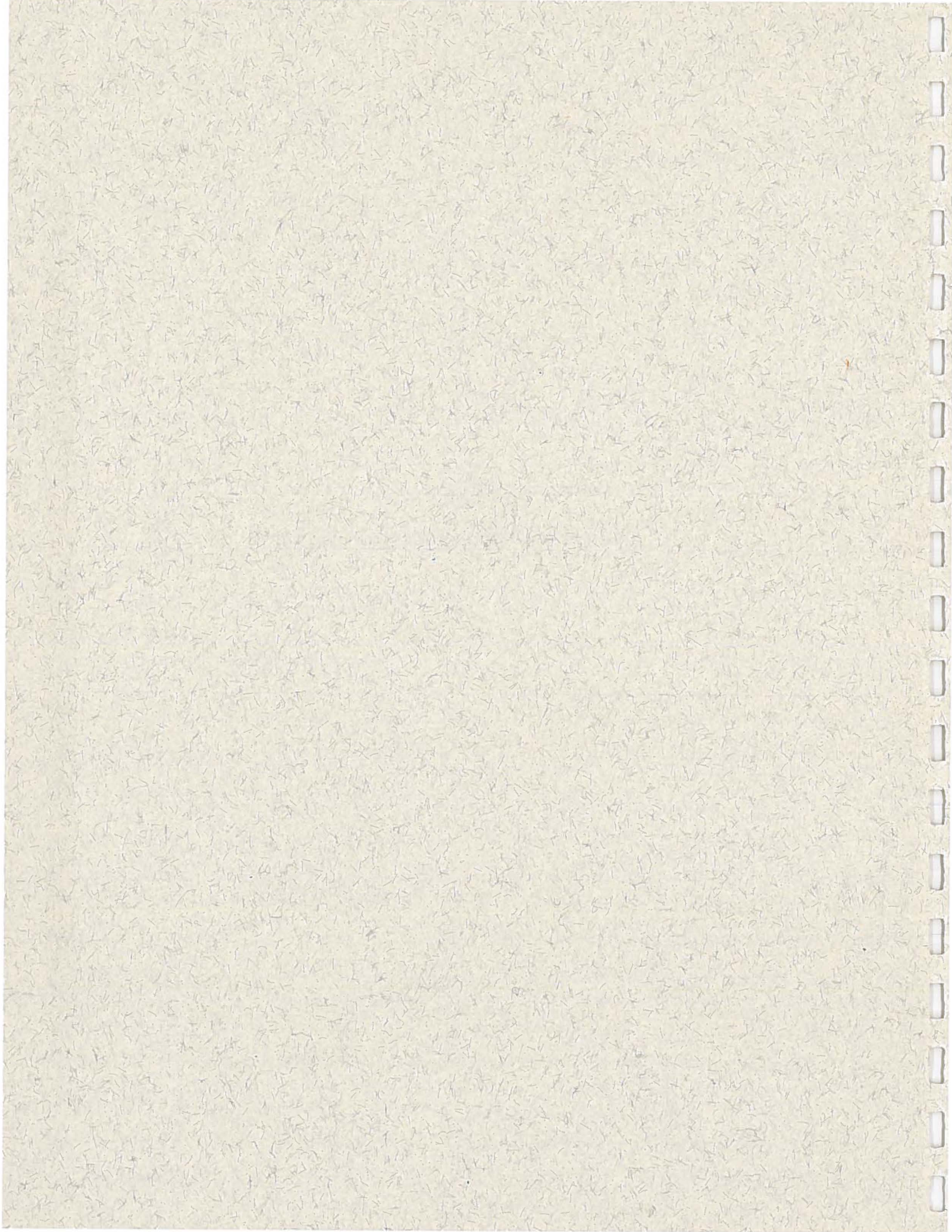


APPENDIX D
FRUEHAUF PHASE I AND II ESA REPORTS



PHASE I ENVIRONMENTAL SURVEY

KCS - FRUEHAUF

9426 8th Avenue South, Seattle, Washington

1.0 INTRODUCTION

In accordance with the scope of work outlined in Dames & Moore's proposal of January 9, 1990, Dames & Moore performed a modified Phase I environmental survey at the Fruehauf property located in Seattle, Washington on February 5, 1990. The purpose of this survey was to evaluate the potential for the existence and the extent, if any, of site contamination resulting from the disposal or improper handling of hazardous or toxic materials on or around this property. And to verify the results of the respective environmental audit of this facility as previously performed by Fruehauf.

The following tasks were accomplished during the performance of this survey:

- Perform a standard Phase I Environmental Survey as specified in the following sections of this proposal in agreement with current customary commercial practice;
- Perform an Asbestos Characterization of suspect asbestos containing building materials (friable and non-friable) at each of the facilities;
- Review and verify the results of the environmental audit performed previously by Fruehauf's audit team at each of the respective facilities;
- Verify the initiation or completion of any remedial work being performed by Fruehauf as a result of their audit recommendations;
- Analyze those issues/environmental concerns which were identified by Fruehauf during previous environmental review to determine the need for a more extensive environmental investigation (i.e., Phase II Investigation) following a complete discussion of the circumstances and obtaining authorization to proceed from KCS's designee.

2.0 PHYSIOGRAPHIC SETTING

The Fruehauf property is located at 9426 8th Avenue South, Seattle, King County, Washington. The site is located in the broad flat valley of the Duwamish River at the south end of Elliott Bay.

The property consists of a main building that houses the service area, parts department, and offices; a separate sales building; a small portable building used as office space; a trailer used for records storage; and a large lot used to store trailers. The subject property is bound to the north by Puget Sound Coatings, Inc., TWS, and Zimmerman Moving; to the west by Advance Electroplating, Polygon Plastics, and Pure Water Corporation; to the east by a large vacant lot that is reported to have been used as a disposal site for kiln dust. The real estate agent listing the vacant property states that the material is approximately seven feet thick and is not hazardous, per a recent environmental investigation (Bill Kidder of Kidder, Mathews and Segner Inc.). Container Care of Puget Sound is located south of the Fruehauf site. The area is generally industrial and commercial.

3.0 SITE DEVELOPMENT HISTORY

The past site history was investigated through the use of available aerial photographs, historical topographic maps and interviews with site personnel.

Aerial photographs for the following years were reviewed: 1965, 1970, 1971, 1985 and 1988. Older photographs were not found. Topographic maps for 1949 and later photo revisions from 1968 and 1973 were also reviewed. No Sanborn maps were available for this site.

The 1949 topographic map indicates that the site was undeveloped. The 1965 photograph shows the original Fruehauf building and a small parking area surrounding it. The property to the east and south appears to be vacant. Other property to the west and north are developed. No significant changes are evident on photographs from 1970 and 1971. In 1985 the building appears to have expanded and the parking area now extends east to 10th Avenue. The surrounding area is fully developed and the vacant lot to the east appears to have been filled. The 1988 photograph shows no significant changes. The 1968 and 1973 topographic maps are consistent with this history.

Mr. Tony Hellman, Service Manager, believes that the site was first developed by Fruehauf in about 1950.

4.0 ENVIRONMENTAL SURVEY/SITE RECONNAISSANCE

On February 5, 1990, Dames & Moore conducted a visual reconnaissance of the Fruehauf property. Dames & Moore was given a tour of the property by Tony Hellman of Fruehauf. Site-specific questions were answered by Russ Snow, Office Manager, and Tony Hellman, Service Manager. During the performance of the site reconnaissance, Dames & Moore identified the following areas of potential environmental concern:

- Underground Storage Tank - A waste oil tank installed about 1984. Approximate capacity is 1,500 gallons.

- Asbestos-Containing Materials - Four bulk samples of potentially asbestos-containing materials were obtained.
 - 2 x 4 suspended ceiling tile *ND* - ceiling tile in sales office *ND*
 - Steam Cleaner insulation *10-15%* - pipe fitting in main shop *65-75% ACM*
ACM
- PCB's - No suspected sources seen on site.
- Staining - Four areas of stained soil or asphalt were observed during the site visit:
 - Oil staining in the vicinity of the waste oil tank and oil/water separator.
 - Oil stains along the eastern fence line, but generally limited to the northern portion of the property line.
 - A small area of oil stains on the ground beneath refrigeration units removed from trailers.
 - An area of white deposits on the soil near the northwest corner of the northern most area of the site.
- Unusual Odors - None noted.
- Spills - See staining above.
- Off-Site Facilities of Concern - Facilities which were located within 0.5 mile of the subject property which appeared to potentially handle, store, or dispose of hazardous materials were noted. During the regulatory agency file review, Dames & Moore attempted to locate records of adverse environmental conditions related to these facilities which may have negative impacts on the subject property. Facilities of concern which were observed within 0.5 mile of the subject property include the following:

<u>Facility</u>	<u>Location</u>
Ace Galvanizing	424 S. 96th Street
Penberthy Electromelt	631 S. 96th Street
Advance Electroplate	9585 8th Avenue S.
Puget Sound Coatings, Inc.	9220 8th Avenue S.
Container Care Puget Sound	9600 8th Avenue S.

A vacant lot is located on the north side of the 1000 block of S. 96th Street. The lot has reportedly been used to dispose of kiln dust from the Ideal Cement Company. The lot has been investigated for contamination and is reportedly non-hazardous (Bill Kidder). Dames & Moore's reconnaissance revealed discolored water leaching from the lot, and water in the ground-water monitoring wells appeared to be discolored. The wells exhibited an anaerobic odor.

5.0 Fruehauf Environmental Audit Verification

During the site reconnaissance Dames & Moore reevaluated specific information contained in Fruehauf's Environmental Survey and Analysis Report dated December 8, 1989. The following statements reflect Dames & Moore observations and subsequent evaluation of the Fruehauf Report:

	<u>Fruehauf</u>	<u>Dames & Moore</u>
• Separator:	Yes	Yes
• Holding Tanks:	Yes	Yes
• Other UST's:	No	No
• Abrasive Blasting:	No	No
• Ground Water Problem:	No	Possibly
• Known Asbestos:	No	Possibly
• Known PCB's:	No	Not suspected
• Issues and Concerns:		

Fruehauf identified oil stains near the holding tank.

Dames & Moore confirmed the presence of these stains. More importantly, we learned that the oil/water separator discharge is routed to an onsite leach field. Ground water is expected to occur near the surface at this location. If the separator is not working properly or if soluble materials are introduced into the system, then ground-water contamination may occur.

Lead acid batteries were observed to be stored in outside unprotected areas without adequate spill prevention and control measures.

A 5-gallon can of xylene was observed in the paint storage room. Disposal of xylene through the oil/water separator may adversely affect local ground-water quality.

The paint booth does not appear to have an air quality permit.

6.0 REGULATORY AGENCY RECORDS REVIEW

Regulatory Agency Records Review Section
to be completed by the Atlanta Office.

7.0 CONCLUSIONS

The following conclusions are provided based upon observations made during the site reconnaissance and data collected during the regulatory agency review:

The facility generally appears to be very well maintained and is quite clean. However, the existing leachfield and oil/water separator system represent a potential environmental liability at the site. An alternative method of managing this waste stream may be advantageous for Fruehauf, especially in light of the adjacent environmental investigation and possible ground-water problems.

The lead acid batteries should be stored in an area that offers protection from the elements and provides a method of preventing and containing spills and leaks.

The source of the oil stains along the east fence, and the white deposits near the northwest corner of the site should be investigated. Measures to prevent future spills or releases should be implemented.

The compliance status of the paint booth should be investigated and an air quality permit obtained, if required.

Results of the ~~asbestos~~ analyses have not been received. In the event that friable asbestos-containing materials are identified, appropriate operations, maintenance plans and abatement measures should be implemented to minimize potential asbestos exposures.

