RDV 40 SL	R3100993.D	10/10/2003 11:48:00AM
A0310016-09B	03RDV 38 SL	R3100994.D	10/10/2003 12:16:00PM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: Red Devil AST Removal

Client: Mactec Engineering & Consulting Inc.

Client Project Number: Mactec

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 20,069 **Lab Project Number:** A0310016

Prep Date: 10/9/2003

Lab Method Blank Id: A031009001-MB
Prep Batch ID: A031009001
Method: Aromatic VOCs by GC/FID via method 8021B - BTEX

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0310016-21A	03RDV 51 SL	N3100915.D	10/9/2003 2:56:00PM
A0310016-22A	03RDV 52 SL	N3100916.D	10/9/2003 3:32:00PM
A0310016-23A	03RDV 53 SL	N3100917.D	10/9/2003 4:02:00PM
A0310016-24A	03RDV 54 SL	N3100920.D	10/9/2003 5:32:00PM
A0310016-25A	03RDV 55 SL	N3100921.D	10/9/2003 6:02:00PM
A0310016-26A	Trip Blank	N3100922.D	10/9/2003 6:31:00PM
A031009001-LCS	LCS	N3100905.D	10/9/2003 9:12:00AM
A031009001-LCS	LCS	N3100905.D	10/9/2003 9:12:00AM
A031009001-LCSD	LCSD	N3100906.D	10/9/2003 9:41:00AM
A031009001-LCSD	LCSD	N3100906.D	10/9/2003 9:41:00AM

Prep Date: 10/8/2003

Lab Method Blank Id: T031009004-MB
Prep Batch ID: T031009004
Method: SW8270C - Semivolatile Organics by GC/MS - PAH

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T031009004-LCS	LCS	03102540.D	10/26/2003 7:14:00AM
A0310015-06A	Batch QC	03102721.D	10/27/2003 11:49:00PM
A0310016-02C	03RDV 31 SL	03102728.D	10/28/2003 3:30:00AM
A0310016-07C	03RDV 36 SL	03102729.D	10/28/2003 4:04:00AM
A0310016-09C	03RDV 38 SL	03102730.D	10/28/2003 4:38:00AM
A0310016-11C	03RDV 40 SL	03102731.D	10/28/2003 5:12:00AM
A0310016-13C	03RDV 42 SL	03102732.D	10/28/2003 5:47:00AM
A0310015-06A-MS	MS	03102733.D	10/28/2003 6:21:00AM
A0310015-06A-MSD	MSD	03102734.D	10/28/2003 6:56:00AM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **20,069** **Lab Project Number:** **A0310016**

Prep Date: 10/10/2003

Lab Method Blank Id: A031010004-MB
Prep Batch ID: A031010004
Method: ADEC AK102/103 - (DRO & RRO)

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A031010004-LCS	LCS	R3101361.D	10/13/2003 7:59:00PM
A031010004-LCSD	LCSD	R3101362.D	10/13/2003 8:27:00PM
A0310016-20B	03RDV 50 SL	R3101363.D	10/13/2003 8:54:00PM
A0310016-21B	03RDV 51 SL	R3101364.D	10/13/2003 9:21:00PM
A0310016-22B	03RDV 52 SL	R3101365.D	10/13/2003 9:48:00PM
A0310016-23B	03RDV 53 SL	R3101366.D	10/13/2003 10:16:00PM
A0310016-24B	03RDV 54 SL	R3101367.D	10/13/2003 10:43:00PM
A0310016-25B	03RDV 55 SL	R3101368.D	10/13/2003 11:10:00PM
A0310016-06B	03RDV 35 SL	R3101369.D	10/13/2003 11:38:00PM
A0310016-14B	03RDV 43 SL	R3101370.D	10/14/2003 12:05:00AM

Prep Date: 10/9/2003

Lab Method Blank Id: A031010006-MB
Prep Batch ID: A031010006
Method: ASTM D2216 - % moisture

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0310016-20B	03RDV 50 SL		10/10/2003 9:50:00AM
A0310016-21B	03RDV 51 SL		10/10/2003 9:50:00AM
A0310016-22B	03RDV 52 SL		10/10/2003 9:50:00AM
A0310016-23B	03RDV 53 SL		10/10/2003 9:50:00AM
A0310016-24B	03RDV 54 SL		10/10/2003 9:50:00AM
A0310016-25B	03RDV 55 SL		10/10/2003 9:50:00AM
B0310054-03A	Batch QC		10/10/2003 9:50:00AM
B0310054-03A-DUP	DUP		10/10/2003 9:50:00AM

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **20,069** **Lab Project Number:** **A0310016**

Prep Date: 10/8/2003

Lab Method Blank Id: A031010007-MB

Prep Batch ID: A031010007

Method: ASTM D2216 - % moisture

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0310016-01B	03RDV 30 SL		10/9/2003 9:15:00AM
A0310016-02B	03RDV 31 SL		10/9/2003 9:15:00AM
A0310016-03B	03RDV 32 SL		10/9/2003 9:15:00AM
A0310016-04B	03RDV 33 SL		10/9/2003 9:15:00AM
A0310016-05B	03RDV 34 SL		10/9/2003 9:15:00AM
A0310016-06B	03RDV 35 SL		10/9/2003 9:15:00AM
A0310016-07B	03RDV 36 SL		10/9/2003 9:15:00AM
A0310016-08B	03RDV 37 SL		10/9/2003 9:15:00AM
A0310016-09B	03RDV 38 SL		10/9/2003 9:15:00AM
A0310016-10B	03RDV 39 SL		10/9/2003 9:15:00AM
A0310016-11B	03RDV 40 SL		10/9/2003 9:15:00AM
A0310016-12B	03RDV 41 SL		10/9/2003 9:15:00AM
A0310016-13B	03RDV 42 SL		10/9/2003 9:15:00AM
A0310016-14B	03RDV 43 SL		10/9/2003 9:15:00AM
A0310016-15B	03RDV 44 SL		10/9/2003 9:15:00AM
A0310016-16B	03RDV 45 SL		10/9/2003 9:15:00AM
A0310016-17B	03RDV 46 SL		10/9/2003 9:15:00AM
A0310016-18B	03RDV 47 SL		10/9/2003 9:15:00AM
A0310016-19B	03RDV 48 SL		10/9/2003 9:15:00AM
A0310016-19B-DUP	DUP		10/9/2003 9:15:00AM

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.
Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit
NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit
HIGH = Recovery , RPD, or other parameter is above Upper Control Limit
E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank
J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)
W = Post digestion spike did not meet criteria
S = Reported value determined by the Method of Standard Additions (MSA)

Other Flags may be applied. See Case Narrative for Description

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0310016

Project: **Red Devil AST Removal**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **Mactec**

REPORTING CONVENTIONS FOR THIS REPORT

A0310016

TestPkgName	Basis	# Sig Figs	Reporting Limit
8021/5035 (Solid) - BTEX	Dry Weight Basis	2	Report to PQL
8270C/3550B (Solid) - PAH	Dry Weight Basis	2	Report to MDL, J qual below PQL
AK101GRO/8021BTEX/5035 (Solid)	Dry Weight Basis	2	Report to PQL
AK102/103/3550 (Solid) - (DRO & RRO)	Dry Weight Basis	2	Report to PQL
ASTMD2216/ASTMD2216 (Solid) - % moisture	As Received	2	Report to PQL

ANALYTICA
ALASKA Inc.

Support Documentation

The Science of Analysis and The Art of Service

MACTEC Engineering and Consulting, Inc.
601 East 57th Place, Anchorage, Alaska, 99518
(907) 563-8102 / FAX (907)561-4574

CHAIN OF CUSTODY

 # Red Devil AST Removal AAI-ANCHORAGE

Pg 1 of 3

A03100116

Project Name: **Red Devil AST Removal**
Project Location: **Red Devil Mine, AK** Samplers: Robin Farrage
Project Manager: **Bryan Lund** Recorder: Standard

MATRIX		# Containers & Preservative						IDENTIFIER	DATE AND TIME							TARED CONTAINER #'s			ANALYSIS REQUESTED				
		4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		Sample Number	YR		MO		DY		TIME	AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)			
S	L	1		1				03RDV30SL SL	0	3	0	9	2	5	1020		16409		✓				1
S	L	1		2				03RDV31SL SL	0	3	0	8	2	5	1035	16179 →			✓	✓			2
S	L	1		1				03RDV32SL SL	0	3	0	8	2	5	1110		16175		✓				3
S	L	1		1				03RDV33SL SL	0	3	0	8	2	6	1000	16119 →			✓				4
S	L	1		1				03RDV34SL SL	0	3	0	8	2	6	1045		16543		✓				5
S	L	1		1				03RDV35SL SL	0	3	0	8	2	6	1350		16120		✓				6
S	L	1		2				03RDV36SL SL	0	3	0	8	2	6	1445	16170 →			✓	✓			7
S	L	1		1				03RDV37SL SL	0	3	0	8	2	6	1615		16548		✓				8
S	L	1		2				03RDV38SL SL	0	3	0	8	2	6	1630	16501 →			✓	✓			9
S	L	1		1				03RDV39SL SL	0	3	0	8	2	6	1650		16158		✓				10

NOTES:

Temperature Blank Included

5.4

RELENQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE
Robin Farrage	10/3/03	15:10	Dollie Wheeler	10-3-03 4:00
RELENQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE
Amber Hammond	10/6/03	1:00 PM		
RELENQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE
DISPATCHED BY:(Signature)	DATE	TIME	RECEIVED FOR LAB BY:(Signature)	DATE
METHOD OF SHIPMENT				

D = AEL

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CHAIN OF CUSTODY

Red Devil AST Removal

AAI-ANCHORAGE

Project Name: **Red Devil AST Removal**
Project Location: **Red Devil Mine, AK**
Project Manager: **Bryan Lund**
Samplers: Robin Farrage
Recorder:
Standard

MATRIX		# Containers & Preservative: 4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		IDENTIFIER: Sample Number	DATE AND TIME: YR	MO	DY	TIME	TARED CONTAINER #'s: AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	ANALYSIS REQUESTED: AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)			
S	L	1		2				03RDV40SL SL	03	09	26	1730	16535 →			✓	☑			11
S	L	1		1				03RDV41SL SL	03	08	26	1812		16529		✓	☑			12
S	L	1		2				03RDV42SL SL	03	08	26	1830	←	16093		✓	☑			13
S	L	1		1				03RDV43SL SL	03	08	26	1845		16542		✓				14
S	L	1		1				03RDV44SL SL	03	08	27	955		16177		✓				15
S	L	1		1				03RDV45SL SL	03	08	27	1030		16178		✓				16
S	L	1		1				03RDV46SL SL	03	08	27	1055		16165		✓				17
S	L	1		1				03RDV47SL SL	03	08	27	1120		16186		✓				18
S	L	1		1				03RDV48SL SL	03	08	27	1340		16079		✓				19
S	L	~~0~~		~~0~~				~~03RDV49SL SL~~	~~03~~	~~08~~	~~27~~		~~BROKE JARS~~							

NOTES:

Temperature Blank Included

S.H

RELENQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE
Robin Farrage	10/3/03	15:10	Dolline Wheeler	4:50 10-3-03
RELENQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE
Amber Hammond	10/6/03	1:00 PM		
RELENQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE
DISPATCHED BY:(Signature)	DATE	TIME	RECEIVED FOR LAB BY:(Signature)	DATE
METHOD OF SHIPMENT				

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CHAIN OF CUSTODY AAI-ANCHORAGE

 # Red Devil AST Removal

page 3 of 3

Project Name: **Red Devil AST Removal**
Project Location: **Red Devil Mine, AK** Samplers: Robin Farrage
Project Manager: **Bryan Lund** Recorder: Standard

MATRIX		# Containers & Preservative						IDENTIFIER	DATE AND TIME							TARED CONTAINER #'s			ANALYSIS REQUESTED				
		4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		Sample Number	YR		MO		DY		TIME	AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)			
S	L	1		1				03RDV50SL SL	0	3	0	9	2	7	1515		16168		✓				20
S	L	1		1				03RDV51SL SL	0	3	0	8	2	7	1517		16180		✓				21
S	L	1		1				03RDV52SL SL	0	3	0	8	2	7	1540		16500		✓				22
S	L	1		1				03RDV53SL SL	0	3	0	8	2	7	1620		16185		✓				23
S	L	1		1				03RDV54SL SL	0	3	0	8	2	7	1630	X ←	16181		✓				24
S	L	1		1				03RDV55SL SL	0	3	0	8	2	7	1632	X ←	16536		✓				25
S	L	1		1				TRIPBLANK SL	0	3	0	8	2	7		X	X						26
S	L							SL	0	3	0	8	2	7									
S	L							SL	0	3	0	8	2	7									
S	L							SL	0	3	0	8	2	7									

NOTES:

Temperature Blank Included

5.4

RELENQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE
Robin Farrage	10/3/03	15/10	Dolleo Wheeler	4:00 pm 10-3-03
RELENQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE
Amber Hammond	10/6/03	1:00 PM		
RELENQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE
DISPATCHED BY:(Signature)	DATE	TIME	RECEIVED FOR LAB BY:(Signature)	DATE
METHOD OF SHIPMENT				

☑ = AEL

MACTEC
Engineering and Consulting, Inc.

601 East 57th Place
Anchorage, Alaska 99518

Tel: 907/563-8102
Fax: 907/561-4574
Web: www.mactec.com

Fax

TO:	DOLLIE	FROM:	R. FARRAGE
FIRM:	ANALYTICA	PROJECT #:	4034030008
FAX:	907-258-~~2155~~ 6634	DATE:	10/7/03
TEL:	907-258-2155	# PAGES:	3 + this cover sheet

MESSAGE:

Attached please find corrected Chain of Custody forms for the Red Devil AST Removal project. The correct dates should be for September 2003 NOT August.

Each incorrect month entry was corrected to 09 & initialed to maintain proper chain of custody procedures.

