

SOURCE AREA INVESTIGATION REP
HOLDER AND WALSKY PROPER
SIX MILE RICHARDSON HIGH
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SHANNON & WILSON, INC.

**SOURCE AREA INVESTIGATION REPORT
HOLDER AND WALSKY PROPERTIES
SIX MILE RICHARDSON HIGHWAY
FAIRBANKS, ALASKA**

February 2, 2001

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EXECUTIVE SUMMARY

Shannon & Wilson investigated sources of the regional trichloroethylene (TCE) groundwater contamination for the Alaska Department of Environmental Conservation (ADEC). The geophysical technique of ground-penetrating radar (GPR) was used to locate buried debris (i.e., drums) and other subsurface anomalies on the Holder (TL-2841) and Walsky (TL-2829) properties. Test pits were excavated at the GPR anomalies to determine if buried objects were present and collect soil samples for characterization. Two source areas (five test pits) on the Holder property and four source areas (14 test pits) on the Walsky property were investigated.

The GPR signal was generally able to penetrate to a depth of 20 feet. At each of the source areas, the GPR identified variations in subsurface conductivity due to soil type and/or presence of foreign objects. About half of the GPR inferences of debris were confirmed in the test pits. In many cases, the high conductivity anomalies were caused by soils with a high organic content. Debris was observed at five of the six source areas, and generally consisted of scrap metal or wood. One crushed 55-gallon drum was uncovered from the Holder property, and three were found at the Walsky property. An area north of the shop building on the Walsky property appears to be an area of debris burial. We did not unearth intact drums or other containers with product, or other direct signs of the cause of soil contamination, at the source areas on these properties.

An area of reported fuel contamination near an electric service pole on the Holder property was also investigated. The area was not investigated with GPR, but a test pit was excavated and sampled. Diesel range organics (DRO) are present in the soil above ADEC cleanup levels, but previous results do not suggest groundwater contamination.

Soil samples were collected for characterization from 12 of the 20 test pits. Soil at one of the Holder source areas exceeded the ADEC cleanup level for TCE, and soil at the second source area on this property exceeded the cleanup level for *cis*-1,2-dichloroethylene, a daughter product of TCE. While low levels of TCE were reported at two Walsky source areas, there were no exceedances of soil cleanup levels on the Walsky property.

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1.0 INTRODUCTION

1.1 Scope and Objectives

A one-mile-long plume of trichloroethylene (TCE)-contaminated groundwater is present at Six Mile Richardson Highway. In 1998 and 1999 Shannon & Wilson identified potential source areas on the Holder (TL-2841) and Walsky (TL-2829) properties, where the TCE plume originates. The objective of this portion of the 2000 field work was to determine if drums, debris, or other foreign objects are associated with the source areas and if soil contamination is present. The source areas were investigated using the geophysical technique of ground penetrating radar (GPR). Test pits were excavated in the source areas to verify the GPR inferences, document subsurface conditions, and collect subsurface soil samples. Field activities were performed in general accordance with Shannon & Wilson's *General Work Plan for Site Investigations, Six Mile Richardson Highway Properties* (August 1998).

This work was performed for the Alaska Department of Environmental Conservation (ADEC) to fulfill a portion of the work scope described in Shannon & Wilson's June 16, 2000, *Request for Amendment to Site Assessment and Remediation Work Plans, McCall, Holder, Walsky, and 6-Mile Truck Shop, Fairbanks, Alaska, NTP 1820121001B*. This report covers only the investigation of the source areas on the Holder and Walsky properties through the use of GPR and test pits. This report does not cover investigation activities on the other properties within this study: McCall (TL-2800) and 6-Mile Truck Shop (Lots 3 and 4, Ziegler Subdivision). Investigation of the floor drains on the Walsky and 6-Mile Truck Shop (Lot 4, Ziegler Subdivision) properties are described in separate reports. Work on the McCall property (TL-2800) has been discontinued due to a change in its ownership to a private party.