See 4.0 page 3

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6.0 REGULATORY AGENCY RECORDS REVIEW

Dames & Moore reviewed federal and state environmental regulatory agency information for the purpose of researching adverse environmental conditions documented on, or within 0.5 mile of the Seattle, Washington, Fruehauf facility. This state and federal environmental data identifies environmental problem sites and activities from the records of the United States Environmental Protection Agency (USEPA) and the State of Washington. The compilation of data reviewed is the result of a search by a regulatory agency data retrieval system. The following USEPA records were examined:

- National Priorities List (NPL)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Index System
- Resource Conservation and Recovery Act (RCRA) Notification System
- National Spill Reports System

In addition to the above federal reports, Dames & Moore also reviewed the following state information as provided by the regulatory agency data retrieval system:

- state sites
- underground storage tank registration
- landfill/solid waste facility locations

NATIONAL PRIORITIES LIST

The National Priorities (Superfund) List is the USEPA's database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Superfund program.

A review of the 1989 National Priorities List revealed the following sites:

No NPL sites were found within 0.5 mile of the facility.

CERCLA SITES

The CERCLA site list is a compilation by USEPA of the sites which USEPA has investigated or is currently investigating for a release or threatened release of hazardous substances pursuant to the CERCLA Act of 1980 (Superfund Act).

A review of the 1989 CERCLA Index System revealed the following sites:

Advance Electroplating Inc
9585 8th St.
Seattle, WA 98108

A Preliminary Assessment was completed on 5/7/85; at the conclusion of a preliminary assessment, no further action is anticipated for this site or no hazard was identified; the site has never been on the proposed final NPL.

RCRA

The USEPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA list is a compilation by the USEPA of reporting facilities that generate, store, transport, treat or dispose of hazardous waste.

A review of the 1989 RCRA list revealed the following facilities:

Fruehauf Div
9426 8th Ave. S
Seattle, WA 98108

Small Quantity Generator

Peninsula Truck Lines Inc.
6314 7th Ave. S.
Seattle, WA 98108

Transporter

Puget Sound Coatings Inc. 9220 8th Ave. S. Seattle, WA 98108	Exempt
Huntley Machine & Tool Inc. 4623 7th Ave. S. Seattle, WA 98108	No Permit Status Information
Tierney Electrical Mfg. Co. 7901 7th Ave. S. Seattle, WA 98108	Exempt
Fleet Equipment Co. 3922 7th Ave. S. Seattle, WA 98108	Generator
The Kaspac Corp. 1237 S. Director Seattle, WA 98108	Generator
West Coast Wire Rope & Rigging 7777 7th Ave. S. Seattle, WA 98108	Small Quantity Generator
Precision Engineering Inc. 1231 S. Director Seattle, WA 98108	Small Quantity Generator
Long Painting Co. 8025 10th Ave. S. Seattle, WA 98108	Generator
Terrel & Sommers Inc. 9508 8th Ave. S. Seattle, WA 98108	Generator
Hussman Refrigeration Inc. 7440 W. Marginal Way S. Seattle, WA 98108	No Permit Status Information
UPS - Seattle (hub) 4455 7th Ave. S. (the Hub) Seattle, WA 98108	Exempt
Welder Supply 4000 7th Ave. S. Seattle, WA 98108	Small Quantity Generator
Shawnee Painting & Sandblasting 8107 10th Ave. S. Seattle, WA 98108	Generator
Signal Delivery Service, Inc. 7130 8th Ave. S. Seattle, WA 98108	Small Quantity Generator
Puget Sound Freight Lines 7303 8th Ave. S. Seattle, WA 98108	Small Quantity Generator

Puget Sound Coatings Inc. 9400 8th Ave. S. Seattle, WA 98108	Generator
Seaway Express Corp. 7814 8th Ave. S. Seattle, WA 98108	Transporter/Closed Non-TSD Facility
Long-Interstate, A Joint Venture 8025 10th Ave. S. Seattle, WA 98108	Generator
Metro-Holden & Marginal Way W. Marginal Way & S. Holden St. Seattle, WA 98108	Generator
Seattle, Cty of-Ad SVCS-8th Ave. S 9200 8th Ave. S. Seattle, WA 98108	Generator
WDOE-NRO 8th S. 7130 8th S. Seattle, WA 98108	Generator
Service Specialties Inc. 7400 8th Ave. S. Seattle, WA 98108	Generator
McKenna Construction 10108 W. Marginal Pl S. Seattle, WA 98108	Generator
Phil's Finishing Touch 7401 8th Ave. S. Seattle, WA 98108	Small Quantity Generator

NATIONAL SPILL REPORTS

The National Spill Reports (NSR) is a compilation of reported releases of oil and hazardous substances. Information for NSR is obtained from spill reports made to federal authorities including the USEPA, the U.S. Coast Guard, the National Response Center, and the Department of Transportation.

Location descriptions in the 1987, 1988, and 1989 NSR were found to be too general in most cases to determine if any spills were reported to have occurred within 0.5 mile of the facility. During the site reconnaissance, Dames & Moore questioned knowledgeable on-site Fruehauf personnel for confirmation of any spills in the area. Any information obtained from on-site personnel is included in Section 4.0 of this report.

STATE SITES

The following property locations were listed by the State of Washington as potentially contaminated sites:

MST Chemical, Inc.
6020 W. Marginal SW
Seattle, WA 98108

Precision Engineering
12131 So. Director
Seattle, WA 98108

Sternoff Metals
7201 Marginal Way E.
Seattle, WA 98108

UNDERGROUND STORAGE TANKS

The State of Washington does not currently publish an underground storage tank listing.

LANDFILL/SOLID WASTE FACILITIES

A review of the State of Washington landfill and solid waste facilities listings revealed the following facilities located within 0.5 mile of the Fruehauf property:

No landfill or solid waste sites were found within 0.5 mile of the facility.

DRAFT REPORT
FRUEHAUF TRAILER OPERATIONS
PHASE II SOIL AND GROUNDWATER INVESTIGATION
SEATTLE, WASHINGTON

Submitted to

FRUEHAUF TRAILER OPERATIONS
JOB NO. 19695-014-005
August 1, 1990

 **DAMES & MOORE**



DAMES & MOORE

A PROFESSIONAL LIMITED PARTNERSHIP

500 MARKET PLACE TOWER, 2025 FIRST AVENUE, SEATTLE, WASHINGTON 98121
(206) 728-0744

August 1, 1990

Fruehauf Trailer Operations
10900 Harper Avenue
Detroit, Michigan 48213

Attention: Mr. Richard Montgomery

Dear Mr. Montgomery:

This letter transmits one copy of our report entitled "Draft Phase II Soil and Groundwater Investigation, Fruehauf Trailer Operations, Seattle, Washington" dated August 1, 1990. This report arrives slightly behind schedule due to a delay by the analytical lab in completing their final report. We hope the timing of this report has not caused any inconvenience to you.

Dames & Moore has enjoyed working with Fruehauf on this project. We would like to discuss the report with you at your convenience. Also, if you have any questions or require clarification, please contact us.

Sincerely,

DAMES & MOORE

Ingrid M. Williams
Staff Hydrogeologist

Gordon Shaffer
Project Manager

Enclosure

**DRAFT REPORT
FRUEHAUF TRAILER OPERATIONS
PHASE II SOIL AND GROUNDWATER INVESTIGATION
SEATTLE, WASHINGTON
August 1, 1990**

1.0 INTRODUCTION

This report presents the results of a chemical evaluation of shallow soil and ground water along the onsite oil/water separator leach field at the Fruehauf trailer operations located in Seattle, Washington. The report summarizes our findings associated with four shallow temporary well installations, survey of ground-water and ground-surface elevations, laboratory results of soil and water samples, and conclusions and recommendations. This report has been prepared for the exclusive use of Fruehauf for specific application to the subject property.

2.0 SITE LOCATION AND BACKGROUND

The site is bordered by 8th and 10th Avenues on the west and east, respectively. The southern property line runs along South 96th Avenue. On the north side lies the Puget Sound Coating facility. Fruehauf has a fence around the perimeter of the property. The area of investigation consists of the leach field, the drainage ditch along 10th Avenue and a shallow pond located on the southeast corner of the Puget Sound Coating facility (Figure 1).

The site is located at 9426 8th Avenue South in Seattle, Washington. A previous investigation at the facility identified elevated total petroleum hydrocarbons (TPH) in the leach field near the oil/water separator. These waste oils may contain various metals, PCB's or volatile organics, all of which will be evaluated in this report. A complete investigation of the leach field, including sampling soil and water at strategic locations and an elevation survey was conducted.

3.0 SCOPE OF WORK

This assessment was designed to evaluate the potential presence of solvents, undercoating and waste oils in the leach field. Our scope of work included a field exploration program comprised of the following tasks:

- Task 1: Completed shallow soil borings along the leach field. These borings were advanced to approximately 6" below ground water with a 3-inch diameter auger.
- Task 2: Collected one soil sample from bottom 6" of each boring.
- Task 3: Installed a temporary ground-water sampling point (using a 0.01-inch machine slotted, 2-inch diameter schedule 40 PVC well screen).
- Task 4: Purged the sampling point, if enough water was available, and took samples of the ground water.

Task 5: Collected one sediment sample from the small pond at the southeast corner of the Puget Sound Coating facility.

Task 6: Surveyed the ground-surface and ground-water elevations.

Soil borings were advanced at locations that would reveal the flow direction along the leach field.

4.0 TEMPORARY WELL INSTALLATION AND SAMPLE COLLECTION

Dames & Moore personnel visited the site on June 28 and 29, 1990. They were given a site tour by Mr. Russ Snow. Mr. Snow explained the approximate extent of the leach field and pointed out the location of the oil/water separator and previous Dames & Moore borings.

Two temporary wells, SB-1 and SB-2, were installed on June 28 and two, SB-3 and SB-4, were installed on June 29, 1990. These locations are shown in Figure 1. Boring logs are presented in the Appendix A.

SB-1 was completed to 4'10" in depth. A PVC screen was lowered into the well before water samples were taken. The screen is a 0.01-inch machine slotted, 2-inch diameter schedule 40 PVC well screen. A soil sample was collected at 4'10" using a decontaminated stainless steel spoon. The soil was heavily stained, with a strong hydrocarbon odor and an obvious sheen. Soil boring SB-1 had 2 feet of brown, gravelly sand (fill) with 1 foot of black silty sand below it, underlain by reddish-brown peat to the bottom of the boring. The material was moist below 1.5 feet. Water samples were taken after the well had been purged. Ground-water samples were collected using a stainless steel bailer and transferred directly into sample containers provided by the laboratory. Each sample was labelled according to the date and time of sample collection, well location, and sampler's initials and placed in a cooler containing ice. A chain-of-custody form was completed and accompanied the samples when shipped to the laboratory for analysis. Water level measurements were recorded before and after development and sampling. Water and soil samples were analyzed for non-halogenated volatile organic compounds, dissolved RCRA metals, PCB's and total petroleum hydrocarbons. Well installation and sampling procedures were identical at all locations unless otherwise noted.

The sample spoon and bailer were decontaminated before sample collection using the following procedure: Alconox scrub, de-ionized water rinse, dilute nitric acid rinse, de-ionized water rinse, and hexane rinse.

Soil boring SB-2 was completed to 4'3". Between 0-6" a brown, dry gravelly sand was encountered. Below that to the depth of the well was fine-grained material similar to kiln dust with occasional cobbles. The material became moist at 2.5 feet. No apparent odor, sheen, or staining was noted. A soil sample was collected at 4'3". After installation of a PVC well screen to complete the well, water samples were taken. Because of the low flow rate through the gray material, little water was obtained. Therefore less than one well volume was purged before water sampling began. The water sample for dissolved metal's analysis was filtered in the field.