Should you need additional information please contact Bryan Lund or myself @ 563-8102

Robin Farrage

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A0010F

MACTEC Engineering and Consulting, Inc.
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(907) 563-9102 / FAX (907)561-4574

CHAIN OF CUSTODY

AAI-ANCHORAGE

Red Devil AST Removal

Pg 1 of 3

Project Name: Red Devil AST Removal
Project Location: Red Devil Mine, AK
Project Manager: Bryan Lund
Samplers: Robin Farrage
Recorder:
Standard

MATRIX		# Containers & Preservative: 4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		IDENTIFIER: Sample Number		DATE AND TIME: YR	MO	DY	TIME	TAKED CONTAINER #'s: AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	ANALYSIS REQUESTED: AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)			
S	L	1		1				03RDV30SL	SL	03	09	25	1020		16409		✓				
S	L	1		2				03RDV31SL	SL	03	08	25	1135	16179 →			✓	✓			
S	L	1		1				03RDV32SL	SL	03	08	25	1110		16175		✓				
S	L	1		1				03RDV33SL	SL	03	08	26	1000	16119 →			✓				
S	L	1		1				03RDV34SL	SL	03	08	26	1045		16543		✓				
S	L	1		1				03RDV35SL	SL	03	08	26	1350		16120		✓				
S	L	1		2				03RDV36SL	SL	03	08	26	1445	16170 →			✓	✓			
S	L	1		1				03RDV37SL	SL	03	08	26	1615		16548		✓				
S	L	1		2				03RDV38SL	SL	03	08	26	1630	16501 →			✓	✓			
S	L	1		1				03RDV39SL	SL	03	08	26	1650		16158		✓				

NOTES:

Temperature Blank Included

5.4

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
Robin Farrage	10/3/03	15:10	Dollie Wheeler	10-3-03 4:00
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE
METHOD OF SHIPMENT				

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CHAIN OF CUSTODY

AAI-ANCHORAGE

Red Devil AST Removal

page 2 of 3

Project Name: Red Devil AST Removal
Project Location: Red Devil Mine, AK
Project Manager: Bryan Lund
Samplers: Robin Farrage
Recorder:
Standard

MATRIX		# Containers & Preservative: 4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass	IDENTIFIER: Sample Number		DATE AND TIME: YR	MO	DY	TIME	TARED CONTAINER #'s: AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	ANALYSIS REQUESTED: AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)			
S	L	1		2			03RDV40SL	SL	03	09	26	1730	16535 →			✓	✓			
S	L	1		1			03RDV41SL	SL	03	09	26	1812		16529		✓				
S	L	1		2			03RDV42SL	SL	03	09	26	1830	←	16098		✓	✓			
S	L	1		1			03RDV43SL	SL	03	09	26	1845		16542		✓				
S	L	1		1			03RDV44SL	SL	03	09	27	955		16177		✓				
S	L	1		1			03RDV45SL	SL	03	09	27	1030		16178		✓				
S	L	1		1			03RDV46SL	SL	03	09	27	1055		16165		✓				
S	L	1		1			03RDV47SL	SL	03	09	27	1120		16186		✓				
S	L	1		1			03RDV48SL	SL	03	09	27	1140		16079		✓				
S	L	10		10			03RDV49SL	SL	03	09	27	↓	Blank	37425						

NOTES:

Temperature Blank Included
5.4

RELINQUISHED BY (Signature)	DATE	TIME	RECEIVED BY (Signature)	DATE
Robin Farrage	10/3/03	15:10	Dolores Wheeler	10-3-03 4:50
RELINQUISHED BY (Signature)	DATE	TIME	RECEIVED BY (Signature)	DATE
RELINQUISHED BY (Signature)	DATE	TIME	RECEIVED BY (Signature)	DATE
DISPATCHED BY (Signature)	DATE	TIME	RECEIVED FOR LAB BY (Signature)	DATE
METHOD OF SHIPMENT				

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CHAIN OF CUSTODY AAI-ANCHORAGE
 # Red Devil AST Removal

page 3 of 3

Project Name: **Red Devil AST Removal**
Project Location: **Red Devil Mine, AK**
Project Manager: **Bryan Lund**
Samplers: Robin Farrage
Recorder:

Standard

MATRIX		# Containers & Preservative: 4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		IDENTIFIER: Sample Number		DATE AND TIME: YR	MO	DY	TIME	TARED CONTAINER #'s: AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	ANALYSIS REQUESTED: AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)			
S	L	1		1				03RDV50SL	SL	03	08	27	1515		16168		✓				
S	L	1		1				03RDV51SL	SL	03	08	27	1517		16180		✓				
S	L	1		1				03RDV52SL	SL	03	08	27	1540		16500		✓				
S	L	1		1				03RDV53SL	SL	03	08	27	1620		16185		✓				
S	L	1		1				03RDV54SL	SL	03	08	27	1630	X ←	16181		✓				
S	L	1		1				03RDV55SL	SL	03	08	27	1632	X ←	16550		✓				
S	L							TRIP BLANK	SL	03	08	27	1714	X	X						
S	L								SL	03	08	27									
S	L								SL	03	08	27									
S	L								SL	03	08	27									

NOTES:

Temperature Blank Included
5.4

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
Robin Farrage	10/3/03	15/10	[signature]	4:00 pm 10-3-03
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE
METHOD OF SHIPMENT				

Cooler Receipt Form

ANALYTICA

AAI-ANCHORAGE

Client: Mactec Engineering & Consul **Client Code:** 010400 **Order #:** A0310016
Project: Red Devil AST Removal

Cooler ID: 1

A. Preliminary Examination Phase: **Date cooler opened:** 10/3/2003 **Signature:** D. Wheeler
Cooler opened by: dw

1. **Was airbill Attached?** No **Airbill #:** **Carrier Name:** Client
2. **Custody Seals?** No **How many?** 0 **Location:** **Seal Name:**
3. **Seals intact?** N/A
4. **Screened for radiation?** N/A
5. **COC Attached?** Yes **Properly Completed?** Yes **Signed by AEL employee?** Yes
6. **Project Identification from custody paper:** Red Devil AST Removal
7. **Preservative:** BlueGel **Temperature:** 5.4

Designated person initial here to acknowledge receipt: DW **Date:** 10-6-03

COMMENTS:

B. Log-In Phase: **Samples Log-in Date:** 10/6/2003 **Log-in By:** dw **Signature:** D. Wheeler

1. **Packing Type:** Bubblewrap
2. **Were samples in separate bags?** Yes
3. **Were containers intact?** Yes **Labels agree with COC?** Yes
4. **Number of bottles received:** 51 **Number of samples received:** 25
5. **Correct containers used?** Yes **Correct preservatives added?** Yes
6. **Sufficient sample volume?** Yes
7. **Bubbles in VOA samples?** No
8. **Was Project manager called and status discussed?** No
9. **Was anyone called?** No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS:

MACTEC Engineering and Consulting, Inc.
601 East 57th Place, Anchorage, Alaska, 99518
(907) 563-8102 / FAX (907)561-4574

Red Devil AST Removal

A03100116

Project Name: Red Devil AST Removal AEL-THORNTON
Project Location: Red Devil Mine, AK
Project Manager: Bryan Lund
Samplers: Robin Farrage
Recorder:
Standard

MATRIX		# Containers & Preservative: 4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass	IDENTIFIER: Sample Number		DATE AND TIME: YR	MO	DY	TIME	TARED CONTAINER #'s: AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	ANALYSIS REQUESTED: AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)			
S	L	1		1			03RDV30SL	SL	03	09	25	1020		16409		✓	✓			1
S	L	1		2			03RDV31SL	SL	03	08	25	1135	16179 →			✓				2
S	L	1		1			03RDV32SL	SL	03	08	25	1110		16175		✓				3
S	L	1		1			03RDV33SL	SL	03	08	26	1000	16119 →			✓				4
S	L	1		1			03RDV34SL	SL	03	08	26	1045		16543		✓				5
S	L	1		1			03RDV35SL	SL	03	08	26	1350		16120		✓	✓			6
S	L	1		2			03RDV36SL	SL	03	08	26	1445	16170 →			✓				7
S	L	1		1			03RDV37SL	SL	03	08	26	1615		16548		✓	✓			8
S	L	1		2			03RDV38SL	SL	03	08	26	1630	16501 →			✓				9
S	L	1		1			03RDV39SL	SL	03	08	26	1650		16158		✓				10

NOTES:

Temperature Blank Included

5.4

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
Robin Farrage	10/3/03	15:10	Dollie Whelan	10-3-03 4:00
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
Amber Hammond	10/6/03	1:00 PM	[illegible]	10/7/03 9:00
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
DISPATCHED BY (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE
METHOD OF SHIPMENT				

☒ = AEL

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CHAIN OF CUSTODY
Red Devil AST Removal

AEL-THORNTON

Project Name: **Red Devil AST Removal**
Project Location: **Red Devil Mine, AK**
Project Manager: **Bryan Lund**
Samplers: Robin Farrage
Recorder:
Standard

MATRIX		# Containers & Preservative: 4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass		IDENTIFIER: Sample Number		DATE AND TIME: YR	MO	DY	TIME	TARED CONTAINER #'s: AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	ANALYSIS REQUESTED: AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)			
S	L	1		2				03RDV40SL	SL	03	09	26	1730	16535 →			✓	✓			11
S	L	1		1				03RDV41SL	SL	03	08	26	1812		16529		✓	✓			12
S	L	1		2				03RDV42SL	SL	03	08	26	1830	←	16093		✓	✓			13
S	L	1		1				03RDV43SL	SL	03	08	26	1845		16542		✓				14
S	L	1		1				03RDV44SL	SL	03	08	27	955		16177		✓				15
S	L	1		1				03RDV45SL	SL	03	08	27	1030		16178		✓				16
S	L	1		1				03RDV46SL	SL	03	08	27	1055		16165		✓				17
S	L	1		1				03RDV47SL	SL	03	08	27	1120		16186		✓				18
S	L	1		1				03RDV48SL	SL	03	08	27	1340		16079		✓				19
S	L	0		0				03RDV49SL	SL	03	08	27		BROKE JAR							

NOTES:

Temperature Blank Included

S.U.

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
Robin Farrage	10/3/03	15:10	Dollie Wheeler	10-3-03 4:50
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
Amber Hammond	10/6/03	1:00 PM	[illegible]	10/7/03 9:00
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE
METHOD OF SHIPMENT				

☑ = AEL

MACTEC Engineering and Consulting, Inc
601 East 57th Place, Anchorage, Alaska, 99518
(907) 563-8102 / FAX (907)561-4574

Red Devil AST Removal

page 3 of 3

AEL-THORNTON

Project Name: Red Devil AST Removal
Project Location: Red Devil Mine, AK
Project Manager: Bryan Lund

Samplers: Robin Farrage
Recorder:

Standard

MATRIX		# Containers & Preservative: 4-oz glass (methanol preservative)	40 ml glass (sodium bisulfate)	4-oz glass	8-oz Amber glass	8-oz glass	IDENTIFIER: Sample Number		DATE AND TIME: YR	MO	DY	TIME	TARED CONTAINER #'s: AK101 (GRO)	EPA 8021 (BTEX)	EPA 8260B (VOCs)	ANALYSIS REQUESTED: AK 102/103 (DRO/RRO)	EPA 8270C (PAHs)			
S	L	1		1			03RDV50SL	SL	03	09	27	1515		161168		✓				20
S	L	1		1			03RDV51SL	SL	03	08	27	1517		161180		✓				21
S	L	1		1			03RDV52SL	SL	03	08	27	1540		161500		✓				22
S	L	1		1			03RDV53SL	SL	03	08	27	1620		161185		✓				23
S	L	1		1			03RDV54SL	SL	03	08	27	1630	X ←	161181		✓				24
S	L	1		1			03RDV55SL	SL	03	08	27	1632	X ←	161536						25
S	L	1		1			TRIP BLANK	SL	03	08	27		X	X						26
S	L							SL	03	08	27									
S	L							SL	03	08	27									
S	L							SL	03	08	27									
S	L							SL	03	08	27									

NOTES:

Temperature Blank Included

5.4

RELINQUISHED BY: (Signature) Robin Farrage	DATE 10/3/03	TIME 15/10	RECEIVED BY (Signature) Dolores Wheeler	DATE 10-3-03 4:00 pm
RELINQUISHED BY: (Signature) Amber Hammond	DATE 10/6/03	TIME 1:00 PM	RECEIVED BY: (Signature) [illegible]	DATE 10/7/03 9:00
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)	DATE
METHOD OF SHIPMENT				

☑ = AEL

Cooler Receipt Form

ANALYTICA

AEL-THORNTON

Client: Mactec Engineering & Consul **Client Code:** 010400 **Order #:** A0310016
Project: Red Devil AST Removal

Cooler ID: 2

A. Preliminary Examination Phase: **Date cooler opened:** 10/7/2003
Cooler opened by: DM **Signature:** Dave Smoz

1. **Was airbill Attached?** Yes **Airbill #:** 790922757564 **Carrier Name:** FedEx
2. **Custody Seals?** Yes **How many?** 1 **Location:** top **Seal Name:** DW
3. **Seals intact?** Yes
4. **Screened for radiation?** N/A
5. **COC Attached?** Yes **Properly Completed?** Yes **Signed by AEL employee?** Yes
6. **Project Identification from custody paper:** Red Devil AST Removal
7. **Preservative:** BlueGel **Temperature:** 3.3

Designated person initial here to acknowledge receipt: DSM **Date:** 10/9/03

COMMENTS: Second Cooler: FedEx # 790922757689, same seal signature, temp blank = 2.4 deg C

B. Log-In Phase: **Samples Log-in Date:** 10/8/2003 **Log-in By:** RA **Signature:** RRa

1. **Packing Type:** Bubblewrap
2. **Were samples in separate bags?** Yes
3. **Were containers intact?** Yes **Labels agree with COC?** Yes
4. **Number of bottles received:** 5 **Number of samples received:** 5
5. **Correct containers used?** Yes **Correct preservatives added?** N/A
6. **Sufficient sample volume?** Yes
7. **Bubbles in VOA samples?** N/A
8. **Was Project manager called and status discussed?** No
9. **Was anyone called?** No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS:

MACTEC

Client Bureau of Land Management (BLM) Laboratory Analytica Alaska

MACTEC Project 4034030008 Data Report Number/Date A0309159 / 10-8-2003
A0309186 / 10-24-2003

LABORATORY DATA REVIEW CHECKLIST

		YES	NO	NOT APPLICABLE
1.	Laboratory analytical data report appears complete (all data results present for all samples submitted for analysis) and there are no apparent transcription errors:	X		
2.	Samples analyzed within applicable holding times (based on date of sample collection):*	X		
3.	Trip blanks, field blanks or laboratory method blanks are free of blank contamination:	X		
4.	If field duplicate samples collected, calculated results meet Relative Percent Difference guidelines: **		X	
5.	Surrogate recoveries (organic analyses only) within laboratory reported recovery acceptance ranges:		X	
6.	If Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples required to meet project objectives, Percent Recoveries (%R) and Relative Percent Difference (RPD) within laboratory reported acceptance ranges:			X
7.	Reported detection limits meet project objectives (e.g., are capable of achieving applicable site standards):	X		
8.	Completed Chain-Of-Custody received noting sample/custody seal condition (with airbill, if appropriate):	X		
9.	Analytical costs within authorized budget for these services:	X		

COMMENTS:

1. Analytical data was reviewed according to the MACTEC Quality Assurance, August, 2003.

2. For batch A0309186 field duplicates 03RDVMW1 (PR) and 03RDVMW10 (QC) have relative percent differences (RPD) greater than 50 percent for Mercury (179.49 percent), (Mercury was not detected at or below 0.0002 mg/L in project sample 03RDVMW1, and was detected at 0.0037 mg/L in QC sample 03RDVMW10) See attached RPD calculations.