Two TCE source areas (H-1 and H-2) and a reported area of fuel-contaminated soil on the Holder property were investigated. Three TCE source areas (W-1 through W-3) and an area of fuel-contaminated soil (W-4) on the Walsky property were investigated. Source area locations on the Holder and Walsky properties are shown in Figures 1 and 2, respectively. These areas are described in the respective subsections of Section 3.0. A portion of Holder source area H-1 extends into the Davison Street Right of Way but is considered with the rest of H-1 on the

Holder property. Test pits were excavated in the source areas on the Holder and Walsky properties instead of installing soil borings, since the GPR survey detected subsurface anomalies at those locations. The levels of soil contamination found in the test pits did not warrant the installation of additional soil borings to determine its extent. Groundwater monitoring wells were installed at various locations on and near 6-Mile Truck Shop and on the Walsky property to monitor groundwater contaminant levels mid-plume. At the ADEC's direction, fewer monitoring wells were installed than proposed in the *2000 Request for Amendment*. Work scope tasks yet to be completed are investigation of the septic tank/leach field and former drum storage area on the 6-Mile Truck Shop property, and a survey of existing and newly installed monitoring wells.

1.2 Background

Shannon & Wilson's 1998/1999 investigation that located the sources of TCE groundwater contamination in the Six Mile Richardson Highway area primarily relied on direct-push groundwater probes to collect groundwater samples from multiple depths. Source area locations and extent were inferred from these results. The specific activities or events that led to the TCE soil and groundwater contamination or whether foreign objects (i.e. drums) were buried at the source areas were not known.

2.0 FIELD INVESTIGATION ACTIVITIES AND METHODS

Field activities were performed in general accordance with Shannon & Wilson's *General Work Plan for Site Investigations, Six Mile Richardson Highway Properties* (August 1998).

2.1 Ground Penetrating Radar Survey

Geophysical exploration with GPR to locate buried objects was performed at two source areas (H-1 and H-2) on the Holder Property and at four source areas (W-1, W-2, W-3 and W-4) on the Walsky property. Dennis Filler, a GPR specialist with Shannon & Wilson, performed the GPR surveys between August 28 and September 5, 2000. It was necessary to move piles of debris and materials and doze heavy vegetation in some areas. Some portions of source areas were not accessible because of obstacles such as fencing, gravel stockpiles, and trees. A 25-foot GPR survey grid was flagged across the accessible portions of the source areas. At source area W-2, two random transects were performed along the east and west sides of the target area. Additional transects were performed at random or intermediate locations. GPR transects are shown in Figures 3 through 8.

A SIR System-2000 with 300 MHz antenna was pulled along the transects to survey the source areas. The antenna settings provided a maximum penetration depth of 20 feet. Actual penetration depths depended on conductivity and other soil characteristics.

GPR findings are summarized by source area and illustrated in Figures 3 through 8. The GPR profiles indicate variations in soil conductivity, which is a function of soil density and/or anomalies. Increased soil conductivity is typically associated with thick deposits of silt and clay, high saline or organic content, or contaminants. A zone of moderate to highly contaminated soil will generally exhibit higher conductivity than uncontaminated soil. Zones of highly conductive soil attenuate GPR energy in the subsurface, reducing penetration depth and resolution.

2.2 Backhoe Test Pits

Backhoe test pits were excavated in areas indicated by the GPR survey to potentially contain debris or other anomalies. Test pit excavation was performed by Rowcon Services using a John Deere 416 backhoe. A total of twenty test pits were excavated on September 11, 12, 13, and 29, and October 13, 2000. At the Holder source areas, excavated soil was stockpiled on a liner to limit the potential spread of soil contamination. In general, we did not excavate deeper than the undisturbed native soil to look for foreign objects or observe soil conditions.

Shannon & Wilson personnel observed subsurface conditions in the excavations, field screened soils using a Photovac photoionization detector (PID), and documented foreign objects. Soil was either field screened *in-situ*, or a sample was collected for headspace testing. Excavated soils were field screened at regular intervals. Field screening was also done in areas of debris, soil staining, and other potentially-contaminated areas.

On the morning of September 11, the PID malfunctioned and could not be repaired in the field. That afternoon and the following day the PID exhibited faults that made its readings suspect. When the PID was malfunctioning, PID samples were collected for testing later.

Following sampling, excavated debris was placed back in the excavation, and the excavated soil was used to backfill the test pit. No investigation-derived waste (IDW) was generated during the field work.

Table 1 summarizes the GPR findings, soil profile, and debris observed during test pit excavation. Test pits are grouped according to the source area.