Soil boring SB-3 was completed at approximately 5 feet. The geology encountered in the test hole was similar to SB-2: 0-2 feet of dry, brown, gravelly sand, underlain by extremely dense, slightly moist, gray fine-grained material. The gray material had become very hard. No free water was encountered during the boring and as such, a static water level could not be determined. Further, because the soil samples were to be collected at the ground-water interface (and there was none), no sample was collected. Very little water collected in the well even after 12 hours. Therefore, the well was not purged and only one sample for TPH analysis was taken because there was not enough water for the other parameters.

Soil boring SB-4 was dug, then hand-augered to a depth of 3'6" feet. An extremely compact gravelly sand (fill) was encountered to a depth of 2'6". At 2 feet the material became moist. Between 2'6" and 3'6" the geology was gravelly sand and silt (probable fill). There was no odor to the soil or water. A soil sample was taken at 3'6" below ground surface. After installing a PVC well screen, water samples were taken. Again, due to the lack of water, the well was not purged before water samples were taken.

Soil boring SB-5 was dug to 3'8". 0-6" was gravel (fill) and 6" - 3'8" was ~~gray silty sand compacted with a white or gray cementing material, possibly calcium carbonate or ash.~~ The material was very dense and had no odor. The water surface was approximately 3'6" to 3'8" below the ground surface. Because no accurate water level could be measured, no soil sample was collected. Also, the absence of free ground water indicated a very low flow through the dense silty sand. Insufficient water had accumulated to allow sampling.

The drainage ditch contained a small amount of water pooled in low spots. The water was slightly orange, had no sheen and contained algae.

A sediment sample was taken from the pond. There was insufficient water to allow collection of a water sample. The small volume of water in the pond was mucky with copious algae, no odor and a slight sheen. Personnel from Puget Sound Coating said that the pond is fed by drainage from the street and parking lot on their property.

Sampling locations were surveyed to determine ground water and ground-surface elevation. The elevation of surface water in the drainage ditch along the eastern property border was also surveyed. The level survey was accomplished on June 29, 1990. A temporary bench mark was established at the southeast corner of the oil/water separator lid. An elevation of 100 feet was assigned to that point. To compute the elevation of the ground water, the depth to water in the wells was subtracted from the surveyed of the PVC casing. Measured depths to in the wells were as follows: 1.79 feet in SB-1, 2.12 feet in SB-2, 4.33 feet in SB-3, 3.9 feet in SB-4. These depths were taken from the top of the PVC casing to the water surface. Apparent ground-water elevations and contours are shown on Figure 2. The ditch contained water pooled in low spots.

5.0 ANALYTICAL RESULTS

Results of chemical analyses are summarized as Table 1 and Table 2 and a copy of the laboratory report and chain-of-custody document are presented in Appendix B.

Our review of the data indicates that the soil samples pass most of the proposed Department of Ecology Model Toxics Control Act (MTCA) residential and industrial soil cleanup criteria. However, exceedances for industrial soil were noted for mercury, total petroleum hydrocarbons and lead. All samples failed the 1 mg/kg (ppm) cleanup criterion for mercury and all but one (SB-2) failed the 200 ppm cleanup criterion for total petroleum hydrocarbons.

A single sample (SB-2) at 1,100 ppm failed the proposed lead criterion of 1000 ppm. Exceedances of proposed MTCA ground-water criteria were noted for four parameters: arsenic, lead, total petroleum hydrocarbons, and xylenes.

The proposed arsenic criterion of 5 µg/l (.005 ppm) was exceeded by SB-1 and SB-4. The .005 ppm lead criteria was exceeded by SB-2 and SB-4. The 1 ppm TPH criterion and the .020 ppm xylene criterion were exceeded by SB-1.

These analyses indicate elevated TPH directly downgradient from the oil/water separator discharge (SB-2) into the leachfield. TPH concentrations decrease significantly at SB-4 further downgradient and near the southern edge of the property.

The sample from SB-2, located immediately upgradient of the oil/water separator discharge point did not exhibit elevated TPH levels. The occurrence of elevated lead at SB-2 is unexplained.

The highest TPH value was found in the pond sediments on the adjacent property.

The results of ground-water analyses indicate elevated levels of arsenic, TPH, and xylene at SB-1 immediately downgradient of the oil/water separator discharge. The water sample from SB-2 (upgradient of the oil/water separator) exceeded the lead criterion while the SB-1 location immediately downgradient from the separator discharge did not.

The highest arsenic concentration in ground water was exhibited by the sample from SB-4 near the southern property boundary.

6.0 CONCLUSIONS

The oil/water separator may be the source of the elevated TPH and xylene identified in SB-1. We believe that the elevated lead concentrations reported at SB-2 are not attributable to normal operation of the oil/water separator, as this sample location is upgradient of the separator discharge. The possible source of the lead at this location is unclear; however, it may be related to the kiln dust fill material noted in this boring or to lead-acid battery storage or spills.

The combined occurrence of lead and arsenic in soil and in ground water may be related to leaks or spills from lead-acid batteries that are or were stored on the site or to the kiln dust fill material encountered in borings. An additional lead source could have been past use of lead-based paint pigments.

The occurrence of mercury in all soil samples at approximately the same concentrations despite variances in soils and locations relative to the separator discharge and pond is unexplained. However, mercury does not appear to have entered the ground water at significant concentrations, nor does ground water appear to be the source as ground water exhibits lower concentrations than the soil.

In general, reported chemical concentrations in soil and ground water are highest in the vicinity of SB-1 and SB-2. The absence of TPH in SB-3 ground water located between SB-1 and SB-4, and the similar absence or lower concentrations of lead in ground water and soil at SB-1, between SB-2 and SB-4, indicate possible discrete sources and that only minimal migration is occurring in ground water.

7.0 RECOMMENDATIONS

Based on the data discussed above, Dames & Moore recommends repairing or properly maintaining the oil/water separator to prevent future excess discharges of oil products to the leach field. Alternatively, Fruehauf may wish to connect directly to the municipal sewer system. We also recommend that all solvents and thinners be properly disposed and all solvent disposal (if any) through the oil/water separator be curtailed immediately.

All spent lead-acid batteries should be stored in a protective structure that contains any leaked or spilled acid and prevents migration into soil or ground water.

Under the Washington State Department of Ecology (Ecology) Model Toxics Control Act (WAC 173-340-300), releases of hazardous substances to the environment that may be a threat to human health or the environment must be reported to Ecology within 90 days of discovery by the facility owner or operator. Ecology has determined that a threat to health or the environment is met if the ground-water concentrations of chemicals exceed U.S. EPA maximum contaminant levels and are in excess of background or naturally occurring levels for the water source.

The background or naturally occurring levels of several metals including arsenic, lead, and mercury are not known at this site. The presence of several potential sources for metals in ground water and soil in the local vicinity of Fruehauf may have affected background concentrations in soil and ground water. Therefore, we do not know that the reported concentrations of metals in onsite soil and ground water exceed local background conditions and there is no clear reporting requirement for their occurrence. However, we believe that is unlikely that the reported lead concentrations in soil and ground water at SB-2 (1,100 ppm and .110 ppm respectively) can be attributed solely to background effects.

The release report to Ecology must also include any remedial actions that are planned, completed or underway. If the release is cleaned up within 90 days of discovery, then a single combined report of discovery and cleanup may be submitted.

To minimize Fruehauf's immediate and long-term liability associated with this site, Dames & Moore would recommend remediating lead, TPH, and xylene in soil and ground water that exceed MTCA cleanup criteria. The most direct and expeditious cleanup would include curtailing the use of the oil/water separator, excavating and disposing soil, and treating ground water. Other alternative remedial actions could consider in situ or on site destruction, detoxification, or immobilization.

We also recommend that background concentrations of metals in ground water and soil be investigated prior to formulating a decision regarding reporting and remediation of lead and arsenic in ground water and mercury and arsenic in soil.

While we cannot recommend a no-action alternative, Fruehauf does have that option.

Table 1
Analytical Results - Soil and Water samples (ppm)*

	SB - 1	SB - 2	SB - 3	SB - 4	POND
OIL					
Ethylbenzene	0.38	ND	NA	ND	ND
Total Xylenes	13	ND	NA	ND	ND
PCB 1260	ND	ND	NA	0.17	0.078
As	10	190	NA	14	24
Ba	71	35	NA	36	76
Cd	ND	4.1	NA	ND	1.3
Cr	59	20	NA	25	98
Pb	18	<u>1.100</u>	NA	140	150
Hg	5.3	4.9	NA	2.9	5.2
Petroleum Hydrocarbons	<u>1,200</u>	23	NA	<u>250</u>	<u>2,200</u>
WATER					
Total Xylenes	<u>0.88</u>	ND	NA	ND	ND
Petroleum Hydrocarbons	<u>10</u>	ND	ND	ND	ND
As (dissolved)	<u>0.028</u>	ND	NA	<u>0.046</u>	NA
Ba (dissolved)	0.17	0.80	NA	0.53	NA
Cd (dissolved)	ND	ND	NA	0.0004	NA
Pb (dissolved)	ND	<u>0.110</u>	NA	<u>0.026</u>	NA
Hg (dissolved)	ND	ND	NA	0.0007	NA
As (total)	NA	NA	NA	<u>0.14</u>	NA
Ba (total)	NA	NA	NA	0.07	NA
Cd (total)	NA	NA	NA	0.0025	NA
Pb (total)	NA	NA	NA	0.45	NA
Hg (total)	NA	NA	NA	0.04	NA

ND - Not Detected.

NA - Not Analyzed.

Underlined indicates exceedence of Washington Department of Ecology Cleanup Guidelines for Industrial soil or for groundwater.

* - ppm = Parts per million, mg/l(water) or mg/kg(soil).

Table 2

Cleanup and Reporting Criteria - Soil and Water (ppm)*

	SCS ¹	SCS ²	GWCS ³	MCLs**
Ethylbenzene	20.0	20.0	0.020	NE
Total Xylenes	20.0	20.0	0.005	NE
PCB	1.0	10.0	0.0001	NE
As	20.0	200.0	0.005	0.050
Ba	NE	NE	NE	1.0
Cd	8.0	10.0	0.005	0.010
Cr (total)	100.0	500.0	0.100	0.050
Pb	250.0	1000.0	0.005	0.050
Hg (inorganic)	1.0	1.0	0.002	0.002
Petroleum Hydrocarbons (diesel)	200.0	200.0	1.0	NE

Standards established in Model Toxics Control Act Cleanup Regulation and Proposed Amendments WAC 173 - 340.

¹ - WAC 173 - 340 - 740 Soil Cleanup Standards.