3. No samples of this delivery were requested or selected as batch MD/MSD.

Notes: 1. This checklist is intended for use with the laboratory reporting formats typical of most projects. If "no" is answered to one or more of the above checklist questions 1 through 7, a more detailed Data Validation may be required, and a person knowledgeable in Data Validation protocols should be consulted. This checklist should not be used if the project scope requires Data Validation from the onset.

2. * = Based upon EPA Guidance and the applicable analytical method references. See reverse side of checklist for details.

GENERAL DATA REVIEW CRITERIA

Typical Holding Times for Water Samples:*

Volatile Organic Compounds (EPA Method 8260/624)	14 days to analysis when preserved with HCl (7 days if not preserved)
Semi-volatile Organic Compounds (EPA Method 8270)	7 days to extraction, 40 days to analysis
Pesticides/PCBs (EPA Method 8081/8082)	7 days to extraction, 40 days to analysis
Metals (except Mercury)	180 days to analysis when preserved with HNO_3
Mercury	28 days to analysis
Cyanide	14 days to analysis

Typical Relative Percent Difference (RPD) Guidelines:**

	Aqueous	Soil
Volatile Organic Compounds (EPA Method 8260/624)	<30	<50
Semi-volatile Organic Compounds (EPA Method 8270)	<30	<50
Pesticides/PCBs (EPA Method 8081/8082)	<30	<50
Metals and Cyanide	<30	<50

Notes:

RPD calculated as:

$$RPD = [\,|A-B|\,] / [\,(A+B)/2\,] \times 100$$

where:

RPD = Relative Percent Difference
A = Sample Result
B = Duplicate Sample Result

* = Based upon EPA Guidance and the applicable analytical method references.

** = Based upon EPA Guidance. Use these criteria on duplicate and sample results that exceed five times the reported detection limit.

RED DEVIL ASTs WATER
FIELD DUPLICATE RELATIVE PERCENT DIFFERENCES

Analayte	03RDVMW1	03RDV10	RPD
DRO			
	ND(0.11)	ND(0.11)	OK
RRO			
	0.3	0.25	18.18
VOC's (BTEX)			
Benzene	ND(1.0)	ND(1.0)	OK
Ethylbenzene	ND(1.0)	ND(1.0)	OK
GRO	ND(50)	ND(50)	OK
Toluene	ND(1.0)	ND(1.0)	OK
Xylenes, Total	ND(3.0)	ND(3.0)	OK
SW7470A			
Mercury	ND(0.0002)	0.0037	179.49
Metals			
Antimony	8	7	13.33
Arsenic	33	34	-2.99

ANALYTICA
Environmental Laboratories

Analytica Alaska Incorporated
website:
www.analyticagroup.com

10/8/2003

Mactec Engineering & Consulting Inc.
601 E. 57th Place
Anchorage, AK 99518
Attn: Bryan Lund

Work Order #: A0309159
Date: 10/8/2003
Work ID: Red Devil AST
Date Received: 9/24/2003

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0309159-01	03RDV MW4	A0309159-02	03RDV MW3

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Gina Durkin
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.
Work Order: A0309159

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

ADEC Method AK101 For the Determination of Gasoline Range Organics.
ADEC Method AK102 For the Determination of Diesel Range Organics.
ADEC Method AK103 For the Determination of Residual Range Organics.
Test Methods for Evaluating Solid Waste, USEPA SW-846, Third Edition, Revision 4, December 1996.

SAMPLE RECEIPT:
Two (2) samples for Red Devil AST project were received at Analytica-Anchorage (ADEC Laboratory Approval Number: UST-014) on 9/24/2003 in one cooler at a temperature of 2.0°C. Samples were received in good condition and in order per chain of custody.

Sample fractions for Metals test were transferred for analysis to Analytica-SE (5438 Shaune Dr. Juneau AK, 99801) where they were received on 9/25/2003 in one cooler at temperature of 1.0°C in good condition and in order per chain of custody.

Samples fractions for Mercury by SW7470 were transferred for analysis to Analytica Environmental Laboratories (AEL); 12189 Pennsylvania St. Thornton, CO 80241 where they were received at a temperature of 1.4°C in good condition and in order per chain of custody.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN
A summary of our review is shown below, organized by test:

Test Method: ADEC AK102/103 - (DRO & RRO) - Aqueous

HOLDING TIMES:
Holding times were met for this test.

INSTRUMENT CALIBRATIONS:
Initial calibration and CCV samples met method criteria.

SURROGATE RECOVERIES:
There were no surrogate recovery outliers.

METHOD BLANK OUTLIERS:
There were no method blank outliers; no target analytes detected in the method blank above the PQL.

LCS/LCSD OUTLIERS:
There are no LCS/LCSD outliers.

MS/MSD OUTLIERS:
No samples of this delivery were selected or designated as batch MS/MSD.

Test Method: GRO by ADEC AK101 & BTEX by 8021B - Aqueous

HOLDING TIMES:
Holding times were met for this test.

INSTRUMENT CALIBRATIONS:
Initial calibration and CCV samples met method criteria.

Case Narrative

Analytica Alaska Inc.
Work Order: A0309159
(continued)

SURROGATE RECOVERIES:
There were no surrogate recovery outliers.

METHOD BLANK OUTLIERS:
There were no method blank outliers; no target analytes detected in the method blank above the PQL.

LCS/LCSD OUTLIERS:
There are no LCS/LCSD outliers.

MS/MSD OUTLIERS:
No samples of this delivery were selected or designated as batch MS/MSD.

Test Method: SW6020 - ICPMS - ICPMS Total - Aqueous

HOLDING TIMES:
Holding times were met for this test.

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

CONTINUING CALIBRATIONS:
Continuing calibrations were within method criteria.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Test Method: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg - Aqueous

HOLDING TIMES:
Holding times were met for this test.

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

Case Narrative

Analytica Alaska Inc.
Work Order: A0309159
(continued)

CONTINUING CALIBRATIONS:
Continuing calibrations were within method criteria.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159

Project: Red Devil AST

Client: Mactec Engineering & Consulting Inc.

Client Project Number: MACTEC

Report Section: Client Sample Report

Client Sample Name: 03RDV MW4

Matrix: Water

Collection Date: 9/20/2003 1:55:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309159-01B
Prep Date: 9/30/2003
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)
Prep Method ID: 3510
Prep Batch Number: A030929001
Report Basis: As Received
Sample prep wt./vol: 950.00 ml

Analysis Date: 9/30/2003 2:43:00PM
Instrument: Roo
File Name: R3093010.D
Dilution Factor: 1
Analyst Initials: HW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	**0.25**		mg/L	0.11	0.021	1
Residual Range Organics	n/a	**0.48**		mg/L	0.21	0.033	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**0.039**		mg/L	0.0053	0.00067	0.053	**73.5**	50	150	1
Squalane	111-01-3	**0.047**		mg/L	0.0053	0.0010	0.053	**89.7**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309159-01A
Prep Date: 9/30/2003
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B
Prep Method ID: 5030
Prep Batch Number: A030930001
Report Basis: As Received
Sample prep wt./vol: 5.00 ml

Analysis Date: 9/30/2003 12:02:00PM
Instrument: Boris
File Name: B3093009.D
Dilution Factor: 1
Analyst Initials: SG
Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15	1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18	
Gasoline Range Organics	n/a	ND		ug/L	50	3.0	
Toluene	108-88-3	ND		ug/L	1.0	0.24	
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**88**		ug/L	1.0	0.10	100	**87.9**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**92**		ug/L	1.0	0.10	100	**91.9**	50	150	
Difluorobenzene	540-36-3	**47**		ug/L	1.0	0.10	50	**94.8**	50	150	
Difluorobenzene(PID)	540-36-3	**48**		ug/L	1.0	0.10	50	**96.9**	50	150	

The following test was conducted by: Analytica - Juneau

Lab Sample Number: A0309159-01C
Prep Date: 9/26/2003
Analytical Method ID: SW6020 - ICPMS - ICPMS Total
Prep Method ID: 3010A
Prep Batch Number: J030926008
Report Basis: As Received
Sample prep wt./vol: 50.00 ml

Analysis Date: 10/1/2003 6:51:59PM
Instrument: Elan
File Name: export100103.c
Dilution Factor: 1
Analyst Initials: DF
Prep Extract Vol: 50.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: Client Sample Report

Client Sample Name: **03RDV MW4**

Matrix: Water

Collection Date: 9/20/2003 1:55:00PM

Lab Sample Number: A0309159-01C

Prep Date: 9/26/2003

Analytical Method ID: SW6020 - ICPMS - ICPMS Total

Prep Method ID: 3010A

Prep Batch Number: J030926008

Report Basis: As Received

Sample prep wt./vol: 50.00 ml

Analysis Date: 10/1/2003 6:51:59PM

Instrument: Elan

File Name: export100103.c

Dilution Factor: 1

Analyst Initials: DF

Prep Extract Vol: 50.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Antimony	7440-36-0	**43.5**		ug/L	0.50	0.096	1
Arsenic	7440-38-2	**20.9**		ug/L	1.0	0.086	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309159-01D

Prep Date: 10/2/2003

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

Prep Method ID: 7470A

Prep Batch Number: T031002019

Report Basis: As Received

Sample prep wt./vol: 20.00 ml

Analysis Date: 10/3/2003 4:20:49PM

Instrument: CVAA_1

File Name: B31003W.WK

Dilution Factor: 1

Analyst Initials: CS

Prep Extract Vol: 20.00 ml

Analyte	CASNo	Result	Flags	Units	POL	MDL	Rerun #:
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159

Project: Red Devil AST

Client: Mactec Engineering & Consulting Inc.

Client Project Number: MACTEC

Report Section: Client Sample Report

Client Sample Name: 03RDV MW3

Matrix: Water

Collection Date: 9/20/2003 4:14:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309159-02B
Prep Date: 9/30/2003
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)
Prep Method ID: 3510
Prep Batch Number: A030929001
Report Basis: As Received
Sample prep wt./vol: 950.00 ml

Analysis Date: 9/30/2003 3:10:00PM
Instrument: Roo
File Name: R3093011.D
Dilution Factor: 1
Analyst Initials: HW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/L	0.11	0.021	1
Residual Range Organics	n/a	**0.24**		mg/L	0.21	0.033	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**0.035**		mg/L	0.0053	0.00067	0.053	**67.0**	50	150	1
Squalane	111-01-3	**0.042**		mg/L	0.0053	0.0010	0.053	**79.5**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309159-02A
Prep Date: 9/30/2003
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B
Prep Method ID: 5030
Prep Batch Number: A030930001
Report Basis: As Received
Sample prep wt./vol: 5.00 ml

Analysis Date: 9/30/2003 12:35:00PM
Instrument: Boris
File Name: B3093010.D
Dilution Factor: 1
Analyst Initials: SG
Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15	1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18	
Gasoline Range Organics	n/a	ND		ug/L	50	3.0	
Toluene	108-88-3	ND		ug/L	1.0	0.24	
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**90**		ug/L	1.0	0.10	100	**89.9**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**92**		ug/L	1.0	0.10	100	**92.2**	50	150	
Difluorobenzene	540-36-3	**48**		ug/L	1.0	0.10	50	**96.0**	50	150	
Difluorobenzene(PID)	540-36-3	**48**		ug/L	1.0	0.10	50	**96.8**	50	150	

The following test was conducted by: Analytica - Juneau

Lab Sample Number: A0309159-02C
Prep Date: 9/26/2003
Analytical Method ID: SW6020 - ICPMS - ICPMS Total
Prep Method ID: 3010A
Prep Batch Number: J030926008
Report Basis: As Received
Sample prep wt./vol: 50.00 ml

Analysis Date: 10/1/2003 6:55:26PM
Instrument: Elan
File Name: export100103.c
Dilution Factor: 1
Analyst Initials: DF
Prep Extract Vol: 50.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: **Client Sample Report**

Client Sample Name: **03RDV MW3**

Matrix: Water

Collection Date: 9/20/2003 4:14:00PM

Lab Sample Number: A0309159-02C

Prep Date: 9/26/2003

Analytical Method ID: SW6020 - ICPMS - ICPMS Total

Prep Method ID: 3010A

Prep Batch Number: J030926008

Report Basis: As Received

Sample prep wt./vol: 50.00 ml

Analysis Date: 10/1/2003 6:55:26PM

Instrument: Elan

File Name: export100103.c

Dilution Factor: 1

Analyst Initials: DF

Prep Extract Vol: 50.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Antimony	7440-36-0	**751**		ug/L	0.50	0.096	1
Arsenic	7440-38-2	**148**		ug/L	1.0	0.086	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309159-02D

Prep Date: 10/2/2003

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

Prep Method ID: 7470A

Prep Batch Number: T031002019

Report Basis: As Received

Sample prep wt./vol: 20.00 ml

Analysis Date: 10/3/2003 4:23:07PM

Instrument: CVAA_1

File Name: B31003W.WK

Dilution Factor: 1

Analyst Initials: CS

Prep Extract Vol: 20.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Mercury	7439-97-6	**0.0010**		mg/L	0.00020	0.000060	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Aqueous