2.3 Sampling Methods

Subsurface soil samples were primarily collected from areas of suspected contamination or where debris was observed. Soil samples were collected from twelve of the twenty test pits to characterize potential contamination. Discrete soil samples were collected directly from the sidewalls or base of the test pit (if it was shallow) or from the backhoe bucket. Soil taken from the backhoe bucket was collected from the center of relatively undisturbed material. Discrete soil samples were collected directly into the appropriate sample containers using a new, disposable, stainless steel, sampling spoon. A new pair of disposable nitrile gloves was worn while collecting each sample. Samples were placed in a cooler with ice substitute to be stored at or near 4°C until they were transported to the laboratory.

In the *2000 Request for Amendment*, two test pits were proposed for each source area where GPR detected buried debris. Two samples were to be collected from each test pit. During this investigation, the number of test pits at each source area and the frequency of sampling deviated from the proposed plan. Differences were due to the number of anomalies indicated by the GPR surveys and the suspected levels of contamination based on PID readings and observations of staining and/or odor.

Collection of water samples from test pits was not anticipated during this project, since this sampling method does not provide a representative groundwater sample. However, groundwater was encountered within an opening in a significant amount of buried, potentially-contaminated debris in one of the test pits at source area W-4. A grab sample of the water in this void was collected using a new, disposable, polyethylene bailer. Care was taken to avoid touching the surrounding debris or disturbing any sediment. The water sample was not filtered prior to volatile analysis. The sample was stored at or near 4°C in a sample cooler until transported to the laboratory.

2.4 Field Quality Control

Quality control (QC) samples consisted of duplicates and trip blanks. Duplicate sample results are used to assess the precision of the sample collection process. Duplicate soil samples were collected at a minimum rate of 10 percent of the project field samples. Trip blanks are used to indicate potential contamination by volatile organic compounds (VOCs) during sample shipment and handling. Trip blanks for soil samples consisted of 10 grams of Ottawa sand in methanol. The blank accompanied the sample bottles during transport to the field, sampling, and to the laboratory. The analytical laboratory prepared all the trip blanks. Two trip blanks were submitted for analysis for VOCs. A discussion of field and laboratory QC results is presented in Section 4.0.

2.5 Laboratory Analysis

CT&E Environmental Services (CT&E) performed the analytical testing. Soil samples were submitted for analysis for VOCs by EPA Method 8260B. About half of the VOC samples were extracted in the field using methanol (EPA 5035). Soil samples from source areas H-1 and W-4 were also analyzed for diesel range organics (DRO) and residual range organics (RRO, Alaska Method AK 102/103). ADEC requested analysis for polynuclear aromatic hydrocarbons (PAHs) where petroleum hydrocarbons had been detected on the Walsky property; this analysis was performed by EPA Method 8270B Selective Ion Monitoring (SIM).

Analytical results for the soil samples from the Holder and Walsky properties are summarized in Tables 2 and 3, respectively. The water sample results are also included in Table 3 for comparison. The analytical laboratory reports are provided in Appendix A.

2.6 Cleanup Levels/Regulatory Criteria

Soil and groundwater cleanup levels appropriate for this site are listed in 18 AAC 75.341. The “under 40-inch rainfall, migration to groundwater” soil cleanup levels are appropriate for this site and were used for comparison. Comparisons of analytical results to cleanup levels are presented in the discussion section for each source area. Soil cleanup levels are listed in Tables 2 and 3 for comparison to the analytical results.

3.0 RESULTS

3.1 Holder Property Source Area H-1

3.1.1 Description

TCE source area H-1 on the Holder property is approximately 100 feet in diameter and located along the east property line. A portion of H-1 extends into the Davison Street Right-of-Way. A smaller petroleum hydrocarbon (diesel) soil source is located within H-1, but has not contaminated the groundwater.

3.1.2 GPR Results

A number of obstructions limited GPR access at source area H-1. Pipe and timber stockpiles and the fence along the property line restricted the continuity of the GPR survey. Because of the amount of buried debris detected with the GPR, additional intermediate transects were added to the source area H-1 survey. GPR findings are illustrated in Figure 3.