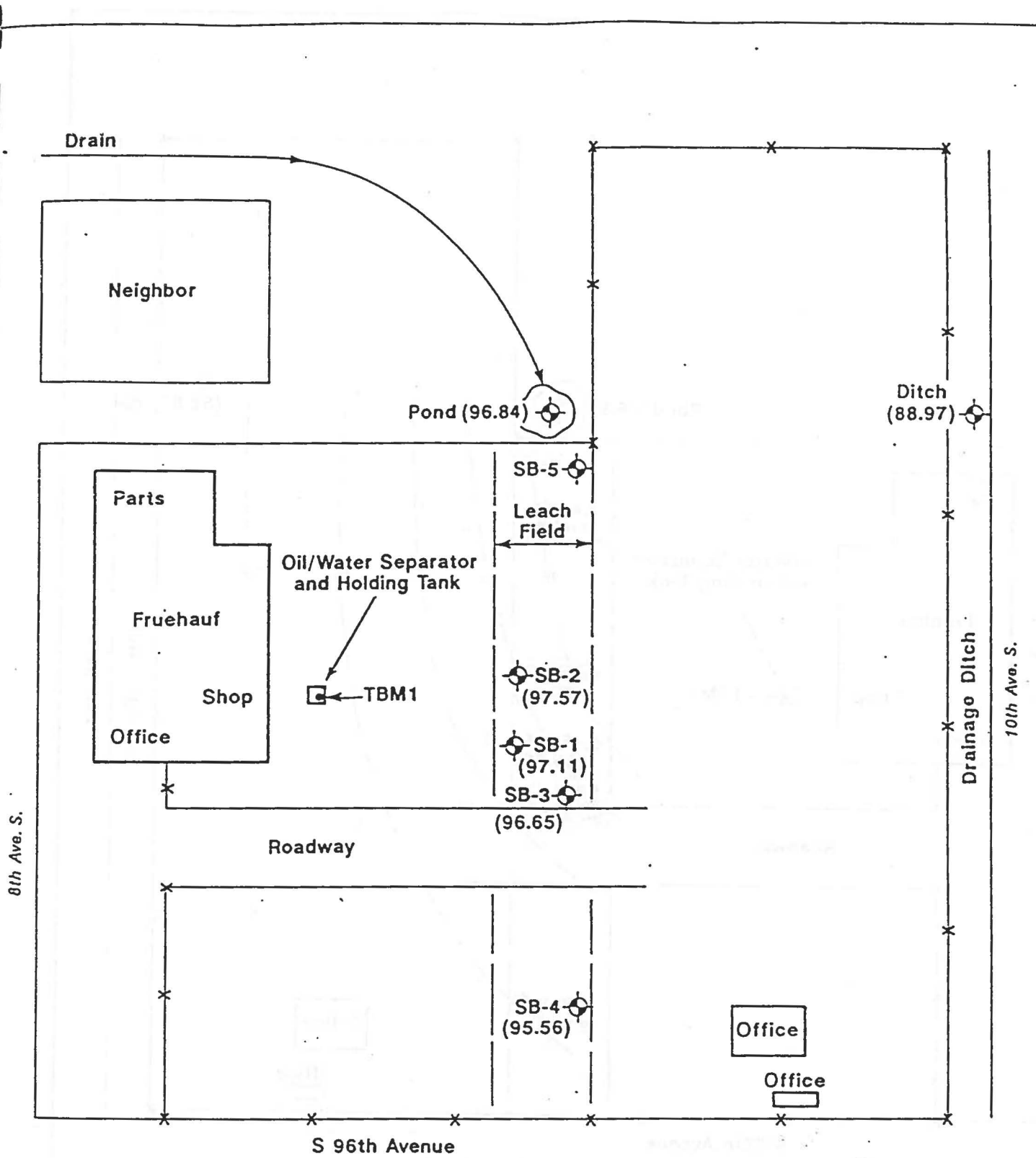
² - WAC 173 - 340 - 745 Soil Cleanup Standards for industrial Sites.

³ - WAC 173 - 340 - 720 Ground-Water Cleanup Standards.

** - USEPA Maximum Contaminant Levels for drinking water.

NE - Not Established

* - ppm = Parts per million, mg/l(water) or mg/kg(soil).



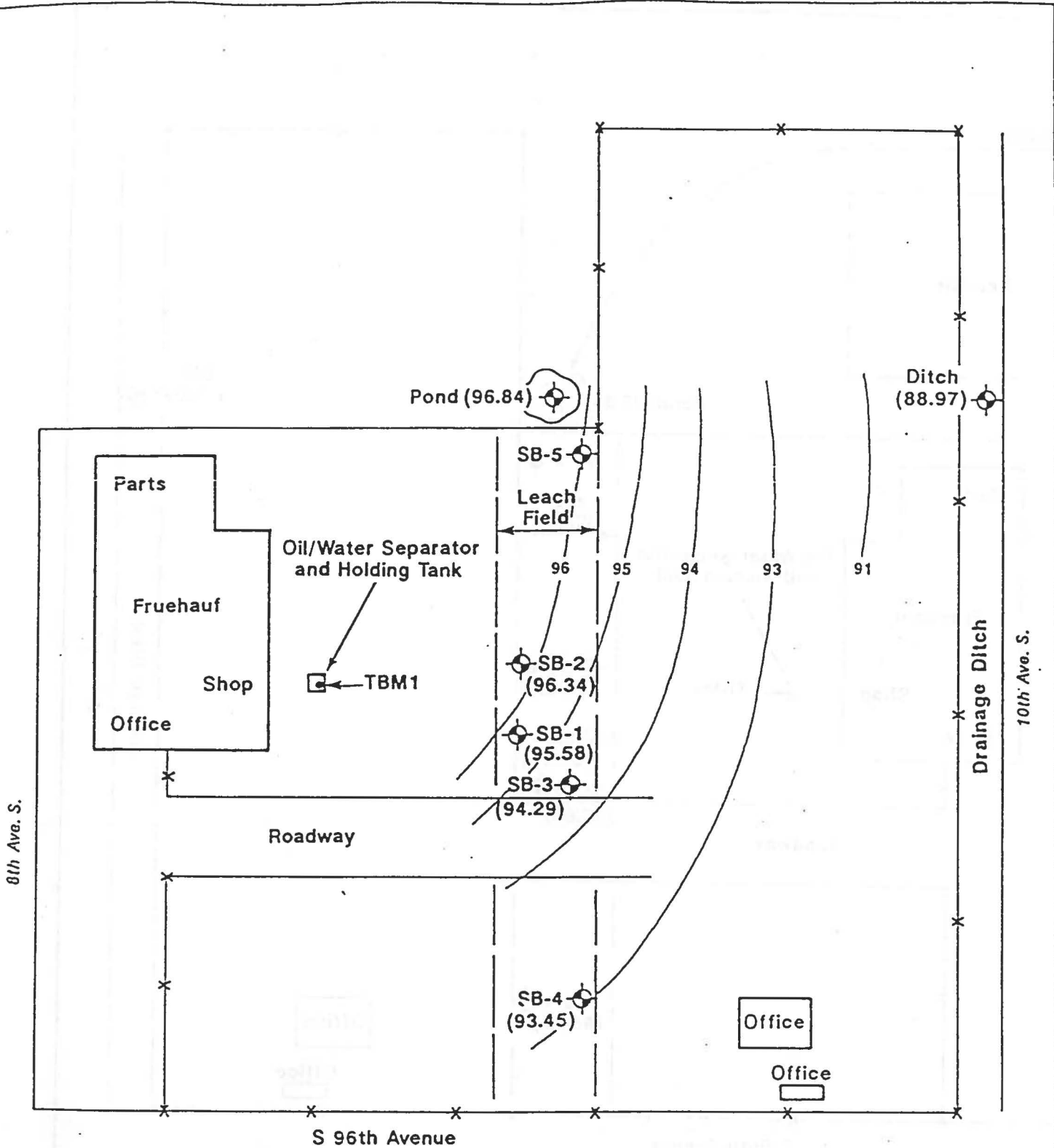
Not to Scale

KEY:

— x — Fence

SB-1  Sampling Location, Number and Ground-Surface Elevation (Feet)

Figure 1
 Sampling Location Map
 Fruehauf Trailer Operations
 Seattle, WA
 Dames & Moore



Not to Scale

KEY:

— x — Fence

SB-1 Sampling Location, Number and Ground-Water Elevation (Feet)

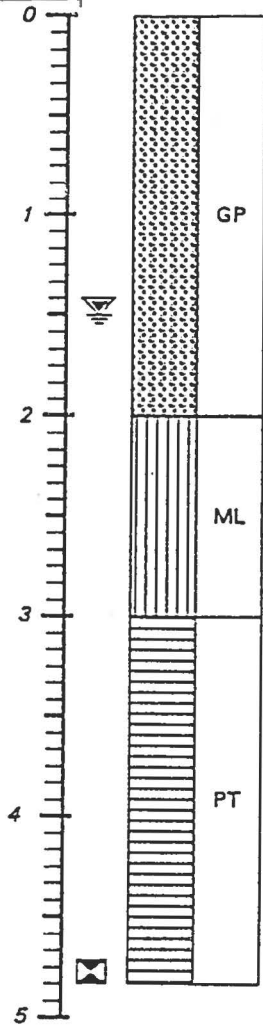
— 95 — Groundwater Elevation Contour (Feet)

Figure 2
 Groundwater Contour Map
 Fruehauf Trailer Operations
 Seattle, WA
 Dames & Moore

Geological Boring Logs

SB - 1

Depth Below
Surface (feet)



Elevation: 97.11'.
Brown, dry, gravelly SAND (fill).

Black, moist silty SAND with greenish-grey pockets and no gravel.

Light reddish brown, moist PEAT with sticks and other organic materials.

Bottom of hole: 4'10".

☒ - Disturbed sample taken for laboratory analysis.

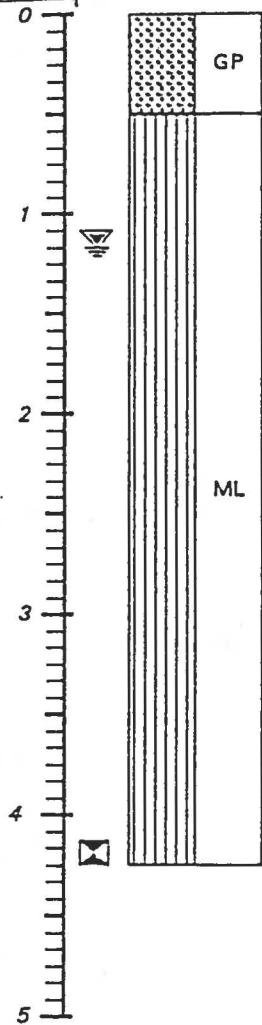
Note: Elevations are relative to a benchmark established at TBM1 (see Site map) which was assigned an elevation of 100 feet.

☒ - Water level in temporary well (6/28/90).

Geological Boring Logs

SB - 2

Depth Below
Surface (feet)



Elevation: 97.57'.

Brown, dry, gravelly SAND (fill)

Grey silty SAND (kiln dust) with occasional cobbles. No odor, sheen or staining noted.

Bottom of hole: 4'3".

☒ - Disturbed sample taken for laboratory analysis.

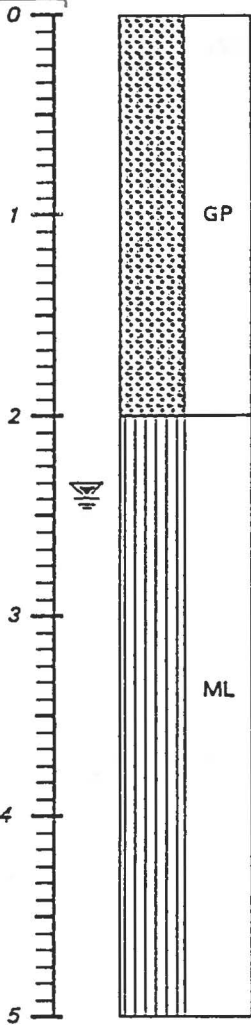
Note: Elevations are relative to a benchmark established at TBM1 (see Site map) which was assigned an elevation of 100 feet.

☹ - Water level in temporary well (6/29/90).

Geological Boring Logs

SB - 3

Depth Below
Surface (feet)



Elevation: 96.65'.
Brown, dry, gravelly SAND (fill).

Grey, extremely dense, slightly moist, silty SAND (kiln dust).

Bottom of hole: Approximately 5'.

☒ - Disturbed sample taken for laboratory analysis.