Collection Date: 9/30/2003 12:00:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A030929001-MB
Prep Date: 9/30/2003
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)
Prep Method ID: 3510
Prep Batch Number: A030929001
Report Basis: Dry Weight Basis
Sample prep wt./vol: 1,000.00 ml

Analysis Date: 9/30/2003 1:21:00PM
Instrument: Roo
File Name: R3093007.D
Dilution Factor: 1
Analyst Initials: HW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/L	0.10	0.020	1
Residual Range Organics	n/a	ND		mg/L	0.20	0.031	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**0.045**		mg/L	0.0050	0.00064	0.050	**89.7**	50	150	1
Squalane	111-01-3	**0.040**		mg/L	0.0050	0.00096	0.050	**80.5**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A030930001-MB
Prep Date: 9/30/2003
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B
Prep Method ID: 5030
Prep Batch Number: A030930001
Report Basis: Dry Weight Basis
Sample prep wt./vol: 5.00 ml

Analysis Date: 9/30/2003 9:14:00AM
Instrument: Boris
File Name: B3093004.D
Dilution Factor: 1
Analyst Initials: SG
Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15	1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18	
Gasoline Range Organics	n/a	ND		ug/L	50	3.0	
Toluene	108-88-3	ND		ug/L	1.0	0.24	
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**90**		ug/L	1.0	0.10	100	**90.2**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**94**		ug/L	1.0	0.10	100	**93.9**	50	150	
Difluorobenzene	540-36-3	**46**		ug/L	1.0	0.10	50	**93.0**	50	150	
Difluorobenzene(PID)	540-36-3	**48**		ug/L	1.0	0.10	50	**96.6**	50	150	

The following test was conducted by: Analytica - Juneau

Lab Sample Number: J030926008-MB
Prep Date: 9/26/2003
Analytical Method ID: SW6020 - ICPMS - ICPMS Total
Prep Method ID: 3010A
Prep Batch Number: J030926008
Report Basis: Dry Weight Basis
Sample prep wt./vol: 50.00 ml

Analysis Date: 10/1/2003 5:00:11PM
Instrument: Elan
File Name: export100103.c
Dilution Factor: 1
Analyst Initials: DF
Prep Extract Vol: 50.00 ml

Detailed Analytical Report

Analytica Alaska Southeast

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Aqueous

Collection Date: 9/26/2003 12:00:00AM

Lab Sample Number: J030926008-MB

Prep Date: 9/26/2003

Analytical Method ID: SW6020 - ICPMS - ICPMS Total

Prep Method ID: 3010A

Prep Batch Number: J030926008

Report Basis: Dry Weight Basis

Sample prep wt./vol: 50.00 ml

Analysis Date: 10/1/2003 5:00:11PM

Instrument: Elan

File Name: export100103.c

Dilution Factor: 1

Analyst Initials: DF

Prep Extract Vol: 50.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Antimony	7440-36-0	ND		ug/L	0.50	0.096	1
Arsenic	7440-38-2	ND		ug/L	1.0	0.086	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T031002019-MB

Prep Date: 10/2/2003

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

Prep Method ID: 7470A

Prep Batch Number: T031002019

Report Basis: Dry Weight Basis

Sample prep wt./vol: 20.00 ml

Analysis Date: 10/3/2003 4:05:19PM

Instrument: CVAA_1

File Name: B31003W.WK

Dilution Factor: 1

Analyst Initials: CS

Prep Extract Vol: 20.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	1

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A0309159

Project: Red Devil AST

Project Number:

Prep Batch: **A030929001**

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: ADEC AK102/103 - (DRO & RRO)

MB: A030929001-MB

Prep Date: 9/30/2003

MB Anal. Date: 9/30/2003 1:21:00PM

Units: mg/L

LCS Anal. Date: 9/30/2003 1:48:00PM LCSD Anal. Date: 9/30/2003 2:15:00PM

Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	1.83	1.76	2.00	2.00	91.5	88.0	3.9	60 - 120	20	
Residual Range Organics	ND	1.92	2.11	2.00	2.00	96.0	105.5	9.4	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A0309159

Project: Red Devil AST

Project Number:

Prep Batch: **A030930001**

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: GRO by ADEC AK101 & BTEX by 8021B

MB: A030930001-MB

Prep Date: 9/30/2003

MB Anal. Date: 9/30/2003 9:14:00AM

Units: ug/L

LCS Anal. Date: 9/30/2003 9:48:00AM LCSD Anal. Date: 9/30/2003 10:21:00AM Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	14.6	14.3	13.8	13.8	105.8	103.7	2.1	60 - 120	20	
Toluene	ND	78.3	74.3	84.5	84.5	92.6	87.9	5.2	60 - 120	20	
Ethylbenzene	ND	20.2	19.6	20.3	20.3	99.6	96.6	3.0	60 - 120	20	
Xylenes, Total	ND	93.7	89.8	99.2	99.2	94.5	90.5	4.3	60 - 120	20	
Gasoline Range Organics	ND	1,030	1,040	1,100	1,100	93.6	94.5	1.0	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Tests Run at: Analytica Environmental Laboratories - Juneau, Alaska

Workorder (SDG): A0309159

Project: Red Devil AST

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **J030926008**

LCS REPORT

Analysis: SW6020 - ICPMS - ICPMS Total

MB: J030926008-MB

Prep Date: 9/26/2003

MB Anal. Date: 10/1/2003 5:00:11PM

Units: ug/L

LCS Anal. Date: 10/1/2003 5:03:38PM

Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SPLev	Recov.	Recov Lim	RPDLim	Flag
Antimony	ND	47.8	50.0	95.6	80 - 120		
Arsenic	ND	50.6	50.0	101.2	80 - 120		

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0309159

Project: Red Devil AST

Project Number:

Prep Batch: **T031002019**

QUALITY CONTROL REPORT

LCS REPORT

Analysis: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

MB: T031002019-MB

Prep Date: 10/2/2003

MB Anal. Date: 10/3/2003 4:05:19PM

Units: mg/L

LCS Anal. Date: 10/3/2003 4:07:38PM

Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SPLev	Recov.	Recov Lim	RPDLim	Flag
Mercury	ND	0.00454	0.00496	91.5	80 - 120		

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

SURROGATE RECOVERY SUMMARY REPORT

Test Method: **ADEC AK102/103 - (DRO & RRO)**

Lab Sample #: A0309159-01B — Dilution: 1
Analysis Date: 9/30/2003 2:43:00PM — Client Sample: **03RDV MW4**
Batch Number: A030929001 — Data File: R3093010.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	74	50	150		Complete
Squalane	90	50	150		Complete

Lab Sample #: A0309159-02B — Dilution: 1
Analysis Date: 9/30/2003 3:10:00PM — Client Sample: **03RDV MW3**
Batch Number: A030929001 — Data File: R3093011.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	67	50	150		Complete
Squalane	80	50	150		Complete

Lab Sample #: A030929001-MB — Dilution: 1
Analysis Date: 9/30/2003 1:21:00PM — Client Sample: **MB**
Batch Number: A030929001 — Data File: R3093007.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	90	60	120		Complete
Squalane	81	60	120		Complete

Lab Sample #: A030929001-LCS — Dilution: 1
Analysis Date: 9/30/2003 1:48:00PM — Client Sample: **LCS**
Batch Number: A030929001 — Data File: R3093008.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	74	60	120		Complete
Squalane	85	60	120		Complete

Lab Sample #: A030929001-LCSD — Dilution: 1
Analysis Date: 9/30/2003 2:15:00PM — Client Sample: **LCSD**
Batch Number: A030929001 — Data File: R3093009.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	75	60	120		Complete
Squalane	86	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Test Method: **GRO by ADEC AK101 & BTEX by 8021B**

Lab Sample #: A0309159-01A | Dilution: 1
Analysis Date: 9/30/2003 12:02:00PM | Client Sample: **03RDV MW4**
Batch Number: A030930001 | Data File: B3093009.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	88	50	150		Complete
Bromofluorobenzene(PID)	92	50	150		Complete
Difluorobenzene	95	50	150		Complete
Difluorobenzene(PID)	97	50	150		Complete

Lab Sample #: A0309159-02A | Dilution: 1
Analysis Date: 9/30/2003 12:35:00PM | Client Sample: **03RDV MW3**
Batch Number: A030930001 | Data File: B3093010.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	90	50	150		Complete
Bromofluorobenzene(PID)	92	50	150		Complete
Difluorobenzene	96	50	150		Complete
Difluorobenzene(PID)	97	50	150		Complete

Lab Sample #: A030930001-MB | Dilution: 1
Analysis Date: 9/30/2003 9:14:00AM | Client Sample: **MB**
Batch Number: A030930001 | Data File: B3093004.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	90	60	120		Complete
Bromofluorobenzene(PID)	94	60	120		Complete
Difluorobenzene	93	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #: A030930001-LCS | Dilution: 1
Analysis Date: 9/30/2003 9:48:00AM | Client Sample: **LCS**
Batch Number: A030930001 | Data File: B3093005.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	101	60	120		Complete
Bromofluorobenzene(PID)	91	60	120		Complete
Difluorobenzene	105	60	120		Complete
Difluorobenzene(PID)	95	60	120		Complete

Lab Sample #: A030930001-LCSD | Dilution: 1
Analysis Date: 9/30/2003 10:21:00AM | Client Sample: **LCSD**
Batch Number: A030930001 | Data File: B3093006.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	100	60	120		Complete
Bromofluorobenzene(PID)	89	60	120		Complete
Difluorobenzene	108	60	120		Complete
Difluorobenzene(PID)	98	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **19,819** **Lab Project Number:** **A0309159**

Prep Date: 9/26/2003

Lab Method Blank Id: J030926008-MB
Prep Batch ID: J030926008
Method: SW6020 - ICPMS - ICPMS Total

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0309117-06A	Batch QC	export100103.csv	10/1/2003 5:40:37PM
A0309133-04A	Batch QC	export100103.csv	10/1/2003 6:45:07PM
A0309159-01C	03RDV MW4	export100103.csv	10/1/2003 6:51:59PM
A0309159-02C	03RDV MW3	export100103.csv	10/1/2003 6:55:26PM
J030926008-LCS	LCS	export100103.csv	10/1/2003 5:03:38PM
A0309133-04A-DUP	DUP	export100103.csv	10/1/2003 6:48:33PM
A0309117-06A-MS	MS	export100103.csv	10/1/2003 5:44:03PM

Prep Date: 9/30/2003

Lab Method Blank Id: A030929001-MB
Prep Batch ID: A030929001
Method: ADEC AK102/103 - (DRO & RRO)

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A030929001-LCS	LCS	R3093008.D	9/30/2003 1:48:00PM
A030929001-LCSD	LCSD	R3093009.D	9/30/2003 2:15:00PM
A0309159-01B	03RDV MW4	R3093010.D	9/30/2003 2:43:00PM
A0309159-02B	03RDV MW3	R3093011.D	9/30/2003 3:10:00PM

Prep Date: 9/30/2003

Lab Method Blank Id: A030930001-MB
Prep Batch ID: A030930001
Method: GRO by ADEC AK101 & BTEX by 8021B

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A030930001-LCS	LCS	B3093005.D	9/30/2003 9:48:00AM
A030930001-LCSD	LCSD	B3093006.D	9/30/2003 10:21:00AM
A0309159-01A	03RDV MW4	B3093009.D	9/30/2003 12:02:00PM
A0309159-02A	03RDV MW3	B3093010.D	9/30/2003 12:35:00PM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **19,819** **Lab Project Number:** **A0309159**

Prep Date: 10/2/2003

Lab Method Blank Id: T031002019-MB

Prep Batch ID: T031002019

Method: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0309159-01D	03RDV MW4	B31003W.WKS	10/3/2003 4:20:49PM
A0309159-02D	03RDV MW3	B31003W.WKS	10/3/2003 4:23:07PM
B0309253-01A	Batch QC	B31003W.WKS	10/3/2003 4:40:52PM
T031002019-LCS	LCS	B31003W.WKS	10/3/2003 4:07:38PM
B0309253-01A-DUP	DUP	B31003W.WKS	10/3/2003 4:43:29PM
B0309253-01A-MS	MS	B31003W.WKS	10/3/2003 4:45:47PM

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.
Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit
NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit
HIGH = Recovery , RPD, or other parameter is above Upper Control Limit
E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank
J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)
W = Post digestion spike did not meet criteria
S = Reported value determined by the Method of Standard Additions (MSA)

Other Flags may be applied. See Case Narrative for Description

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309159

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

REPORTING CONVENTIONS FOR THIS REPORT

A0309159

TestPkgName	Basis	# Sig Figs	Reporting Limit
6020/3010A (Aqueous) - ICPMS Total	As Received	3	Report to PQL
7470A/7470A (Aqueous) - Total Hg	As Received	2	Report to PQL
AK101GRO/8021BTEX/5030 (Aqueous)	As Received	2	Report to PQL
AK102/103/3510 (Aqueous) - (DRO & RRO)	As Received	2	Report to PQL

ANALYTICA
ALASKA Inc.

Support Documentation

The Science of Analysis and The Art of Service

№ 30381

ANALYTICA GROUP

www.analyticagroup.com

811 W. 8th Ave.
Anchorage, AK 99501
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FAX: (907) 258-6634

5438 Shaune Drive
Juneau, AK 99801
(907) 780-6668
FAX: (907) 780-6670

12189 Pennsylvania Street
Thornton, CO 80241
(303) 469-8868
FAX: (303) 469-5254

LGN: A0309159
Quote:
Project ID #:

Chain of Custody Record / Analysis Request

Company Name: MACTEC
Company Address: 601 East ~~57th~~ 57th Place, Anchorage AK 99518
Telephone: 907-563-8102
Fax: 907-561-4574
Email:

Project Name: Red Devil AST/
Report To: BRYAN LUND
Invoice To: BRYAN LUND
P.O. Number 4034030008

Sample ID	Date Collected	Time collected	Maxtix	# Containers VOA	1Lt	250mL poly	RF	AK102 preserved HCL	BTEX	AK102/103 preserved HCL	6020/7470 preserved HNO3	7470	MS / MSD	Preserved?	Highly Concentrated?	LAB ID
03RDV MW4	9/20/03	1355	WATER	2	1	1		X		X	X	X		X		
0312DV MW3	9/20/03	16:14		2	1	1		X		X	X	X		X		
WATER/TEMP BLANK																

COMMENTS

O SE
O - AEL

☐ 10 Business Days Standard TAT
☐ 15 Business Days
☐ other:_____ # Business Days
(Prior Authorization Required.)