GPR penetration was limited by increased soil conductivity across much of the survey area. Penetration depths to 20 feet were obtained between the zones of increased soil conductivity. The GPR delineated signs of three former excavations at source area H-1. A shallow excavation with abundant shallow debris was at the north end of the survey area. A partial excavation boundary was delineated at the southwest corner of the survey area, and a third excavation extending into the Davison Street Right-of-Way was inferred. Anomalies in four profiles suggested possible drums and other debris at the fence.

In general, numerous metal and other miscellaneous debris were detected by the GPR in near-surface soils across much of H-1. Metallic signatures resembled small objects (e.g., bolts, nails) at a few locations. A few larger metallic signatures (Features A1 and A2) resembled shallow drums. The flat metallic debris, less than 2 feet across, at Feature A2 was interpreted to be crushed drums or other debris.

3.1.3 Test Pit Observations

Two test pits were excavated in source area H-1 on September 13, 2000. The test pit proposed in the Davison Street Right-of-Way was actually excavated on the Holder property, where the soil contamination was in fact located. Excavated soil was stockpiled on a liner and replaced in the

excavation following sampling, along with encountered debris. *In situ* PID readings were not above 0 ppm. Photographs of the test pits are included in Appendix B.

Test pit TP-15 was excavated at Feature A2, the inferred shallow drum. Soil in the 4-foot-wide by 10-foot-long and 4-foot to 5-foot-deep test pit consisted of a few inches of surface organics over gravelly silty sand fill. What appeared to be native soils were encountered at 5 feet. Angle iron, an empty crushed 55-gallon drum, burlap, a 6-foot-long iron pipe, and what appeared to be a door panel from a military vehicle were unearthed at about 4 feet below the ground surface (bgs). Sample 928-091300-013 was collected at 5 feet bgs in native soil. Groundwater was encountered at approximately 5 feet.

Test pit TP-16 was excavated at Feature A1, the inferred shallow drum and other debris. Soil in the 6-foot-long by 11-foot-wide by 5-foot-deep excavation consisted of about 4 feet of gravelly sandy silt fill over dark grey, native silt. The only observed debris was a metal "form tie" at about 4 feet bgs. One sample (928-091300-014) and duplicate (928-091300-015) were collected in the native silt at 4 feet bgs.

3.1.4 Analytical Results

Sample 928-091300-013 from TP-15 contained 16.3 milligrams per kilogram (mg/kg) DRO. RRO was not reported above the detection limit. Trichloroethylene (TCE) was the only VOC detected in this sample at 0.0429 mg/kg. Sample 928-091300-014 and duplicate 928-091300-015 from TP-16 contained up to 17.1 mg/kg DRO and 97 mg/kg RRO; VOCs were not reported above their detection limits in these samples. Analytical results are summarized in Table 2.

3.1.5 Discussion

A crushed drum suggested by the GPR survey was confirmed by excavation at Feature A2. The presence of the drum and other objects imply debris disposal or burial in this area. The levels of DRO and RRO reported in the samples collected from native silt do not exceed ADEC soil cleanup levels (250 mg/kg and 10,000 mg/kg, respectively). Native soil collected from 5 feet bgs exceeds the ADEC cleanup level for trichloroethylene (TCE) (0.027 mg/kg).

3.2 Holder Property Source Area H-2

3.2.1 Description

TCE source area H-2 is northwest of H-1 and about 100 feet in diameter. The property owner unearthed three crushed 55-gallon drums when installing a service pole near H-2.

3.2.2 GPR Results

The fenced dog yard, doghouses, and shed altered the alignment of some GPR transects in H-2. Random intermediate transects were also incorporated in the survey. GPR penetration depths to 20 feet were possible throughout much of source area H-2. Increases in soil conductivity were detected in the southeastern quadrant of the survey area. The GPR delineated signs of a former excavation at the northeast corner of the survey area. Scattered debris and soil disturbance indicated in some GPR profiles suggest past excavation activity at the south end of the survey area, east of the fenced dog yard.

Small pieces of metal, wood, or other miscellaneous debris were inferred across the southeast quadrant at shallow depths. The GPR indicated a few metallic signatures resembling crushed drums less than 5 feet deep at Feature B. Other signatures resembling small metallic objects appeared grouped at the east fence of the dog yard. GPR signatures resembling drums were delineated in the northeast corner of the survey area. The drums excavated at the nearby service pole may be part of a debris field extending south and west into the GPR survey area.