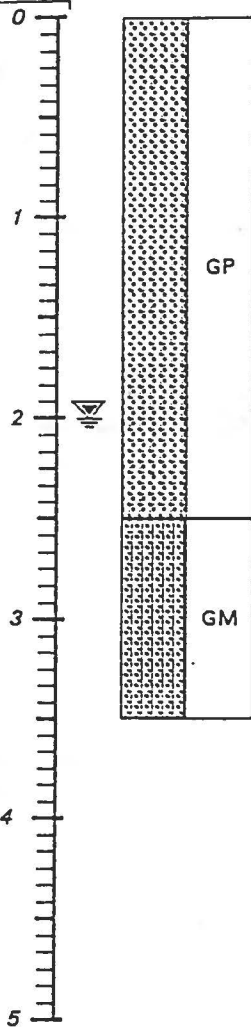
Note: Elevations are relative to a benchmark established at TBM1 (see Site map) which was assigned an elevation of 100 feet.

☒ - Water level in temporary well (6/29/90).

Geological Boring Logs

SB - 4

Depth Below
Surface (feet)



Elevation: 95.56'.

Brown, dense, gravelly SAND (fill). No odor to soil or water.

Gravelly SAND and SILT.

Bottom of hole: 3'6".

☒ - Disturbed sample taken for laboratory analysis.

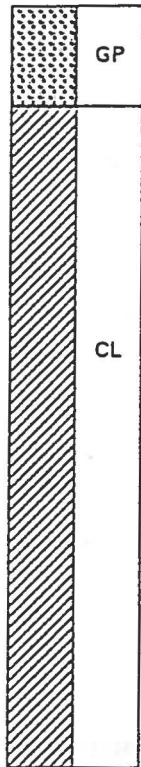
Note: Elevations are relative to a benchmark established at TBM1 (see Site map) which was assigned an elevation of 100 feet.

☒ - Water level in temporary well (6/29/90).

Geological Boring Logs

SB - 5

Depth Below
Surface (feet)



Elevation: 98.17'.
Gravelly SAND (fill).

Grey silty SAND (kiln dust).

Bottom of hole: 3.8'.

Note: Elevations are relative to a benchmark established at TBM1 (see Site map) which was assigned an elevation of 100 feet.



Analytical Technologies, Inc.

560 Naches Avenue, S.W., Suite 101, Renton, WA 98055, (206) 228-8335

ATI I.D. # 9006-228

July
June 25, 1990

Dames & Moore
500 Market Place Tower
2025 1st Avenue
Seattle, WA 98121

Attention : Gordon Shaffer

Project Number : -

Project Name : Fruehauf

On June 29, 1990 Analytical Technologies, Inc. received four soil samples and four water samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and the quality control data are enclosed.

Donna M. McKinney
Donna M. McKinney
Project Manager

FWG/tc

Frederick W. Grothkopp

Frederick W. Grothkopp
Technical Manager

SAMPLE CROSS REFERENCE SHEET

CLIENT : DAMES & MOORE
 PROJECT # : -
 PROJECT NAME : FRUEHAUF

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9006-228-1	SB1	06/29/90	WATER
9006-228-2	SB4	06/29/90	WATER
9006-228-3	SB3	06/29/90	WATER
9006-228-4	SB1	06/28/90	SOIL
9006-228-5	SB2	06/28/90	WATER
9006-228-6	SB2	06/28/90	SOIL
9006-228-7	SB4	06/29/90	SOIL
9006-228-8	POND	06/29/90	SOIL

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	4
WATER	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

ANALYTICAL SCHEDULE

CLIENT : DAMES & MOORE
 PROJECT # : -
 PROJECT NAME : FRUEHAUF

ANALYSIS	TECHNIQUE	REFERENCE	LAB
VOLATILE ORGANIC COMPOUNDS	GCMS	EPA 8240	R
POLYCHLORINATED BIPHENYLS (PCBs)	GC/ECD	EPA 8080	R
ARSENIC	AA/GF	EPA 7060	R
BARIUM	AA/F	EPA 7080	R
CADMIUM	AA/F	EPA 7130	R
CADMIUM	AA/GF	EPA 7131	R
CHROMIUM	AA/F	EPA 7190	R
LEAD	AA/F	EPA 7420	R
LEAD	AA/GF	EPA 7421	R
MERCURY	AA/COLD VAPOR	EPA 7470	R
MERCURY	AA/COLD VAPOR	EPA 7471	R
SELENIUM	AA/GF	EPA 7740	R
SILVER	AA/F	EPA 7760	R
PETROLEUM HYDROCARBONS	IR	EPA 418.1	R
MOISTURE	GRAVIMETRIC	METHOD 7-2.2	R

R = ATI - Renton
 SD = ATI - San Diego
 T = ATI - Tempe
 PNR = ATI - Pensacola
 FC = ATI - Fort Collins
 SUB = Subcontract

VOLATILE ORGANICS ANALYSIS
 DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: N/A
PROJECT #	: -	DATE RECEIVED	: N/A
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: N/A
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 07/11/90
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8240	DILUTION FACTOR	: 1

 COMPOUND RESULT

ACETONE	<10
BENZENE	<1
BROMODICHLOROMETHANE	<1
BROMOFORM	<5
BROMOMETHANE	<10
2-BUTANONE (MEK)	<10
CARBON DISULFIDE	<1
CARBON TETRACHLORIDE	<1
CHLOROBENZENE	<1
CHLOROETHANE	<1
CHLOROFORM	<1
CHLOROMETHANE	<10
DIBROMOCHLOROMETHANE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHANE	<1
1,1-DICHLOROETHENE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
1,2-DICHLOROPROPANE	<1
CIS-1,3-DICHLOROPROPENE	<1
TRANS-1,3-DICHLOROPROPENE	<1
ETHYLBENZENE	<1
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
METHYLENE CHLORIDE	<5
STYRENE	<1
1,1,2,2-TETRACHLOROETHANE	<1
TETRACHLOROETHENE	<1
TOLUENE	<1
1,1,1-TRICHLOROETHANE	<1
1,1,2-TRICHLOROETHANE	<1
TRICHLOROETHENE	<1
VINYL ACETATE	<10
VINYL CHLORIDE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	94
TOLUENE-d8	99
BROMOFLUOROBENZENE	99

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	: DAMES & MOORE	DATE SAMPLED	: N/A
PROJECT #	: -	DATE RECEIVED	: N/A
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: N/A
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 07/11/90
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8240	DILUTION FACTOR	: 1

COMPOUND NAME	SCAN NUMBER	ESTIMATED CONCENTRATION
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NO NON-HSL COMPOUNDS FOUND > 10% OF NEAREST INTERNAL STANDARD.

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: N/A
PROJECT #	: -	DATE RECEIVED	: N/A
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: N/A
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 07/12/90
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8240	DILUTION FACTOR	: 1

COMPOUND RESULT

ACETONE	<10
BENZENE	<1
BROMODICHLOROMETHANE	<1
BROMOFORM	<5
BROMOMETHANE	<10
2-BUTANONE (MEK)	<10
CARBON DISULFIDE	<1
CARBON TETRACHLORIDE	<1
CHLOROBENZENE	<1
CHLOROETHANE	<1
CHLOROFORM	<1
CHLOROMETHANE	<10
DIBROMOCHLOROMETHANE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHANE	<1
1,1-DICHLOROETHENE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
1,2-DICHLOROPROPANE	<1
CIS-1,3-DICHLOROPROPENE	<1
TRANS-1,3-DICHLOROPROPENE	<1
ETHYLBENZENE	<1
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
METHYLENE CHLORIDE	<5
STYRENE	<1
1,1,2,2-TETRACHLOROETHANE	<1
TETRACHLOROETHENE	<1
TOLUENE	<1
1,1,1-TRICHLOROETHANE	<1
1,1,2-TRICHLOROETHANE	<1
TRICHLOROETHENE	<1
VINYL ACETATE	<10
VINYL CHLORIDE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	78
TOLUENE-d8	90
BROMOFLUOROBENZENE	97

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	: DAMES & MOORE	DATE SAMPLED	: N/A
PROJECT #	: -	DATE RECEIVED	: N/A
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: N/A
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 07/12/90
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8240	DILUTION FACTOR	: 1

COMPOUND NAME	SCAN NUMBER	ESTIMATED CONCENTRATION
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NO NON-HSL COMPOUNDS FOUND > 10% OF NEAREST INTERNAL STANDARD.

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/29/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: N/A
CLIENT I.D.	: SB1	DATE ANALYZED	: 07/12/90
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8240	DILUTION FACTOR	: 10

COMPOUND RESULT

ACETONE	<100
BENZENE	<10
BROMODICHLOROMETHANE	<10
BROMOFORM	<50
BROMOMETHANE	<100
2-BUTANONE (MEK)	<100
CARBON DISULFIDE	<10
CARBON TETRACHLORIDE	<10
CHLOROBENZENE	<10
CHLOROETHANE	<10
CHLOROFORM	<10
CHLOROMETHANE	<100
DIBROMOCHLOROMETHANE	<10
1,1-DICHLOROETHANE	<10
1,2-DICHLOROETHANE	<10
1,1-DICHLOROETHENE	<10
1,2-DICHLOROETHENE (TOTAL)	<10
1,2-DICHLOROPROPANE	<10
CIS-1,3-DICHLOROPROPENE	<10
TRANS-1,3-DICHLOROPROPENE	<10
ETHYLBENZENE	<10
2-HEXANONE (MBK)	<100
4-METHYL-2-PENTANONE (MIBK)	<100
METHYLENE CHLORIDE	<50
STYRENE	<10
1,1,2,2-TETRACHLOROETHANE	<10
TETRACHLOROETHENE	<10
TOLUENE	<10
1,1,1-TRICHLOROETHANE	<10
1,1,2-TRICHLOROETHANE	<10
TRICHLOROETHENE	<10
VINYL ACETATE	<100
VINYL CHLORIDE	<10
TOTAL XYLENES	880

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	115
TOLUENE-d8	91
BROMOFLUOROBENZENE	102

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF
CLIENT I.D. : SB1
SAMPLE MATRIX : WATER
EPA METHOD : 8240
DATE SAMPLED : 06/29/90
DATE RECEIVED : 06/29/90
DATE EXTRACTED : N/A
DATE ANALYZED : 07/12/90
UNITS : ug/L
DILUTION FACTOR : 10

COMPOUND NAME	SCAN NUMBER	ESTIMATED CONCENTRATION
ETHYL METHYL BENZENE	1593	240
C3 SUBSTITUTED BENZENE	1603	81
C3 SUBSTITUTED BENZENE	1676	290
C3 SUBSTITUTED BENZENE	1764	130

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/29/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: N/A
CLIENT I.D.	: SB4	DATE ANALYZED	: 07/12/90
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8240	DILUTION FACTOR	: 10*

COMPOUND	RESULT
ACETONE	<100
BENZENE	<10
BROMODICHLOROMETHANE	<10
BROMOFORM	<50
BROMOMETHANE	<100
2-BUTANONE (MEK)	<100
CARBON DISULFIDE	<10
CARBON TETRACHLORIDE	<10
CHLOROETHANE	<10
CHLOROETHANE	<10
CHLOROFORM	<10
CHLOROMETHANE	<100
DIBROMOCHLOROMETHANE	<10
1,1-DICHLOROETHANE	<10
1,2-DICHLOROETHANE	<10
1,1-DICHLOROETHENE	<10
1,2-DICHLOROETHENE (TOTAL)	<10
1,2-DICHLOROPROPANE	<10
CIS-1,3-DICHLOROPROPENE	<10
TRANS-1,3-DICHLOROPROPENE	<10
ETHYLBENZENE	<10
2-HEXANONE (MBK)	<100
4-METHYL-2-PENTANONE (MIBK)	<100
METHYLENE CHLORIDE	<50
STYRENE	<10
1,1,2,2-TETRACHLOROETHANE	<10
TETRACHLOROETHENE	<10
TOLUENE	<10
1,1,1-TRICHLOROETHANE	<10
1,1,2-TRICHLOROETHANE	<10
TRICHLOROETHENE	<10
VINYL ACETATE	<100
VINYL CHLORIDE	<10
TOTAL XYLENES	<10