RELINQUISHED BY SAMPLER:	RECEIVED BY:	~~RELINQUISHED~~ Received BY:	RECEIVED BY:
Signature: R. Farrage	Signature: S. Finnegan	Signature: Dollie Wheeler	Signature:
Printed Name: R. FARRAGE	Printed Name: S. FINNEGAN	Printed Name: Dollie Wheeler	Printed Name:
Firm: MACTEC	Firm: MACTEC	Firm: AAI	Firm:
Date/ Time: 9/22/03 11:40	Date/ Time: 9/24/03 8:45	Date/ Time: 9-24-03 9:05AM	Date/ Time:

Cooler Receipt Information
Temp Received: 2.0 °C
Temp Received:_____ °C
Coolers:_____
Seals: 2-SF

Means of Delivery / Way Bill #
Hand Delivered.

Cooler Receipt Form

AAI-ANCHORAGE

ANALYTICA

Client: Mactec Engineering & Consul **Client Code:** 010400 **Order #:** A0309159
Project: Red Devel AST/

Cooler ID: 1

A. Preliminary Examination Phase: **Date cooler opened:** 9/24/2003
Cooler opened by: dw **Signature:** D. Wheeler

1. **Was airbill Attached?** No **Airbill #:** **Carrier Name:** Client
2. **Custody Seals?** Yes **How many?** 2 **Location:** LID **Seal Name:** SF
3. **Seals intact?** Yes
4. **Screened for radiation?** N/A
5. **COC Attached?** Yes **Properly Completed?** Yes **Signed by AEL employee?** Yes
6. **Project Identification from custody paper:** Red Devel AST/
7. **Preservative:** BlueGel **Temperature:** 2.0

Designated person initial here to acknowledge receipt: DW **Date:** 9-24-03

COMMENTS:

B. Log-In Phase: **Samples Log-in Date:** 9/24/2003 **Log-in By:** dw **Signature:** D. Wheeler

1. **Packing Type:** Bubblewrap
2. **Were samples in separate bags?** Yes
3. **Were containers intact?** Yes **Labels agree with COC?** Yes
4. **Number of bottles received:** 10 **Number of samples received:** 2
5. **Correct containers used?** Yes **Correct preservatives added?** Yes
6. **Sufficient sample volume?** Yes
7. **Bubbles in VOA samples?** No
8. **Was Project manager called and status discussed?** No
9. **Was anyone called?** No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS:

Amber Hammontree

From: "Lund, Bryan" <BDLUND@mactec.com>
To: <ahammontree@analyticagroup.com>
Sent: Thursday, September 25, 2003 12:21 PM
Subject: Red Devil Tanks

Amber – I did get your message, just behind on all fronts.

The Red Devil water samples for metals should be analyzed for mercury, antimony, and arsenic.

If you need me to sign/approve something let me know. I will also talk with field so this does not happen again.

Thanks, Bryan

Bryan D. Lund
MACTEC Engineering and Consulting
Anchorage, Alaska
email: bdlund@mactec.com
tele: 907-563-8102
fax: 907-561-4574

ANALYTICA GROUP

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№ 30381

LGN: A0309159
Quote:
Project ID #:

Chain of Custody Record / Analysis Request

Company Name: MACTEC
Company Address: 601 East 57th Place, Anchorage AK 99518
Telephone: 907-563-8102
Fax: 907-561-4574
Email:

Project Name: Red Devil AST/
Report To: BRYAN LUND
Invoice To: BRYAN LUND
P.O. Number 4034030008

Sample ID	Date Collected	Time collected	Matrix	# Containers	VOA	1L+	250mL poly	RF preserved	~~AK~~ GRO / BTEX preserved HCL	AK102 / 103 preserved HCL	6020 / 7470 preserved HNO3	PH 7.0	MS / MSD	Preserved?	Highly Concentrated?	LAB ID
03RDV MW4	9/20/03	1355	WATER	2	1	1			X	X	X	X		X		
0312DV MW3	9/20/03	16:14		2	1	1			X	X	X	X		X		
WATER/TEMP BLANK																

COMMENTS

O - SE
O - AEL

☐ 10 Business Days Standard TAT
☐ 15 Business Days
☐ other:_____ # Business Days
(Prior Authorization Required.)

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: R. Farrage	Signature: S. Finnegan	Signature: Dollie Wheeler	Signature: Kerria Schroeder
Printed Name: R. FARRAGE	Printed Name: S. FINNEGAN	Printed Name: Dollie Wheeler	Printed Name: Kerria Schroeder
Firm: MACTEC	Firm: MACTEC	Firm: AAI	Firm: AAI SE
Date/ Time: 9/22/03 11:40	Date/ Time: 9/24/03 8:45	Date/ Time: 9-24-03 9:15AM	Date/ Time:

Cooler Receipt Information

Temp Received: 2.0 °C 1.0°C
Temp Received: _____ °C
Coolers: _____ 1
Seals: 2-SF y-DW

Means of Delivery / Way Bill #

Cooler Receipt Form

ANALYTICA

AAISE-JUNEAU

Client: Mactec Engineering & Consul **Client Code:** 010400 **Order #:** A0309159
Project: Red Devel AST/

Cooler ID: 2

A. Preliminary Examination Phase: **Date cooler opened:** 9/25/2003
Cooler opened by: KS **Signature:** Kerwin Schrock

1. **Was airbill Attached?** Yes **Airbill #:** DHL #878 4721 525 **Carrier Name:** DHL
2. **Custody Seals?** Yes **How many?** 1 **Location:** on cooler **Seal Name:** DW
3. **Seals intact?** Yes
4. **Screened for radiation?** No
5. **COC Attached?** Yes **Properly Completed?** Yes **Signed by AEL employee?** Yes
6. **Project Identification from custody paper:** Red Devil AST
7. **Preservative:** BlueGel **Temperature:** 1.0

Designated person initial here to acknowledge receipt: **Date:** 9/25/

COMMENTS:

B. Log-In Phase: **Samples Log-in Date:** 9/25/2003 **Log-in By:** KU **Signature:**

1. **Packing Type:** Green Foam
2. **Were samples in separate bags?** No
3. **Were containers intact?** Yes **Labels agree with COC?** Yes
4. **Number of bottles received:** 2 **Number of samples received:** 2
5. **Correct containers used?** Yes **Correct preservatives added?** Yes
6. **Sufficient sample volume?** Yes
7. **Bubbles in VOA samples?** N/A
8. **Was Project manager called and status discussed?** No
9. **Was anyone called?** No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS:

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Thornton, CO 80241
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FAX: (303) 469-5254

AEL-THORNTON

№ 30381

LGN: AD309159
Quote:
Project ID #:

Chain of Custody Record / Analysis Request

Company Name: MACTEC
Company Address: 601 East ~~5th~~ 57th Place Anchorage AK 99518
Telephone: 907-563-8102
Fax: 907-561-4574
Email:

Project Name: Red Devil AST/
Report To: BRYAN LUND
Invoice To: BRYAN LUND
P.O. Number 4034030008

Sample ID	Date Collected	Time collected	Matrix	# Containers VOA	1Lt	250mL Poly	BTEX preserved HCl	AK102/103 preserved HCl	6020/7470 preserved HNO3	7470	MS / MSD	Preserved?	Highly Concentrated?	LAB ID
03RDV MW4	9/20/03	1355	WATER	2	1	1	X	X	X	X		X		
0312DV MW3	9/20/03	16:14		2	1	1	X	X	X	X		X		
WATER/TEMP BLANK												X		

COMMENTS

O SE
O - AEL

☐ 10 Business Days Standard TAT
☐ 15 Business Days
☐ other:_____ # Business Days
(Prior Authorization Required.)

Cooler Receipt Information
Temp Received: 2.0 °C 1.4°C
Temp Received:_____ °C
Coolers:_____
Seals: 2-SF

Means of Delivery / Way Bill #

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature]	Signature: [signature]	Signature: Dollie Wheeler	Signature: [signature]
Printed Name: R. FARRAGE	Printed Name: S. FINNEGAN	Printed Name: Dollie Wheeler	Printed Name: Kristin R Arnold
Firm: MACTEC	Firm: MACTEC	Firm: AAI	Firm: AEL
Date/ Time: 9/22/03 11:40	Date/ Time: 9/24/03 8:45	Date/ Time: 9-24-03 9:05 AM	Date/ Time: 9/25/03 0830

ANALYTICA

Cooler Receipt Form

AEL-THORNTON

Client: Mactec Engineering & Consul **Client Code:** 010400 **Order #:** A0309159
Project: Red Devel AST/

Cooler ID: 3

A. Preliminary Examination Phase: **Date cooler opened:** 9/25/2003
Cooler opened by: RA **Signature:** RRa

1. **Was airbill Attached?** Yes **Airbill #:** 7909 1106 5923 **Carrier Name:** FedEx
2. **Custody Seals?** Yes **How many?** 1 **Location:** front **Seal Name:** DW
3. **Seals intact?** Yes
4. **Screened for radiation?** N/A
5. **COC Attached?** N/A **Properly Completed?** Yes **Signed by AEL employee?** Yes
6. **Project Identification from custody paper:** Red Devel AST/
7. **Preservative:** BlueGel **Temperature:** 1.4

Designated person initial here to acknowledge receipt: RRa **Date:** 9/25/03

COMMENTS:

B. Log-In Phase: **Samples Log-in Date:** 9/25/2003 **Log-in By:** dm **Signature:** Dad Moss

1. **Packing Type:** Bubblewrap
2. **Were samples in separate bags?** Yes
3. **Were containers intact?** Yes **Labels agree with COC?** Yes
4. **Number of bottles received:** 2 **Number of samples received:** 2
5. **Correct containers used?** Yes **Correct preservatives added?** Yes
6. **Sufficient sample volume?** Yes
7. **Bubbles in VOA samples?** N/A
8. **Was Project manager called and status discussed?** No
9. **Was anyone called?** No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS:

ANALYTICA
Environmental Laboratories

Analytica Alaska Incorporated
website:
www.analyticagroup.com

10/24/2003

Mactec Engineering & Consulting Inc.
601 E. 57th Place
Anchorage, AK 99518
Attn: Bryan Lund

Work Order #: A0309186
Date: 10/24/2003
Work ID: Red Devil AST
Date Received: 9/26/2003

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0309186-01	03RDVMW6	A0309186-02	03RDVMW1
A0309186-03	03RDVMW10	A0309186-04	03RDVMW7
A0309186-05	TRIP BLANK		

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Jason Gray
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.
Work Order: A0309186

Samples were prepared and analyzed by methods in the following references:

ADEC Method AK101 For the Determination of Gasoline Range Organics.
ADEC Method AK102/103 For the Determination of Diesel/Residual Range Organics.
Test Methods for Evaluating Solid Waste, USEPA SW-846, Third Edition, Rev. 4, Dec. 1996.

SAMPLE RECEIPT:
Four samples and BTEX trip blank were received at Analytica-Anchorage (ADEC Laboratory Approval Number: UST-014) on 9/26/2003 in two coolers at a temperature of 2.4°C, 4.2°C.
Comments: Samples very turbid at time of sampling 03RDVMW7 very turbid; not enough recharge to sample for all parameters. Only .5 liter for aK102/103. R.Farrage; Mactec.
Samples were otherwise received in good condition and in order per chain of custody

Samples for Hg analysis were transferred for analysis at Analytica Environmental Laboratories (AEL); 12189 Pennsylvania St. Thornton, CO 80241 where they were received at a temperature of 2.3°C in good condition and in order per chain of custody.

Samples fractions for Metals testing were transferred to Analytica-SE (5438 Shuane Dr. Juneau AK, 99801) where they were received in one cooler at temperature of 3.6°C on 10/3/2003. Samples were received in good condition and in order per chain of custody. Due to subsequent laboratory instrument problems AAI-Juneau was unable to perform the analysis and the method 6020 Metals samples were sent for subcontract analysis to BC Research Inc. 3650 Wesbrook Mall, Vancouver, BC, V6S 2L2.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN
A summary of our review is shown below, organized by test:

Test Method: ADEC AK102 (DRO)

HOLDING TIMES:
Holding times were met for this Test.

INSTRUMENT CALIBRATIONS:
Initial calibration and CCV samples met method criteria.

SURROGATE RECOVERIES:
There were no surrogate recovery outliers.

METHOD BLANK OUTLIERS:
There were no MB outliers.

LCS/LCSD OUTLIERS:
There are no LCS/LCSD outliers.

Test Method: GRO by ADEC AK101 & BTEX by 8021B

HOLDING TIMES:
Holding times were met for this Test.

INSTRUMENT CALIBRATIONS:
Initial calibration and CCV samples met method criteria.

Case Narrative

Analytica Alaska Inc.
Work Order: A0309186
(continued)

SURROGATE RECOVERIES:
There were no Surrogate recovery outliers.

METHOD BLANK OUTLIERS:
There were no MB outliers.

LCS/LCSD OUTLIERS:
There are no LCS/LCSD outliers.

Test Method: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg - Aqueous

HOLDING TIMES:
Holding times were met for this Test

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

CONTINUING CALIBRATIONS:
Continuing calibrations were within method criteria.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Test Method: SW6020 - ICPMS - Total BC Research - Aqueous
This test was subcontracted to BC Research Inc. 3650 Wesbrook Mall, Vancouver, BC, V6S 2L2 and has been represented to us as having met all method criteria.