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	101
TOLUENE-d8	85
BROMOFLUOROBENZENE	95

* Diluted due to matrix effect (foaming)

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF
CLIENT I.D. : SB4
SAMPLE MATRIX : WATER
EPA METHOD : 8240

DATE SAMPLED : 06/29/90
DATE RECEIVED : 06/29/90
DATE EXTRACTED : N/A
DATE ANALYZED : 07/12/90
UNITS : ug/L
DILUTION FACTOR : 10

COMPOUND NAME	SCAN NUMBER	ESTIMATED CONCENTRATION
---------------	-------------	-------------------------

NO NON-HSL COMPOUNDS FOUND > 10% OF NEAREST INTERNAL STANDARD



VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/28/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: N/A
CLIENT I.D.	: SB2	DATE ANALYZED	: 07/11/90
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8240	DILUTION FACTOR	: 1

COMPOUND	RESULT
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ACETONE	<10
BENZENE	<1
BROMODICHLOROMETHANE	<1
BROMOFORM	<5
BROMOMETHANE	<10
2-BUTANONE (MEK)	<10
CARBON DISULFIDE	<1
CARBON TETRACHLORIDE	<1
CHLOROBENZENE	<1
CHLOROETHANE	<1
CHLOROFORM	<1
CHLOROMETHANE	<10
DIBROMOCHLOROMETHANE	<1
1,1-DICHLOROETHANE	<1
1,2-DICHLOROETHANE	<1
1,1-DICHLOROETHENE	<1
1,2-DICHLOROETHENE (TOTAL)	<1
1,2-DICHLOROPROPANE	<1
CIS-1,3-DICHLOROPROPENE	<1
TRANS-1,3-DICHLOROPROPENE	<1
ETHYLBENZENE	<1
2-HEXANONE (MBK)	<10
4-METHYL-2-PENTANONE (MIBK)	<10
METHYLENE CHLORIDE	<5
STYRENE	<1
1,1,2,2-TETRACHLOROETHANE	<1
TETRACHLOROETHENE	<1
TOLUENE	<1
1,1,1-TRICHLOROETHANE	<1
1,1,2-TRICHLOROETHANE	<1
TRICHLOROETHENE	<1
VINYL ACETATE	<10
VINYL CHLORIDE	<1
TOTAL XYLENES	<1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	87
TOLUENE-d8	105
BROMOFLUOROBENZENE	106

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF
CLIENT I.D. : SB2
SAMPLE MATRIX : WATER
EPA METHOD : 8240

DATE SAMPLED : 06/28/90
DATE RECEIVED : 06/29/90
DATE EXTRACTED : N/A
DATE ANALYZED : 07/11/90
UNITS : ug/L
DILUTION FACTOR : 1

COMPOUND NAME	SCAN NUMBER	ESTIMATED CONCENTRATION
UNKNOWN	426	23

VOLATILE ORGANICS
QUALITY CONTROL DATA

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF
EPA METHOD : 8240

SAMPLE I.D. : 9006-141-1
DATE ANALYZED : 07/03/90
MATRIX : WATER
UNITS : ug/L

COMPOUND	SAMPLE RESULT	SPIKE ADDED	SPIKED SAMPLE	% REC	DUP SPIKED SAMPLE	DUP % REC	RPD
1,1-DICHLOROETHENE	<1	50	38	76	36	72	5
TRICHLOROETHENE	<1	50	51	102	45	90	13
BENZENE	<1	50	51	102	46	92	10
TOLUENE	<1	50	49	98	50	100	2
CHLOROBENZENE	<1	50	54	108	50	100	8

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: N/A
PROJECT #	: -	DATE RECEIVED	: N/A
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
ACETONE	<1.0
BENZENE	<0.050
BROMODICHLOROMETHANE	<0.050
BROMOFORM	<0.25
BROMOMETHANE	<0.50
2-BUTANONE (MEK)	<0.50
CARBON DISULFIDE	<0.050
CARBON TETRACHLORIDE	<0.050
CHLOROBENZENE	<0.050
CHLOROETHANE	<0.050
CHLOROFORM	<0.050
CHLOROMETHANE	<0.50
DIBROMOCHLOROMETHANE	<0.050
1,1-DICHLOROETHANE	<0.050
1,2-DICHLOROETHANE	<0.050
1,1-DICHLOROETHENE	<0.050
1,2-DICHLOROETHENE (TOTAL)	<0.050
1,2-DICHLOROPROPANE	<0.050
CIS-1,3-DICHLOROPROPENE	<0.050
TRANS-1,3-DICHLOROPROPENE	<0.050
ETHYLBENZENE	<0.050
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
METHYLENE CHLORIDE	<0.25
STYRENE	<0.050
1,1,2,2-TETRACHLOROETHANE	<0.050
TETRACHLOROETHENE	<0.050
TOLUENE	<0.050
1,1,1-TRICHLOROETHANE	<0.050
1,1,2-TRICHLOROETHANE	<0.050
TRICHLOROETHENE	<0.050
VINYL ACETATE	<0.50
VINYL CHLORIDE	<0.050
TOTAL XYLENES	<0.050

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	102
TOLUENE-d8	88
BROMOFLUOROBENZENE	83

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	: DAMES & MOORE	DATE SAMPLED	: N/A
PROJECT #	: -	DATE RECEIVED	: N/A
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT			

COMPOUND	SCAN NUMBER	ESTIMATED CONCENTRATION
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NO NON-HSL COMPOUNDS FOUND > 10% OF NEAREST INTERNAL STANDARD.

VOLATILE ORGANICS ANALYSIS
 DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: N/A
PROJECT #	: -	DATE RECEIVED	: N/A
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 07/10/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
ACETONE	<1.0
BENZENE	<0.050
BROMODICHLOROMETHANE	<0.050
BROMOFORM	<0.25
BROMOMETHANE	<0.50
2-BUTANONE (MEK)	<0.50
CARBON DISULFIDE	<0.050
CARBON TETRACHLORIDE	<0.050
CHLOROBENZENE	<0.050
CHLOROETHANE	<0.050
CHLOROFORM	<0.050
CHLOROMETHANE	<0.50
DIBROMOCHLOROMETHANE	<0.050
1,1-DICHLOROETHANE	<0.050
1,2-DICHLOROETHANE	<0.050
1,1-DICHLOROETHENE	<0.050
1,2-DICHLOROETHENE (TOTAL)	<0.050
1,2-DICHLOROPROPANE	<0.050
CIS-1,3-DICHLOROPROPENE	<0.050
TRANS-1,3-DICHLOROPROPENE	<0.050
ETHYLBENZENE	<0.050
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
METHYLENE CHLORIDE	<0.25
STYRENE	<0.050
1,1,2,2-TETRACHLOROETHANE	<0.050
TETRACHLOROETHENE	<0.050
TOLUENE	<0.050
1,1,1-TRICHLOROETHANE	<0.050
1,1,2-TRICHLOROETHANE	<0.050
TRICHLOROETHENE	<0.050
VINYL ACETATE	<0.50
VINYL CHLORIDE	<0.050
TOTAL XYLENES	<0.050

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	75
TOLUENE-d8	102
BROMOFLUOROBENZENE	100

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF
CLIENT I.D. : REAGENT BLANK
SAMPLE MATRIX : SOIL
EPA METHOD : 8240
RESULTS BASED ON DRY WEIGHT

DATE SAMPLED : N/A
DATE RECEIVED : N/A
DATE EXTRACTED : 07/06/90
DATE ANALYZED : 07/10/90
UNITS : mg/Kg
DILUTION FACTOR : 1

COMPOUND	SCAN NUMBER	ESTIMATED CONCENTRATION
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NO NON-HSL COMPOUNDS FOUND > 10% OF NEAREST INTERNAL STANDARD.

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/28/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: SB1	DATE ANALYZED	: 07/10/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
ACETONE	<2.1
BENZENE	<0.10
BROMODICHLOROMETHANE	<0.10
BROMOFORM	<0.52
BROMOMETHANE	<1.0
2-BUTANONE (MEK)	<1.0
CARBON DISULFIDE	<0.10
CARBON TETRACHLORIDE	<0.10
CHLOROBENZENE	<0.10
CHLOROETHANE	<0.10
CHLOROFORM	<0.10
CHLOROMETHANE	<1.0
DIBROMOCHLOROMETHANE	<0.10
1,1-DICHLOROETHANE	<0.10
1,2-DICHLOROETHANE	<0.10
1,1-DICHLOROETHENE	<0.10
1,2-DICHLOROETHENE (TOTAL)	<0.10
1,2-DICHLOROPROPANE	<0.10
CIS-1,3-DICHLOROPROPENE	<0.10
TRANS-1,3-DICHLOROPROPENE	<0.10
ETHYLBENZENE	0.38
2-HEXANONE (MBK)	<1.0
4-METHYL-2-PENTANONE (MIBK)	<1.0
METHYLENE CHLORIDE	<0.52
STYRENE	<0.10
1,1,2,2-TETRACHLOROETHANE	<0.10
TETRACHLOROETHENE	<0.10
TOLUENE	<0.10
1,1,1-TRICHLOROETHANE	<0.10
1,1,2-TRICHLOROETHANE	<0.10
TRICHLOROETHENE	<0.10
VINYL ACETATE	<1.0
VINYL CHLORIDE	<0.10
TOTAL XYLENES	13

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	80
TOLUENE-d8	67 *
BROMOFLUOROBENZENE	68

* Out of limits due to matrix effect (Interfering peaks).

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/28/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: SB1	DATE ANALYZED	: 07/10/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	SCAN NUMBER	ESTIMATED CONCENTRATION
C7 ALKANE	725	5.2
METHYL CYCLOHEXANE	848	4.6
DECANE	1564	5.5
TRIMETHYLBENZENE	1677	5.0
C9 OXYGENATED AROMATIC HYDROCARBON	1819	4.5

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/28/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: SB2	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
ACETONE	<1.8
BENZENE	<0.091
BROMODICHLOROMETHANE	<0.091
BROMOFORM	<0.45
BROMOMETHANE	<0.91
2-BUTANONE (MEK)	<0.91
CARBON DISULFIDE	<0.091
CARBON TETRACHLORIDE	<0.091
CHLOROBENZENE	<0.091
CHLOROETHANE	<0.091
CHLOROFORM	<0.091
CHLOROMETHANE	<0.91
DIBROMOCHLOROMETHANE	<0.091
1,1-DICHLOROETHANE	<0.091
1,2-DICHLOROETHANE	<0.091
1,1-DICHLOROETHENE	<0.091
1,2-DICHLOROETHENE (TOTAL)	<0.091
1,2-DICHLOROPROPANE	<0.091
CIS-1,3-DICHLOROPROPENE	<0.091
TRANS-1,3-DICHLOROPROPENE	<0.091
ETHYLBENZENE	<0.091
2-HEXANONE (MBK)	<0.91
4-METHYL-2-PENTANONE (MIBK)	<0.91
METHYLENE CHLORIDE	<0.45
STYRENE	<0.091
1,1,2,2-TETRACHLOROETHANE	<0.091
TETRACHLOROETHENE	<0.091
TOLUENE	<0.091
1,1,1-TRICHLOROETHANE	<0.091
1,1,2-TRICHLOROETHANE	<0.091
TRICHLOROETHENE	<0.091
VINYL ACETATE	<0.91
VINYL CHLORIDE	<0.091
TOTAL XYLENES	<0.091

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	83
TOLUENE-d8	81
BROMOFLUOROBENZENE	82

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/28/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: SB2	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	SCAN NUMBER	ESTIMATED CONCENTRATION
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NO NON-HSL COMPOUNDS FOUND > 10% OF NEAREST INTERNAL STANDARD

VOLATILE ORGANICS ANALYSIS
 DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/29/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: SB4	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
ACETONE	<1.0
BENZENE	<0.050
BROMODICHLOROMETHANE	<0.050
BROMOFORM	<0.25
BROMOMETHANE	<0.50
2-BUTANONE (MEK)	<0.50
CARBON DISULFIDE	<0.050
CARBON TETRACHLORIDE	<0.050
CHLOROBENZENE	<0.050
CHLOROETHANE	<0.050
CHLOROFORM	<0.050
CHLOROMETHANE	<0.50
DIBROMOCHLOROMETHANE	<0.050
1,1-DICHLOROETHANE	<0.050
1,2-DICHLOROETHANE	<0.050
1,1-DICHLOROETHENE	<0.050
1,2-DICHLOROETHENE (TOTAL)	<0.050
1,2-DICHLOROPROPANE	<0.050
CIS-1,3-DICHLOROPROPENE	<0.050
TRANS-1,3-DICHLOROPROPENE	<0.050
ETHYLBENZENE	<0.050
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
METHYLENE CHLORIDE	<0.25
STYRENE	<0.050
1,1,2,2-TETRACHLOROETHANE	<0.050
TETRACHLOROETHENE	<0.050
TOLUENE	<0.050
1,1,1-TRICHLOROETHANE	<0.050
1,1,2-TRICHLOROETHANE	<0.050
TRICHLOROETHENE	<0.050
VINYL ACETATE	<0.50
VINYL CHLORIDE	<0.050
TOTAL XYLENES	<0.050

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	114
TOLUENE-d8	81
BROMOFLUOROBENZENE	85

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/29/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: SB4	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
ACETONE	<1.0
BENZENE	<0.050
BROMODICHLOROMETHANE	<0.050
BROMOFORM	<0.25
BROMOMETHANE	<0.50
2-BUTANONE (MEK)	<0.50
CARBON DISULFIDE	<0.050
CARBON TETRACHLORIDE	<0.050
CHLOROBENZENE	<0.050
CHLOROETHANE	<0.050
CHLOROFORM	<0.050
CHLOROMETHANE	<0.50
DIBROMOCHLOROMETHANE	<0.050
1,1-DICHLOROETHANE	<0.050
1,2-DICHLOROETHANE	<0.050
1,1-DICHLOROETHENE	<0.050
1,2-DICHLOROETHENE (TOTAL)	<0.050
1,2-DICHLOROPROPANE	<0.050
CIS-1,3-DICHLOROPROPENE	<0.050
TRANS-1,3-DICHLOROPROPENE	<0.050
ETHYLBENZENE	<0.050
2-HEXANONE (MBK)	<0.50
4-METHYL-2-PENTANONE (MIBK)	<0.50
METHYLENE CHLORIDE	<0.25
STYRENE	<0.050
1,1,2,2-TETRACHLOROETHANE	<0.050
TETRACHLOROETHENE	<0.050
TOLUENE	<0.050
1,1,1-TRICHLOROETHANE	<0.050
1,1,2-TRICHLOROETHANE	<0.050
TRICHLOROETHENE	<0.050
VINYL ACETATE	<0.50
VINYL CHLORIDE	<0.050
TOTAL XYLENES	<0.050

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	114
TOLUENE-d8	81
BROMOFLUOROBENZENE	85

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/28/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: SB4	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 1
RESULTS BASED ON DRY WEIGHT			

COMPOUND	SCAN NUMBER	ESTIMATED CONCENTRATION
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NO NON-HSL COMPOUNDS FOUND > 10% OF NEAREST INTERNAL STANDARD

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/29/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: POND	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 10*

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
ACETONE	<21
BENZENE	<1.1
BROMODICHLOROMETHANE	<1.1
BROMOFORM	<5.3
BROMOMETHANE	<11
2-BUTANONE (MEK)	<11
CARBON DISULFIDE	<1.1
CARBON TETRACHLORIDE	<1.1
CHLOROBENZENE	<1.1
CHLOROETHANE	<1.1
CHLOROFORM	<1.1
CHLOROMETHANE	<11
DIBROMOCHLOROMETHANE	<1.1
1,1-DICHLOROETHANE	<1.1
1,2-DICHLOROETHANE	<1.1
1,1-DICHLOROETHENE	<1.1
1,2-DICHLOROETHENE (TOTAL)	<1.1
1,2-DICHLOROPROPANE	<1.1
CIS-1,3-DICHLOROPROPENE	<1.1
TRANS-1,3-DICHLOROPROPENE	<1.1
ETHYLBENZENE	<1.1
2-HEXANONE (MBK)	<11
4-METHYL-2-PENTANONE (MIBK)	<11
METHYLENE CHLORIDE	<5.3
STYRENE	<1.1
1,1,2,2-TETRACHLOROETHANE	<1.1
TETRACHLOROETHENE	<1.1
TOLUENE	<1.1
1,1,1-TRICHLOROETHANE	<1.1
1,1,2-TRICHLOROETHANE	<1.1
TRICHLOROETHENE	<1.1
VINYL ACETATE	<11
VINYL CHLORIDE	<1.1
TOTAL XYLENES	<1.1

SURROGATE PERCENT RECOVERIES

1,2-DICHLOROETHANE-d4	113
TOLUENE-d8	89
BROMOFLUOROBENZENE	108

* Diluted due to matrix effect (foaming).

VOLATILE ORGANICS ANALYSIS
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/29/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: POND	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8240	DILUTION FACTOR	: 10
RESULTS BASED ON DRY WEIGHT			

COMPOUND	SCAN NUMBER	ESTIMATED CONCENTRATION
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NO NON-HSL COMPOUNDS FOUND > 10% OF NEAREST INTERNAL STANDARD

VOLATILE ORGANICS
QUALITY CONTROL DATA

CLIENT	: DAMES & MOORE	SAMPLE I.D.	: BLANK SPIKE
PROJECT #	: -	DATE EXTRACTED	: 07/06/90
PROJECT NAME	: FRUEHAUF	DATE ANALYZED	: 07/09/90
EPA METHOD	: 8240	MATRIX	: SOIL
		UNITS	: mg/Kg

COMPOUND	SAMPLE RESULT	SPIKE ADDED	SPIKED SAMPLE	% REC	DUP SPIKED SAMPLE	DUP % REC	RPD
1,1-DICHLOROETHENE	<0.05	2.50	2.49	100	2.17	87	14
TRICHLOROETHENE	<0.05	2.50	2.41	96	1.99	80	19
BENZENE	<0.05	2.50	2.24	90	2.16	86	4
TOLUENE	<0.05	2.50	2.29	92	2.41	96	5
CHLOROBENZENE	<0.05	2.50	2.31	92	2.41	96	4

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD. (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS
DATA SUMMARY

CLIENT : DAMES & MOORE DATE SAMPLED : N/A
PROJECT # : - DATE RECEIVED : N/A
PROJECT NAME : FRUEHAUF DATE EXTRACTED : 07/06/90
CLIENT I.D. : REAGENT BLANK DATE ANALYZED : 07/13/90
SAMPLE MATRIX : WATER UNITS : ug/L
EPA METHOD : 8080 (PCB) DILUTION FACTOR : 1

COMPOUND	RESULT
PCB 1016	<1.0
PCB 1221	<1.0
PCB 1232	<1.0
PCB 1242	<1.0
PCB 1248	<1.0
PCB 1254	<1.0
PCB 1260	<1.0

SURROGATE PERCENT RECOVERY

DIBUTYLCHLORENDATE 86

POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/29/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/06/90
CLIENT I.D.	: SB1	DATE ANALYZED	: 07/13/90
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8080 (PCB)	DILUTION FACTOR	: 1

COMPOUNDRESULT

PCB 1016	<1.0
PCB 1221	<1.0
PCB 1232	<1.0
PCB 1242	<1.0
PCB 1248	<1.0
PCB 1254	<1.0
PCB 1260	<1.0

SURROGATE PERCENT RECOVERY

DIBUTYLCHLORENDATE	40
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POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS
DATA SUMMARY

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF
CLIENT I.D. : SB4
SAMPLE MATRIX : WATER
EPA METHOD : 8080 (PCB)

DATE SAMPLED : 06/29/90
DATE RECEIVED : 06/29/90
DATE EXTRACTED : 07/06/90
DATE ANALYZED : 07/13/90
UNITS : ug/L
DILUTION FACTOR : 1

COMPOUNDRESULT

PCB 1016	<1.0
PCB 1221	<1.0
PCB 1232	<1.0
PCB 1242	<1.0
PCB 1248	<1.0
PCB 1254	<1.0
PCB 1260	<1.0

SURROGATE PERCENT RECOVERY

DIBUTYLCHLORENDATE 17 *

* Out of limits due to matrix interference.

POLYCHLORINATED BIPHENYLS (PCB)
QUALITY CONTROL

CLIENT	: DAMES & MOORE	SAMPLE ID	: 9006-228-1
PROJECT #	: -	DATE EXTRACTED	: 07/06/90
PROJECT NAME	: FRUEHAUF	DATE ANALYZED	: 07/13/90
EPA METHOD	: 8080 (PCB)	MATRIX	: WATER
		UNITS	: ug/L

COMPOUND	SAMPLE RESULT	DUP CONC		DUP SPIKED SAMPLE	% REC	SPIKED SAMPLE		% RECOVERY	RPD
		MS	MSD			SAMPLE	SAMPLE		
PCB 1260	<1.0	5.1	5.0	2.30	45	2.42	48	5	

$$\% \text{ Recovery} = \frac{(\text{Spike Sample result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

POLYCHLORINATED BIPHENYLS (PCB)
QUALITY CONTROL

CLIENT	: DAMES & MOORE	SAMPLE ID	: BLANK SPIKE
PROJECT #	: -	DATE EXTRACTED	: 07/06/90
PROJECT NAME	: FRUEHAUF	DATE ANALYZED	: 07/13/90
EPA METHOD	: 8080 (PCB)	MATRIX	: WATER
		UNITS	: ug/L

COMPOUND	SAMPLE RESULT	CONC SPIKED	SPIKED SAMPLE	% REC	DUP SPIKED SAMPLE	DUP % RECOVERY	RPD
PCB 1260	<1.0	5.0	5.46	109	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: N/A
PROJECT #	: -	DATE RECEIVED	: N/A
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/04/90
CLIENT I.D.	: REAGENT BLANK	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080 (PCB)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
PCB 1016	<0.033
PCB 1221	<0.033
PCB 1232	<0.033
PCB 1242	<0.033
PCB 1248	<0.033
PCB 1254	<0.033
PCB 1260	<0.033

SURROGATE PERCENT RECOVERY

DIBUTYLCHLORENDATE 87

POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/28/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/04/90
CLIENT I.D.	: SB1	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080 (PCB)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
PCB 1016	<0.069
PCB 1221	<0.069
PCB 1232	<0.069
PCB 1242	<0.069
PCB 1248	<0.069
PCB 1254	<0.069
PCB 1260	<0.069

SURROGATE PERCENT RECOVERY

DIBUTYLCHLORENDATE 73

POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/28/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/04/90
CLIENT I.D.	: SB2	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080 (PCB)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
PCB 1016	<0.061
PCB 1221	<0.061
PCB 1232	<0.061
PCB 1242	<0.061
PCB 1248	<0.061
PCB 1254	<0.061
PCB 1260	<0.061

SURROGATE PERCENT RECOVERY

DIBUTYLCHLORENDATE	63
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POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/29/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/04/90
CLIENT I.D.	: SB4	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080 (PCB)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
PCB 1016	<0.033
PCB 1221	<0.033
PCB 1232	<0.033
PCB 1242	<0.033
PCB 1248	<0.033
PCB 1254	<0.033
PCB 1260	0.17