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: Client Sample Report

Client Sample Name: **03RDVMW6**

Matrix: Water

Collection Date: 9/22/2003 3:42:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-01B

Prep Date: 10/3/2003

Analytical Method ID: ADEC AK102/103 - (DRO & RRO)

Prep Method ID: 3510

Prep Batch Number: A031003006

Report Basis: As Received

Sample prep wt./vol: 940.00 ml

Analysis Date: 10/7/2003 3:28:00PM

Instrument: Roo

File Name: R3100703.D

Dilution Factor: 1

Analyst Initials: HW

Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/L	0.11	0.021	1
Residual Range Organics	n/a	**0.25**		mg/L	0.21	0.033	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**0.047**		mg/L	0.0053	0.00068	0.053	**88.9**	50	150	1
Squalane	111-01-3	**0.052**		mg/L	0.0053	0.0010	0.053	**97.1**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-01A

Prep Date: 10/2/2003

Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B

Prep Method ID: 5030

Prep Batch Number: A031002002

Report Basis: As Received

Sample prep wt./vol: 5.00 ml

Analysis Date: 10/2/2003 6:11:00PM

Instrument: Natasha

File Name: N3100222.D

Dilution Factor: 1

Analyst Initials: SG

Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15	1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18	
Gasoline Range Organics	n/a	ND		ug/L	50	3.0	
Toluene	108-88-3	ND		ug/L	1.0	0.24	
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**75**		ug/L	1.0	0.10	100	**74.7**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**100**		ug/L	1.0	0.10	100	**101**	50	150	
Difluorobenzene	540-36-3	**46**		ug/L	1.0	0.10	50	**92.9**	50	150	
Difluorobenzene(PID)	540-36-3	**50**		ug/L	1.0	0.10	50	**99.9**	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309186-01D

Prep Date: 10/8/2003

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

Prep Method ID: 7470A

Prep Batch Number: T031008002

Report Basis: As Received

Sample prep wt./vol: 20.00 ml

Analysis Date: 10/11/2003 2:56:40PM

Instrument: CVAA_1

File Name: B031011W.W

Dilution Factor: 1

Analyst Initials: CS

Prep Extract Vol: 20.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: **Client Sample Report**

Client Sample Name: **03RDVMW6**

Matrix: Water

Collection Date: 9/22/2003 3:42:00PM

Lab Sample Number: A0309186-01D

Prep Date: 10/8/2003

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

Prep Method ID: 7470A

Prep Batch Number: T031008002

Report Basis: As Received

Sample prep wt./vol: 20.00 ml

Analysis Date: 10/11/2003 2:56:40PM

Instrument: CVAA_1

File Name: B031011W.W

Dilution Factor: 1

Analyst Initials: CS

Prep Extract Vol: 20.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	1

The following test was conducted by: BC Research Inc.

Lab Sample Number: A0309186-01C

Prep Date: 10/17/2003

Analytical Method ID: SW6020 - ICPMS - Total BC Research

Prep Method ID: 6020-BC

Prep Batch Number: J031023006

Report Basis: As Received

Sample prep wt./vol: 100.00 ml

Analysis Date: 10/17/2003 12:49:47PM

Instrument: Sub Contract

File Name:

Dilution Factor: 1

Analyst Initials: BC Research

Prep Extract Vol: 100.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Antimony	7440-36-0	**15.0**		ug/L	1.0	0.33	1
Arsenic	7440-38-2	**36.0**		ug/L	1.0	0.33	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: Client Sample Report

Client Sample Name: **03RDVMW1**

Matrix: Water

Collection Date: 9/22/2003 5:25:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-02B

Prep Date: 10/3/2003

Analytical Method ID: ADEC AK102/103 - (DRO & RRO)

Prep Method ID: 3510

Prep Batch Number: A031003006

Report Basis: As Received

Sample prep wt./vol: 950.00 ml

Analysis Date: 10/7/2003 3:55:00PM

Instrument: Roo

File Name: R3100704.D

Dilution Factor: 1

Analyst Initials: HW

Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/L	0.11	0.021	1
Residual Range Organics	n/a	**0.30**		mg/L	0.21	0.033	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**0.043**		mg/L	0.0053	0.00067	0.053	**82.6**	50	150	1
Squalane	111-01-3	**0.045**		mg/L	0.0053	0.0010	0.053	**86.0**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-02A

Prep Date: 10/2/2003

Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B

Prep Method ID: 5030

Prep Batch Number: A031002002

Report Basis: As Received

Sample prep wt./vol: 5.00 ml

Analysis Date: 10/2/2003 6:41:00PM

Instrument: Natasha

File Name: N3100223.D

Dilution Factor: 1

Analyst Initials: SG

Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15	1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18	
Gasoline Range Organics	n/a	ND		ug/L	50	3.0	
Toluene	108-88-3	ND		ug/L	1.0	0.24	
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**72**		ug/L	1.0	0.10	100	**72.0**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**110**		ug/L	1.0	0.10	100	**107**	50	150	
Difluorobenzene	540-36-3	**44**		ug/L	1.0	0.10	50	**87.8**	50	150	
Difluorobenzene(PID)	540-36-3	**52**		ug/L	1.0	0.10	50	**104**	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309186-02D

Prep Date: 10/8/2003

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

Prep Method ID: 7470A

Prep Batch Number: T031008002

Report Basis: As Received

Sample prep wt./vol: 20.00 ml

Analysis Date: 10/11/2003 2:59:08PM

Instrument: CVAA_1

File Name: B031011W.W

Dilution Factor: 1

Analyst Initials: CS

Prep Extract Vol: 20.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: **Client Sample Report**

Client Sample Name: **03RDVMW1**

Matrix: Water

Collection Date: 9/22/2003 5:25:00PM

Lab Sample Number:	A0309186-02D	Analysis Date:	10/11/2003 2:59:08PM
Prep Date:	10/8/2003	Instrument:	CVAA_1
Analytical Method ID:	SW7470A - Mercury in Liquid Waste by CVAA - Total Hg	File Name:	B031011W.W
Prep Method ID:	7470A	Dilution Factor:	1
Prep Batch Number:	T031008002		
Report Basis:	As Received	Analyst Initials:	CS
Sample prep wt./vol:	20.00 ml	Prep Extract Vol:	20.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	1

The following test was conducted by: BC Research Inc.

Lab Sample Number:	A0309186-02C	Analysis Date:	10/17/2003 12:49:47PM
Prep Date:	10/17/2003	Instrument:	Sub Contract
Analytical Method ID:	SW6020 - ICPMS - Total BC Research	File Name:	
Prep Method ID:	6020-BC	Dilution Factor:	1
Prep Batch Number:	J031023006		
Report Basis:	As Received	Analyst Initials:	BC Research
Sample prep wt./vol:	100.00 ml	Prep Extract Vol:	100.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Antimony	7440-36-0	**8.00**		ug/L	1.0	0.33	1
Arsenic	7440-38-2	**33.0**		ug/L	1.0	0.33	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: Client Sample Report

Client Sample Name: **03RDVMW10**

Matrix: Water

Collection Date: 9/22/2003 5:28:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-03B

Prep Date: 10/3/2003

Analytical Method ID: ADEC AK102/103 - (DRO & RRO)

Prep Method ID: 3510

Prep Batch Number: A031003006

Report Basis: As Received

Sample prep wt./vol: 950.00 ml

Analysis Date: 10/7/2003 7:07:00PM

Instrument: Roo

File Name: R3100711.D

Dilution Factor: 1

Analyst Initials: HW

Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/L	0.11	0.021	1
Residual Range Organics	n/a	**0.25**		mg/L	0.21	0.033	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**0.051**		mg/L	0.0053	0.00067	0.053	**97.8**	50	150	1
Squalane	111-01-3	**0.049**		mg/L	0.0053	0.0010	0.053	**92.9**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-03A

Prep Date: 10/2/2003

Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B

Prep Method ID: 5030

Prep Batch Number: A031002002

Report Basis: As Received

Sample prep wt./vol: 5.00 ml

Analysis Date: 10/2/2003 7:10:00PM

Instrument: Natasha

File Name: N3100224.D

Dilution Factor: 1

Analyst Initials: SG

Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15	1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18	
Gasoline Range Organics	n/a	ND		ug/L	50	3.0	
Toluene	108-88-3	ND		ug/L	1.0	0.24	
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**72**		ug/L	1.0	0.10	100	**72.4**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**100**		ug/L	1.0	0.10	100	**104**	50	150	
Difluorobenzene	540-36-3	**45**		ug/L	1.0	0.10	50	**89.6**	50	150	
Difluorobenzene(PID)	540-36-3	**52**		ug/L	1.0	0.10	50	**104**	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309186-03D

Prep Date: 10/8/2003

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

Prep Method ID: 7470A

Prep Batch Number: T031008002

Report Basis: As Received

Sample prep wt./vol: 20.00 ml

Analysis Date: 10/11/2003 3:01:26PM

Instrument: CVAA_1

File Name: B031011W.W

Dilution Factor: 1

Analyst Initials: CS

Prep Extract Vol: 20.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: **Client Sample Report**

Client Sample Name: **03RDVMW10**

Matrix: Water

Collection Date: 9/22/2003 5:28:00PM

Lab Sample Number:	A0309186-03D	Analysis Date:	10/11/2003 3:01:26PM
Prep Date:	10/8/2003	Instrument:	CVAA_1
Analytical Method ID:	SW7470A - Mercury in Liquid Waste by CVAA - Total Hg	File Name:	B031011W.W
Prep Method ID:	7470A	Dilution Factor:	1
Prep Batch Number:	T031008002		
Report Basis:	As Received	Analyst Initials:	CS
Sample prep wt./vol:	20.00 ml	Prep Extract Vol:	20.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Mercury	7439-97-6	**0.0037**		mg/L	0.00020	0.000060	1

The following test was conducted by: BC Research Inc.

Lab Sample Number:	A0309186-03C	Analysis Date:	10/17/2003 12:49:47PM
Prep Date:	10/17/2003	Instrument:	Sub Contract
Analytical Method ID:	SW6020 - ICPMS - Total BC Research	File Name:	
Prep Method ID:	6020-BC	Dilution Factor:	1
Prep Batch Number:	J031023006		
Report Basis:	As Received	Analyst Initials:	BC Research
Sample prep wt./vol:	100.00 ml	Prep Extract Vol:	100.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Antimony	7440-36-0	**7.00**		ug/L	1.0	0.33	1
Arsenic	7440-38-2	**34.0**		ug/L	1.0	0.33	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: Client Sample Report

Client Sample Name: **03RDVMW7**

Matrix: Water

Collection Date: 9/23/2003 4:35:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-04B

Prep Date: 10/3/2003

Analytical Method ID: ADEC AK102/103 - (DRO & RRO)

Prep Method ID: 3510

Prep Batch Number: A031003006

Report Basis: As Received

Sample prep wt./vol: 600.00 ml

Analysis Date: 10/7/2003 7:35:00PM

Instrument: Roo

File Name: R3100712.D

Dilution Factor: 1

Analyst Initials: HW

Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/L	0.17	0.033	1
Residual Range Organics	n/a	ND		mg/L	0.33	0.052	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**0.093**		mg/L	0.0083	0.0011	0.083	**112**	50	150	1
Squalane	111-01-3	**0.089**		mg/L	0.0083	0.0016	0.083	**107**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A0309186-04A

Prep Date: 10/2/2003

Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B

Prep Method ID: 5030

Prep Batch Number: A031002002

Report Basis: As Received

Sample prep wt./vol: 5.00 ml

Analysis Date: 10/2/2003 7:40:00PM

Instrument: Natasha

File Name: N3100225.D

Dilution Factor: 1

Analyst Initials: SG

Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15	1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18	
Gasoline Range Organics	n/a	ND		ug/L	50	3.0	
Toluene	108-88-3	ND		ug/L	1.0	0.24	
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**71**		ug/L	1.0	0.10	100	**71.4**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**100**		ug/L	1.0	0.10	100	**99.8**	50	150	
Difluorobenzene	540-36-3	**45**		ug/L	1.0	0.10	50	**90.4**	50	150	
Difluorobenzene(PID)	540-36-3	**50**		ug/L	1.0	0.10	50	**101**	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0309186-04D

Prep Date: 10/8/2003

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

Prep Method ID: 7470A

Prep Batch Number: T031008002

Report Basis: As Received

Sample prep wt./vol: 20.00 ml

Analysis Date: 10/11/2003 3:03:59PM

Instrument: CVAA_1

File Name: B031011W.W

Dilution Factor: 1

Analyst Initials: CS

Prep Extract Vol: 20.00 ml

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: **Client Sample Report**

Client Sample Name: **03RDVMW7**

Matrix: Water

Collection Date: 9/23/2003 4:35:00PM

Lab Sample Number: A0309186-04D

Prep Date: 10/8/2003

Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

Prep Method ID: 7470A

Prep Batch Number: T031008002

Report Basis: As Received

Sample prep wt./vol: 20.00 ml

Analysis Date: 10/11/2003 3:03:59PM

Instrument: CVAA_1

File Name: B031011W.W

Dilution Factor: 1

Analyst Initials: CS

Prep Extract Vol: 20.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Mercury	7439-97-6	**0.011**		mg/L	0.00020	0.000060	1

The following test was conducted by: BC Research Inc.