SURROGATE PERCENT RECOVERY

DIBUTYLCHLORENDATE	67
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POLYCHLORINATED BIPHENYLS (PCB) ANALYSIS
DATA SUMMARY

CLIENT	: DAMES & MOORE	DATE SAMPLED	: 06/29/90
PROJECT #	: -	DATE RECEIVED	: 06/29/90
PROJECT NAME	: FRUEHAUF	DATE EXTRACTED	: 07/04/90
CLIENT I.D.	: POND	DATE ANALYZED	: 07/09/90
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080 (PCB)	DILUTION FACTOR	: 1

RESULTS BASED ON DRY WEIGHT

COMPOUND	RESULT
PCB 1016	<0.070
PCB 1221	<0.070
PCB 1232	<0.070
PCB 1242	<0.070
PCB 1248	<0.070
PCB 1254	<0.070
PCB 1260	0.078

SURROGATE PERCENT RECOVERY

DIBUTYLCHLORENDATE	61
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POLYCHLORINATED BIPHENYLS (PCB)
QUALITY CONTROL

CLIENT	: DAMES & MOORE	SAMPLE ID	: 9006-170-14
PROJECT #	: -	DATE EXTRACTED	: 06/28/90
PROJECT NAME	: FRUEHAUF	DATE ANALYZED	: 07/05/90
EPA METHOD	: 8080 (PCB)	MATRIX	: SOIL
		UNITS	: mg/Kg

COMPOUND	SAMPLE RESULT	CONC SPIKED	SPIKED SAMPLE	% REC	DUP SPIKED SAMPLE	DUP % RECOVERY	RPD
PCB 1260	<0.59	0.59	0.489J	83	0.441J	75	10

J = Estimated value.

$$\% \text{ Recovery} = \frac{(\text{Spike Sample result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$

POLYCHLORINATED BIPHENYLS (PCB)
QUALITY CONTROL

CLIENT	: DAMES & MOORE	SAMPLE ID	: BLANK SPIKE
PROJECT #	: -	DATE EXTRACTED	: 07/04/90
PROJECT NAME	: FRUEHAUF	DATE ANALYZED	: 07/09/90
EPA METHOD	: 8080 (PCB)	MATRIX	: SOIL
		UNITS	: mg/Kg

COMPOUND	SAMPLE RESULT	CONC SPIKED	SPIKED SAMPLE	% REC	DUP SPIKED SAMPLE	DUP % RECOVERY	RPD
PCB 1260	<0.033	0.33	0.355	107	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Spiked Sample Result} - \text{Duplicate Spike Sample Result})}{\text{Average of Spiked Sample}} \times 100$$



TOTAL METALS RESULTS

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF

MATRIX : WATER
UNITS : mg/L

PARAMETER	SB4
	-2

ARSENIC	0.14
BARIUM	0.07
CADMIUM	0.0025
CHROMIUM	<0.02
LEAD	0.45
MERCURY	<0.0005
SELENIUM	<0.005
SILVER	0.04

TOTAL
METALS QUALITY CONTROL

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF

MATRIX : WATER
UNITS : mg/L

COMPOUND	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
ARSENIC	9007-051-1	0.120	0.130	8	0.156	0.050	72
BARIUM	9007-051-1	0.18	0.24	28	22.7	20.0	113
CADMIUM	9007-089-4	<0.0003	<0.0003	0	0.0020	0.0020	100
CHROMIUM	9007-051-1	<0.02	<0.02	0	1.89	2.00	94
LEAD	9007-014-3	<0.1	<0.1	0	9.9	10.0	99
MERCURY	9007-089-4	<0.0005	<0.0005	0	0.0016	0.0020	80
SELENIUM	9007-051-1	0.049	0.051	4	0.084	0.050	70
SILVER	9007-051-1	<0.02	<0.02	0	0.97	1.00	97

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

DISSOLVED METALS
RESULTS

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF

MATRIX : WATER

UNITS : mg/L

PARAMETER	SB1 -1	SB4 -2	SB2 -5
ARSENIC	0.028	0.046	<0.005
BARIUM	0.17	0.53	0.80
CADMIUM	<0.0003	0.0004	<0.0003
CHROMIUM	<0.02	<0.02	<0.02
LEAD	<0.005	0.026	0.110
MERCURY	<0.0005	0.0007	<0.0005
SELENIUM	<0.005	<0.005	<0.005
SILVER	<0.02	<0.02	<0.02

DISSOLVED METALS
QUALITY CONTROL

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF

MATRIX : WATER

UNITS : mg/L

COMPOUND	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
ARSENIC	9006-228-5	<0.005	0.006	0	0.058	0.050	116
BARIUM	9006-228-5	0.80	0.91	13	12.2	10.0	114
CADMIUM	9006-228-5	<0.0003	<0.0003	0	0.0015	0.0020	75
CHROMIUM	9006-228-5	<0.02	<0.02	0	1.63	2.00	82
LEAD	9006-228-5	0.110	0.110	0	0.170	0.050	120
MERCURY	9007-005-12	<0.0005	<0.0005	0	0.0018	0.0020	90
SELENIUM	9006-228-5	<0.005	<0.005	0	0.036	0.050	72
SILVER	9006-228-5	<0.02	<0.02	0	0.98	1.00	98

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

METALS RESULTS

CLIENT : DAMES & MOORE
 PROJECT # : -
 PROJECT NAME : FRUEHAUF

MATRIX : SOIL

UNITS : mg/Kg

PARAMETER	SB1	SB2	SB4	POND
	-4	-6	-7	-8
ARSENIC	10	190	14	24
BARIUM	71	35	36	76
CADMIUM	<1	4.1	<1	1.3
CHROMIUM	59	20	25	98
LEAD	18	1,100	140	150
MERCURY	5.3	4.9	2.9	5.2
SELENIUM	<0.5	<0.5	<0.5	<0.5
SILVER	<2	<2	<2	<2

METALS QUALITY CONTROL

CLIENT : DAMES & MOORE
 PROJECT # : -
 PROJECT NAME : FRUEHAUF

MATRIX : SOIL
 UNITS : mg/Kg

COMPOUND	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% REC
ARSENIC	9006-228-8	24	24	0	**	**	**
BARIUM	9006-228-8	76	88	15	595	553	94
CADMIUM	9007-051-1	<1	<1	0	13	12	108
CHROMIUM	9006-228-8	98	100	2	606	553	92
LEAD	9007-051-1	<10	<10	0	220	250	88
MERCURY	9006-228-8	5.2	5.4	4	7.4	2.1	105
SELENIUM	9006-228-8	<0.5	<0.5	0	3.4	4.8	71
SILVER	9007-051-1	<2	<2	0	20	25	80

** Due to the necessary dilution of the sample, result was not attainable.

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

GENERAL CHEMISTRY RESULTS

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF

SAMPLE MATRIX : WATER
UNITS : mg/L

ATI I.D. # CLIENT I.D. PETROLEUM HYDROCARBONS

9006-228-1	SB1	10
9006-228-2	SB4	<1
9006-228-3	SB3	<1
9006-228-5	SB2	<1

GENERAL CHEMISTRY QUALITY CONTROL

CLIENT : DAMES & MOORE
 PROJECT # : -
 PROJECT NAME : FRUEHAUF

SAMPLE MATRIX : WATER

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
PETROLEUM HYDROCARBONS	mg/L	9006-228-5	<1	<1	0	5.9	10	59

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$



GENERAL CHEMISTRY RESULTS

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF

SAMPLE MATRIX : SOIL
UNITS : mg/Kg

ATI I.D. #	CLIENT I.D.	PETROLEUM HYDROCARBONS
9006-228-4	SB1	1,200
9006-228-6	SB2	23
9006-228-7	SB4	250
9006-228-8	POND	2,200

GENERAL CHEMISTRY RESULTS

CLIENT : DAMES & MOORE
PROJECT # : -
PROJECT NAME : FRUEHAUF

SAMPLE MATRIX : SOIL

UNITS : %

ATI I.D. #	CLIENT I.D.	MOISTURE
006-228-4	SB1	52
006-228-6	SB2	45
006-228-7	SB4	24
006-228-8	POND	53

GENERAL CHEMISTRY QUALITY CONTROL

CLIENT : DAMES & MOORE
 PROJECT # : -
 PROJECT NAME : FRUEHAUF

SAMPLE MATRIX : SOIL

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
PETROLEUM HYDROCARBONS	mg/Kg	9006-228-7	250	240	4	484	257	91
MOISTURE	%	9007-003-2	10	9	11	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$

Chain of Custody

PROJECT MANAGER: CWS Gordon Shaffer

COMPANY: Dames & Moore

ADDRESS: 300 Market Place TORIC
2025 1st Ave

PHONE: 729 0744 SAMPLED BY: IMW, DMB

LABORATORY NUMBER:

ANALYSIS REQUEST

SAMPLE DISPOSAL INSTRUCTIONS

ATI Disposal @ \$5.00 each Return Pickup (will call)

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	8010 Halogenated Volatiles	8020 Aromatic Volatiles	BETX ONLY	8240 GCMS Volatiles	8270 GCMS BNA	8310 HPLC PNA	8080 Pesticides & PCB's	PCB's ONLY	8140 Phosphate Pesticides	8150 Herbicides	WDOE PAH/PH (WAC 173)	418.1 (TPH)	413.2 Grease & Oil	8015 (Modified)	TOC 9060	TOX 9020	% Moisture	TCLP	Priority Pollutant Metals (13)	EPTOX Metals (8) Total	EP TOX Metals (8) EP EXT	NUMBER OF CONTAINERS
Pond	6-29	7⁰⁰	water				X									X										
SB1	6-29	10 ⁴⁵	water	-1			X				X					X										11
SB4	6-29	1 ⁰⁰	water	-2			X				X					X										5
SB3	6-29	12 ³⁰	water	-3			X									X										1
SB1	6-29	11 ⁰⁰	soil	-4			X			X	X					X										2
SB2	6-28	5 ⁰⁰	water	-5			X				X					X										16
SB2	6-29	2 ⁰⁰	soil	-6			X				X					X										2
SB4	6-29	10 ³⁰	soil	-7			X				X					X										2
Pond	6-29	1 ⁰⁰	soil	-8			X				X					X										2

PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY: 1.		RELINQUISHED BY: 2.		RELINQUISHED BY: 3.	
PROJECT NUMBER:		TOTAL NUMBER OF CONTAINERS	27	Signature:	<i>Ingrid Williams</i>	Signature:		Signature:	
PROJECT NAME: <u>Fruehauf</u>		CHAIN OF CUSTODY SEALS Y/N/NA	NA	Printed Name:	Ingrid Williams	Printed Name:		Printed Name:	
PURCHASE ORDER NUMBER:		INTACT? Y/N/NA	Y	Date:	6/29/10	Date:		Date:	
VIA: <u>Hand Delivered</u>		RECEIVED GOOD COND./COLD	Y/Y	Company:	Dames & Moore	Company:		Company:	
TAT: <input type="checkbox"/> 24HR <input type="checkbox"/> 48 HRS <input type="checkbox"/> 72 HRS <input type="checkbox"/> 1 WK <input checked="" type="checkbox"/> 2 WKS (Normal)									
PRIOR AUTHORIZATION IS REQUIRED FOR RUSH DATA				RECEIVED BY: 1.		RECEIVED BY: 2.		RECEIVED BY: (LAB) 3.	
SPECIAL INSTRUCTIONS: <u>Note: TPH + PCB water needs to be deaerated.</u> <u>Also, dissolved metals need to be filtered.</u>				Signature:		Signature:		Signature:	<i>Michael</i>
				Printed Name:		Printed Name:		Printed Name:	G. LICHTFISSEL
				Company:		Company:		Company:	Analytical Technologies, Inc.