Lab Sample Number: A0309186-04C

Prep Date: 10/17/2003

Analytical Method ID: SW6020 - ICPMS - Total BC Research

Prep Method ID: 6020-BC

Prep Batch Number: J031023006

Report Basis: As Received

Sample prep wt./vol: 100.00 ml

Analysis Date: 10/17/2003 12:49:47PM

Instrument: Sub Contract

File Name:

Dilution Factor: 1

Analyst Initials: BC Research

Prep Extract Vol: 100.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Antimony	7440-36-0	ND		ug/L	1.0	0.33	1
Arsenic	7440-38-2	ND		ug/L	1.0	0.33	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: **Client Sample Report**

Client Sample Name: **TRIP BLANK**

Matrix: Water

Collection Date: 9/23/2003 4:35:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number:	A0309186-05A	Analysis Date:	10/2/2003 8:10:00PM
Prep Date:	10/2/2003	Instrument:	Natasha
Analytical Method ID:	GRO by ADEC AK101 & BTEX by 8021B	File Name:	N3100226.D
Prep Method ID:	5030	Dilution Factor:	1
Prep Batch Number:	A031002002		
Report Basis:	As Received	Analyst Initials:	SG
Sample prep wt./vol:	5.00 ml	Prep Extract Vol:	5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15	1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18	
Gasoline Range Organics	n/a	ND		ug/L	50	3.0	
Toluene	108-88-3	ND		ug/L	1.0	0.24	
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**72**		ug/L	1.0	0.10	100	**71.8**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**110**		ug/L	1.0	0.10	100	**107**	50	150	
Difluorobenzene	540-36-3	**44**		ug/L	1.0	0.10	50	**88.2**	50	150	
Difluorobenzene(PID)	540-36-3	**52**		ug/L	1.0	0.10	50	**104**	50	150	

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Aqueous

Collection Date: 10/3/2003 12:00:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031003006-MB
Prep Date: 10/3/2003
Analytical Method ID: ADEC AK102/103 - (DRO & RRO)
Prep Method ID: 3510
Prep Batch Number: A031003006
Report Basis: Dry Weight Basis
Sample prep wt./vol: 1,000.00 ml

Analysis Date: 10/8/2003 12:40:00PM
Instrument: Roo
File Name: R3100729.D
Dilution Factor: 1
Analyst Initials: HW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Diesel Range Organics	n/a	ND		mg/L	0.10	0.020	1
Residual Range Organics	n/a	ND		mg/L	0.20	0.031	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
o-Terphenyl	84-15-1	**0.050**		mg/L	0.0050	0.00064	0.050	**99.7**	50	150	1
Squalane	111-01-3	**0.049**		mg/L	0.0050	0.00096	0.050	**98.0**	50	150	

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A031002002-MB
Prep Date: 10/2/2003
Analytical Method ID: GRO by ADEC AK101 & BTEX by 8021B
Prep Method ID: 5030
Prep Batch Number: A031002002
Report Basis: Dry Weight Basis
Sample prep wt./vol: 5.00 ml

Analysis Date: 10/2/2003 9:07:00AM
Instrument: Natasha
File Name: N3100204.D
Dilution Factor: 1
Analyst Initials: SG
Prep Extract Vol: 5.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Benzene	71-43-2	ND		ug/L	1.0	0.15	1
Ethylbenzene	100-41-4	ND		ug/L	1.0	0.18	
Gasoline Range Organics	n/a	ND		ug/L	50	3.0	
Toluene	108-88-3	ND		ug/L	1.0	0.24	
Xylenes, Total	1330-20-7	ND		ug/L	3.0	0.63	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	Rerun #:
Bromofluorobenzene	1072-85-1	**79**		ug/L	1.0	0.10	100	**79.4**	50	150	1
Bromofluorobenzene(PID)	1072-85-1	**110**		ug/L	1.0	0.10	100	**107**	50	150	
Difluorobenzene	540-36-3	**46**		ug/L	1.0	0.10	50	**92.8**	50	150	
Difluorobenzene(PID)	540-36-3	**50**		ug/L	1.0	0.10	50	**100**	50	150	

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T031008002-MB
Prep Date: 10/8/2003
Analytical Method ID: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg
Prep Method ID: 7470A
Prep Batch Number: T031008002
Report Basis: Dry Weight Basis
Sample prep wt./vol: 20.00 ml

Analysis Date: 10/11/2003 2:23:28PM
Instrument: CVAA_1
File Name: B031011W.W
Dilution Factor: 1
Analyst Initials: CS
Prep Extract Vol: 20.00 ml

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Aqueous

Collection Date: 10/8/2003 12:00:00AM

Lab Sample Number:	T031008002-MB	Analysis Date:	10/11/2003 2:23:28PM
Prep Date:	10/8/2003	Instrument:	CVAA_1
Analytical Method ID:	SW7470A - Mercury in Liquid Waste by CVAA - Total Hg	File Name:	B031011W.W
Prep Method ID:	7470A	Dilution Factor:	1
Prep Batch Number:	T031008002		
Report Basis:	Dry Weight Basis	Analyst Initials:	CS
Sample prep wt./vol:	20.00 ml	Prep Extract Vol:	20.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Mercury	7439-97-6	ND		mg/L	0.00020	0.000060	2

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A0309186

Project: Red Devil AST

Project Number:

Prep Batch: **A031003006**

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: ADEC AK102/103 - (DRO & RRO)

MB: A031003006-MB

Prep Date: 10/3/2003

MB Anal. Date: 10/8/2003 12:40:00PM

Units: mg/L

LCS Anal. Date: 10/6/2003 9:11:00PM LCSD Anal. Date: 10/8/2003 1:08:00PM

Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	2.08	1.90	2.00	2.00	104.0	95.0	9.0	60 - 120	20	
Residual Range Organics	ND	2.32	1.95	2.00	2.00	116.0	97.5	17.3	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A0309186

Project: Red Devil AST

Project Number:

Prep Batch: **A031002002**

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: GRO by ADEC AK101 & BTEX by 8021B

MB: A031002002-MB

Prep Date: 10/2/2003

MB Anal. Date: 10/2/2003 9:07:00AM

Units: ug/L

LCS Anal. Date: 10/2/2003 9:37:00AM LCSD Anal. Date: 10/2/2003 10:07:00AM Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	14.1	14.2	13.8	13.8	102.2	102.9	0.7	60 - 120	20	
Toluene	ND	74.2	74.0	84.5	84.5	87.8	87.5	0.3	60 - 120	20	
Ethylbenzene	ND	22.4	22.7	20.3	20.3	110.4	111.9	1.3	60 - 120	20	
Xylenes, Total	ND	112	110	99.2	99.2	112.9	110.9	1.8	60 - 120	20	
Gasoline Range Organics	ND	911	970	1,100	1,100	82.8	88.2	6.3	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0309186

Project: Red Devil AST

Project Number:

Prep Batch: **T031008002**

QUALITY CONTROL REPORT

LCS REPORT

Analysis: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

MB: T031008002-MB

Prep Date: 10/8/2003

MB Anal. Date: 10/11/2003 2:23:28PM

Units: mg/L

LCS Anal. Date: 10/10/2003 5:06:21PM

Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SPLev	Recov.	Recov Lim	RPDLim	Flag
Mercury	ND	0.00486	0.00496	98.0	80 - 120		

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

SURROGATE RECOVERY SUMMARY REPORT

Test Method: **ADEC AK102/103 - (DRO & RRO)**

Lab Sample #: A0309186-01B | Dilution: 1
Analysis Date: 10/7/2003 3:28:00PM | Client Sample: **03RDVMW6**
Batch Number: A031003006 | Data File: R3100703.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	89	50	150		Complete
Squalane	97	50	150		Complete

Lab Sample #: A0309186-02B | Dilution: 1
Analysis Date: 10/7/2003 3:55:00PM | Client Sample: **03RDVMW1**
Batch Number: A031003006 | Data File: R3100704.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	83	50	150		Complete
Squalane	86	50	150		Complete

Lab Sample #: A0309186-03B | Dilution: 1
Analysis Date: 10/7/2003 7:07:00PM | Client Sample: **03RDVMW10**
Batch Number: A031003006 | Data File: R3100711.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	98	50	150		Complete
Squalane	93	50	150		Complete

Lab Sample #: A0309186-04B | Dilution: 1
Analysis Date: 10/7/2003 7:35:00PM | Client Sample: **03RDVMW7**
Batch Number: A031003006 | Data File: R3100712.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	112	50	150		Complete
Squalane	107	50	150		Complete

Lab Sample #: A031003006-MB | Dilution: 1
Analysis Date: 10/8/2003 12:40:00PM | Client Sample: **MB**
Batch Number: A031003006 | Data File: R3100729.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	100	60	120		Complete
Squalane	98	60	120		Complete

Lab Sample #: A031003006-LCS | Dilution: 1
Analysis Date: 10/6/2003 9:11:00PM | Client Sample: **LCS**
Batch Number: A031003006 | Data File: R3100613.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	89	60	120		Complete
Squalane	97	60	120		Complete

Lab Sample #: A031003006-LCSD | Dilution: 1
Analysis Date: 10/8/2003 1:08:00PM | Client Sample: **LCSD**
Batch Number: A031003006 | Data File: R3100730.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
o-Terphenyl	79	60	120		Complete
Squalane	84	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Test Method: **GRO by ADEC AK101 & BTEX by 8021B**

Lab Sample #: A0309186-01A | Dilution: 1
Analysis Date: 10/2/2003 6:11:00PM | Client Sample: **03RDVMW6**
Batch Number: A031002002 | Data File: N3100222.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	75	50	150		Complete
Bromofluorobenzene(PID)	101	50	150		Complete
Difluorobenzene	93	50	150		Complete
Difluorobenzene(PID)	100	50	150		Complete

Lab Sample #: A0309186-02A | Dilution: 1
Analysis Date: 10/2/2003 6:41:00PM | Client Sample: **03RDVMW1**
Batch Number: A031002002 | Data File: N3100223.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	72	50	150		Complete
Bromofluorobenzene(PID)	107	50	150		Complete
Difluorobenzene	88	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Lab Sample #: A0309186-03A | Dilution: 1
Analysis Date: 10/2/2003 7:10:00PM | Client Sample: **03RDVMW10**
Batch Number: A031002002 | Data File: N3100224.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	72	50	150		Complete
Bromofluorobenzene(PID)	104	50	150		Complete
Difluorobenzene	90	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Lab Sample #: A0309186-04A | Dilution: 1
Analysis Date: 10/2/2003 7:40:00PM | Client Sample: **03RDVMW7**
Batch Number: A031002002 | Data File: N3100225.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	71	50	150		Complete
Bromofluorobenzene(PID)	100	50	150		Complete
Difluorobenzene	90	50	150		Complete
Difluorobenzene(PID)	101	50	150		Complete

Lab Sample #: A0309186-05A | Dilution: 1
Analysis Date: 10/2/2003 8:10:00PM | Client Sample: **TRIP BLANK**
Batch Number: A031002002 | Data File: N3100226.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	72	50	150		Complete
Bromofluorobenzene(PID)	107	50	150		Complete
Difluorobenzene	88	50	150		Complete
Difluorobenzene(PID)	104	50	150		Complete

Lab Sample #: A031002002-MB | Dilution: 1
Analysis Date: 10/2/2003 9:07:00AM | Client Sample: **MB**
Batch Number: A031002002 | Data File: N3100204.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

Test Method: **GRO by ADEC AK101 & BTEX by 8021B**

Lab Sample #: A031002002-MB | Dilution: 1
Analysis Date: 10/2/2003 9:07:00AM | Client Sample: **MB**
Batch Number: A031002002 | Data File: N3100204.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	79	60	120		Complete
Bromofluorobenzene(PID)	107	60	120		Complete
Difluorobenzene	93	60	120		Complete
Difluorobenzene(PID)	100	60	120		Complete

Lab Sample #: A031002002-LCS | Dilution: 1
Analysis Date: 10/2/2003 9:37:00AM | Client Sample: **LCS**
Batch Number: A031002002 | Data File: N3100205.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	82	60	120		Complete
Bromofluorobenzene(PID)	92	60	120		Complete
Difluorobenzene	91	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Lab Sample #: A031002002-LCSD | Dilution: 1
Analysis Date: 10/2/2003 10:07:00AM | Client Sample: **LCSD**
Batch Number: A031002002 | Data File: N3100206.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Bromofluorobenzene	85	60	120		Complete
Bromofluorobenzene(PID)	92	60	120		Complete
Difluorobenzene	93	60	120		Complete
Difluorobenzene(PID)	97	60	120		Complete

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **19,918** **Lab Project Number:** **A0309186**

Prep Date: 10/2/2003

Lab Method Blank Id: A031002002-MB
Prep Batch ID: A031002002
Method: GRO by ADEC AK101 & BTEX by 8021B

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0309186-05A	TRIP BLANK	N3100226.D	10/2/2003 8:10:00PM
A0309186-02A	03RDVMW1	N3100223.D	10/2/2003 6:41:00PM
A0309186-03A	03RDVMW10	N3100224.D	10/2/2003 7:10:00PM
A0309186-04A	03RDVMW7	N3100225.D	10/2/2003 7:40:00PM
A031002002-LCS	LCS	N3100205.D	10/2/2003 9:37:00AM
A031002002-LCSD	LCSD	N3100206.D	10/2/2003 10:07:00AM
A0309186-01A	03RDVMW6	N3100222.D	10/2/2003 6:11:00PM

Prep Date: 10/3/2003

Lab Method Blank Id: A031003006-MB
Prep Batch ID: A031003006
Method: ADEC AK102/103 - (DRO & RRO)

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0309186-03B	03RDVMW10	R3100711.D	10/7/2003 7:07:00PM
A0309186-04B	03RDVMW7	R3100712.D	10/7/2003 7:35:00PM
A031003006-LCSD	LCSD	R3100730.D	10/8/2003 1:08:00PM
A031003006-LCS	LCS	R3100613.D	10/6/2003 9:11:00PM
A0309186-01B	03RDVMW6	R3100703.D	10/7/2003 3:28:00PM
A0309186-02B	03RDVMW1	R3100704.D	10/7/2003 3:55:00PM

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **19,918** **Lab Project Number:** **A0309186**

Prep Date: 10/8/2003

Lab Method Blank Id: T031008002-MB

Prep Batch ID: T031008002

Method: SW7470A - Mercury in Liquid Waste by CVAA - Total Hg

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate	
A0309186-04D	03RDVMW7	B031011W.WKS	10/11/2003	3:03:59PM
B0309287-01A-MS	MS	B031011W.WKS	10/11/2003	2:33:08PM
A0309186-01D	03RDVMW6	B031011W.WKS	10/11/2003	2:56:40PM
A0309186-02D	03RDVMW1	B031011W.WKS	10/11/2003	2:59:08PM
A0309186-03D	03RDVMW10	B031011W.WKS	10/11/2003	3:01:26PM
B0309287-01A	Batch QC	B031010W.WKS	10/10/2003	5:08:45PM
T031008002-LCS	LCS	B031010W.WKS	10/10/2003	5:06:21PM
B0309287-01A-DUP	DUP	B031010W.WKS	10/10/2003	5:11:09PM

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.
Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit
NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit
HIGH = Recovery , RPD, or other parameter is above Upper Control Limit
E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank
J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)
W = Post digestion spike did not meet criteria
S = Reported value determined by the Method of Standard Additions (MSA)

Other Flags may be applied. See Case Narrative for Description

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0309186

Project: **Red Devil AST**

Client: **Mactec Engineering & Consulting Inc.**

Client Project Number: **MACTEC**

REPORTING CONVENTIONS FOR THIS REPORT

A0309186

TestPkgName	Basis	# Sig Figs	Reporting Limit
6020/3010A (Aqueous) - Total BC Research	As Received	3	Report to PQL
7470A/7470A (Aqueous) - Total Hg	As Received	2	Report to PQL
AK101GRO/8021BTEX/5030 (Aqueous)	As Received	2	Report to PQL
AK102/103/3510 (Aqueous) - (DRO & RRO)	As Received	2	Report to PQL

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page 1 of 1

№ 30382

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FAX: (303) 469-5254

LGN: A03091816
Quote:
Project ID #:

Chain of Custody Record / Analysis Request

Company Name: MACTEC
Company Address: 601 EAST 57th PLACE ANC. AK 99518
Telephone: 907-563-8102
Fax: 907-563-4574
Email: B LUND@mactec.com

Project Name: RED DEVIL AST
Report To: BRYAN LUND
Invoice To: BRYAN LUND
P.O. Number 4034030008

Sample ID	Date Collected	Time collected	Matrix	# Containers: VOA	1 Litre	125ml		GRO/BTEX (HCl preserved)	AK102/103 (HCl preserved)	6020/7470 (HNO3 preserved)	Metals incl As, Sb, Hg											MS / MSD	Preserved?	Highly Concentrated?	LAB ID
RF ~~03AMW~~ 03RDV MW10	9/22/03	1542	H_2O	2	1	1		X	X	X		X											X		1
03RDV MW1	9/22/03	1725	H_2O	2	1	1		X	X	X		X											X		2
03RDV MW10	9/22/03	1728	H_2O	2	1	1		X	X	X		X											X		3
03RDV MW7	9/23/03	1635	H_2O	2	1/2	1		X	X	X		X													4
TRIP BLANK & WATER TEMP								X																	5

COMMENTS samples (all H_2O) very turbid @ time of sampling; 03RDV MW7 VERY TURBID; not enough recharge to sample for all parameters only 1/2 liter for AK102/103

O - AEL D - SE

☐ 10 Business Days Standard TAT
☐ 15 Business Days
☐ other:_____ # Business Days
(Prior Authorization Required.)

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:	Cooler Receipt Information
Signature: R Farrage	Signature: S Finnegan	Signature: S Finnegan	Signature: Dollu Wheeler	Temp Received: 2.4 °C
Printed Name: R FARRAGE	Printed Name: S. FINNEGAN	Printed Name: S Finnegan	Printed Name: Dollu Wheeler	Temp Received: 4.2 °C
Firm: MACTEC	Firm: MACTEC	Firm: MACTEC	Firm: AAI	Coolers: 2
Date/ Time: 9/25/03 11AM	Date/ Time: 9/26/03 9:30 A.M	Date/ Time: 9/26/03 11:45	Date/ Time: 9-26-03 11:45	Seals: 2 SF
				Means of Delivery / Way Bill #: Client

Relinq - DW 9-29-03 1pm, 4pm -

Cooler Receipt Form

AAI-ANCHORAGE

ANALYTICA

Client: Mactec Engineering & Consul **Client Code:** 010400 **Order #:** A0309186
Project: Red Devel AST/

Cooler ID: 1

A. Preliminary Examination Phase: **Date cooler opened:** 9/26/2003
Cooler opened by: dw **Signature:** D. Wheeler

1. **Was airbill Attached?** No **Airbill #:** **Carrier Name:** Client
2. **Custody Seals?** Yes **How many?** 2 **Location:** LID **Seal Name:** SF
3. **Seals intact?** Yes
4. **Screened for radiation?** N/A
5. **COC Attached?** Yes **Properly Completed?** Yes **Signed by AEL employee?** Yes
6. **Project Identification from custody paper:** RED DEVIL AST
7. **Preservative:** BlueGel **Temperature:** 2.4

Designated person initial here to acknowledge receipt: DW **Date:** 9-29-03

COMMENTS: 2 COOLERS RECEIVED AT AAI 2.4, 4.2

B. Log-In Phase: **Samples Log-in Date:** 9/29/2003 **Log-in By:** dw **Signature:** D. Wheeler

1. **Packing Type:** Bubblewrap
2. **Were samples in separate bags?** Yes
3. **Were containers intact?** Yes **Labels agree with COC?** Yes
4. **Number of bottles received:** 19 **Number of samples received:** 5
5. **Correct containers used?** Yes **Correct preservatives added?** Yes
6. **Sufficient sample volume?** Yes
7. **Bubbles in VOA samples?** No
8. **Was Project manager called and status discussed?** No
9. **Was anyone called?** No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS: Samples very turbid at time of sampling 03RDVMW7 very turbid; not enough recharge to sample for all parameters. Only .5 liter for aK102/103. R.Farrage with Mactec 9/25/03

ANALYTICA

Cooler Receipt Form

AEL-THORNTON

Client: Mactec Engineering & Consul **Client Code:** 010400 **Order #:** A0309186
Project: Red Devel AST/

Cooler ID: 2

A. Preliminary Examination Phase: **Date cooler opened:** 9/30/2003
Cooler opened by: RA **Signature:** RA

1. **Was airbill Attached?** Yes **Airbill #:** 7929 7905 0654 **Carrier Name:** FedEx
2. **Custody Seals?** Yes **How many?** 1 **Location:** front **Seal Name:** DW
3. **Seals intact?** Yes
4. **Screened for radiation?** N/A
5. **COC Attached?** N/A **Properly Completed?** Yes **Signed by AEL employee?** Yes
6. **Project Identification from custody paper:** Red Devel AST/
7. **Preservative:** BlueGel **Temperature:** 2.3

Designated person initial here to acknowledge receipt: RA **Date:** 9-30-03

COMMENTS:

B. Log-In Phase: **Samples Log-in Date:** 9/30/2003 **Log-in By:** dm **Signature:** [illegible]

1. **Packing Type:** Bubblewrap
2. **Were samples in separate bags?** No
3. **Were containers intact?** Yes **Labels agree with COC?** Yes
4. **Number of bottles received:** 4 **Number of samples received:** 4
5. **Correct containers used?** Yes **Correct preservatives added?** Yes
6. **Sufficient sample volume?** Yes
7. **Bubbles in VOA samples?** N/A
8. **Was Project manager called and status discussed?** No
9. **Was anyone called?** No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS:

No 30382

LGN: A03091846
Quote:
Project ID #:

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Chain of Custody Record / Analysis Request

Company Name: MACTEC
Company Address: 601 EAST 57th PLACE ANC. AK 99518
Telephone: 907-563-8102
Fax: 907-561-4574
Email: B LUND@mactec.com

Project Name: RED DEVIL AST
Report To: BRYAN LUND
Invoice To: BRYAN LUND
P.O. Number 4034030008

Sample ID	Date Collected	Time collected	Matrix	# Containers VOA	1L HZ	1L Sol		SW6 BTEX (HCl preserved)	AK102/103 (HCl preserved)	8020 74470 (HNO3 preserved)	Metals (no As, Sb, Hg)	Hg										MS / MSD	Preserved?	Highly Concentrated?	LAB ID
RF ~~03AMW~~ 03RDV MW6	9/22/03	1542	H_2O	2	1	1		X	X	X		X											X		
03RDV MW1	9/22/03	1725	H_2O	2	1	1		X	X	X		X											X		
03RDV MW10	9/22/03	1728	H_2O	2	1	1		X	X	X		X											X		
03RDV MW7	9/23/03	1635	H_2O	2	1/2	1		X	X	X		X													
TRIP BLANK & WATER TEMP																									

COMMENTS samples (all H_2O) very turbid @ time of sampling; 03RDVMW7 VERY TURBID; not enough recharge to sample for all parameters only 1/2 liter for AK102/103

O - AEL D - SE

☐ 10 Business Days Standard TAT
☐ 15 Business Days
☐ other: _____ # Business Days
(Prior Authorization Required.)

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:	Cooler Receipt Information
Signature: R Farrage	Signature: [signature]	Signature: [signature]	Signature: Dollie Wheeler	Temp Received: 2.4 °C
Printed Name: R FARRAGE	Printed Name: S. FINNEGAN	Printed Name: S Finnegan	Printed Name: Dollie Wheeler	Temp Received: 4.2 °C 23
Firm: MACTEC	Firm: MACTEC	Firm: MACTEC	Firm: AAI	Coolers: 2
Date/ Time: 9/25/03 11AM	Date/ Time: 9/26/03 9:30 A.M	Date/ Time: 9/26/03 11:45	Date/ Time: 9-26-03 11:45	Seals: 2 SF
	Rel'd by - DW - 9-29-03 1:40pm		Rcvd: [signature] 9/30/03 10:00	Means of Delivery / Way Bill # Client

№ 30382

LGN: A0309186
Quote:
Project ID #:

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(303) 469-8868
FAX: (303) 469-5254

AAISE-JUNEAU

Chain of Custody Record / Analysis Request

Company Name: MACTEC
Company Address: 601 EAST 57th PLACE ANC. AK 99518
Telephone: 907-563-8102
Fax: 907-561-4574
Email: B LUND@mactec.com

Project Name: RED DEVIL AST
Report To: BRYAN LUND
Invoice To: BRYAN LUND
P.O. Number: 4034030008

Sample ID	Date Collected	Time collected	Matrix	# Containers VOA	1 Liter	125ml		GRO/BTEX (HCl preserved)	AK102/103 (HCl preserved)	6020/7470 (HNO3 preserved)	Metals (Na, As, Sb, Hg)	Hardness	MS / MSD	Preserved?	Highly Concentrated?	LAB ID
RF ~~03AMW~~ 03RDV MW6	9/22/03	1542	H_2O	2	1	1		X	X	X		X		X		
03RDV MW1	9/22/03	1725	H_2O	2	1	1		X	X	X		X		X		
03RDV MW10	9/22/03	1728	H_2O	2	1	1		X	X	X		X		X		
03RDV MW7	9/23/03	1635	H_2O	2	1/2	1		X	X	X		X				
TRIP BLANK & WATER TEMP																

COMMENTS Samples (all H_2O) very turbid @ time of sampling; 03RDVMW7 VERY TURBID; not enough recharge to sample for all parameters only 1/2 liter for AK102/103 O-AEL D-SE

☐ 10 Business Days Standard TAT
☐ 15 Business Days
☐ other: _____ # Business Days
(Prior Authorization Required.)

RELINQUISHED BY SAMPLER:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: R Farrage	Signature: S Finnegan	Signature: S Finnegan	Signature: Dollu Wheeler
Printed Name: R FARRAGE	Printed Name: S. FINNEGAN	Printed Name: S Finnegan	Printed Name: Dollu Wheeler
Firm: MACTEC	Firm: MACTEC	Firm: MACTEC	Firm: AAI
Date/ Time: 9/25/03 11AM	Date/ Time: 9/26/03 9:30AM	Date/ Time: 9/26/03 11:45	Date/ Time: 9-26-03 11:45

Cooler Receipt Information
Temp Received: 2.1 °C 3.6°C
Temp Received: 4.2 °C
Coolers: 2 1
Seals: 2 SF y-DW

Means of Delivery / Way Bill #: Client

Relinq - DW 9.29.03 1pm & 4pm rec. by: Kerra Schroeder 10/3/03 0905 DHL# 8785388673

ANALYTICA

Cooler Receipt Form

AAISE-JUNEAU

Client: Mactec Engineering & Consul **Client Code:** 010400 **Order #:** A0309186
Project: Red Devel AST/

Cooler ID: 3

A. Preliminary Examination Phase: **Date cooler opened:** 10/3/2003
Cooler opened by: KS **Signature:** Kevin Schroll

1. **Was airbill Attached?** Yes **Airbill #:** DHL# 8785388673 **Carrier Name:** DHL
2. **Custody Seals?** Yes **How many?** 1 **Location:** Cooler **Seal Name:** DW
3. **Seals intact?** Yes
4. **Screened for radiation?** No
5. **COC Attached?** Yes **Properly Completed?** Yes **Signed by AEL employee?** Yes
6. **Project Identification from custody paper:** Red Devil AST
7. **Preservative:** BlueGel **Temperature:** 3.6

Designated person initial here to acknowledge receipt: ML **Date:** 10/6/03

COMMENTS:

B. Log-In Phase: **Samples Log-in Date:** 10/6/2003 **Log-in By:** ML **Signature:** [signature]

1. **Packing Type:** Other
2. **Were samples in separate bags?** No
3. **Were containers intact?** Yes **Labels agree with COC?** Yes
4. **Number of bottles received:** 4 **Number of samples received:** 4
5. **Correct containers used?** Yes **Correct preservatives added?** Yes
6. **Sufficient sample volume?** Yes
7. **Bubbles in VOA samples?** N/A
8. **Was Project manager called and status discussed?** No
9. **Was anyone called?** No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS:

APPENDIX E

APPENDIX E

PROPOSED CLEANUP LEVELS

Proposed Cleanup Levels
BLM Red Devil Aboveground Storage Tanks

The proposed cleanup levels presented in the table below are based on site-specific data collected by MACTEC Engineering and Consulting, Inc. (MACTEC); calculations performed by the Alaska Department of Environmental Conservation (ADEC); and calculations performed by MACTEC. This table was originally presented in ADEC comments to the Bureau of Land Management (BLM) regarding the draft petroleum release investigation report prepared by MACTEC for the BLM.

Contaminant of Concern	Cleanup Level (mg/kg)	Governing Risk-Based Pathway	Maximum Level Found Onsite (mg/kg)[1]
GRO	1,380	Migration to Groundwater	214 / 120
DRO	1,190	Migration to Groundwater	22,900 / 3,400
RRO	10,000	Ingestion	194 / 12
Benzene	0.087	Migration to Groundwater	0.095 / 0.053
Toluene	25.2	Migration to Groundwater	0.16
Ethylbenzene	25.7	Migration to Groundwater	0.18
Total Xylenes	362	Migration to Groundwater	2.3
Naphthalene	21	Migration to Groundwater	0.4
Phenanthrene	4,300	Migration to Groundwater	0.15

1. The values listed for gasoline-range organics (GRO), diesel-range organics (DRO), residual-range organics (RRO), and benzene show results from both the 2000 and 2003 sampling events: 2000 result/2003 result. The remaining contaminants of concern levels are only from 2003.

DISTRIBUTION

Aboveground Storage Tanks/Ore Hopper Demolition and
Petroleum Release Investigation
Red Devil Mine
Red Devil, Alaska

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