Feature A is an anomaly within a zone of highly conductive soil, and its GPR profile, partially masked by the conductivity, is characterized by a metallic signature resembling a drum or small tank buried an estimated 4 to 10 feet deep. GPR findings are shown in Figure 4.

3.2.3 Test Pit Observations

Three test pits were excavated and sampled in source area H-2 on October 13, 2000. A few inches of snow were on the ground, and shallow seasonal frost was observed in these test pits. Soil from all three test pits exhibited low PID readings *in situ* (less than 2 ppm) and elevated PID readings when warmed (210 ppm to more than 2,000 ppm). Gravel fill soils in this area extended to about 2.5 feet bgs. Photographs of the test pits are included in Appendix B.

Test pit TP-17 was excavated at Feature B, where the GPR indicated several drums. Soil in the 15-foot-wide by 18-foot-long by 3-foot-deep test pit consisted of about 2.5 feet of dark brown, silty, sandy gravel fill over a dark brown, native organic mat (about 0.5 foot thick), and grey fine sand at 3 feet. Debris consisted of a few pieces of lumber, a nail, rubber tubing, and a piece of asphaltic roofing paper with a nail at 0.5 foot. Sample 928-101300-020 was collected at 1.7 feet bgs in fill soils, and sample 928-101300-019 was collected at 3 feet in native organics.

Test pit TP-18 was excavated where a large amount of buried debris was inferred at the south end of H-2. The test pit was excavated to 14-feet-wide by 17-feet-long by 2- to 3-feet-deep. Soils consisted of less than 0.5 foot of sandy gravel fill over light grey/orange, native, organic-rich silt. A few pieces of wood and organic material were observed under the fill at 0.5 foot bgs. Sample 928-101300-021 was collected at 2.5 feet bgs in the native silt.

Test pit TP-19 was excavated inside the dog yard at Feature A, where a possible buried tank was inferred at the west side of H-2. Soil in the 7.5-foot-wide by 12-foot-long by 2- to 3-foot-deep test pit consisted of a few inches of gravel fill over light grey, native silt and fine sand to about 2.8 feet, over fine gravel (rust-colored at the interface). PID readings on *in situ* soil were not above 0 ppm, but warm field-screening samples ranged from 210 to greater than 2,000 ppm. Sample 928-101300-022 was collected from 1.5 feet bgs in light grey, native fine sand. The only observed debris was a fabric glove at 1.5 feet bgs. Sample 928-101300-023 and duplicate sample 928-101300-024 were collected at 3 feet in the native sandy gravel.

3.2.4 Analytical Results

Sample 928-101300-019 from TP-17 contained 0.0615 mg/kg *cis*-1,2-dichloroethylene (*cis*-1,2-DCE) and 0.0398 mg/kg *trans*-1,2-dichloroethylene (*trans*-1,2-DCE). Sample 928-101300-021 from TP-18 contained 0.567 mg/kg *cis*-1,2-DCE and 0.0858 mg/kg *trans*-1,2-DCE. VOCs were not reported above the detection limits in samples 928-101300-020, 928-101300-022, 928-101300-023, and 928-101300-024. Analytical results are summarized in Table 2.

3.2.5 Discussion

The anomalies inferred to be a tank at Feature A and several drums at Feature B were not observed in the test pits. Sample 928-101300-019 contained *cis*-1,2-DCE and *trans*-1,2-DCE below ADEC cleanup levels (0.2 mg/kg and 0.4 mg/kg, respectively). Sample 928-101300-021 contained *cis*-1,2-DCE above the ADEC soil cleanup level and *trans*-1,2-DCE below the cleanup

level. TCE was not detected in the samples from source area H-2, but *cis*-1,2-DCE and *trans*-1,2-DCE were detected. The VOCs *cis*-1,2-dichloroethylene and *trans*-1,2-dichloroethylene are daughter products of TCE and imply its former presence.

3.3 Holder South Service Pole

3.3.1 Description

The “south” service pole on the Holder property, as opposed to the “north” service pole near H-2, refers to an area of reported fuel contamination in the soil (Figure 1). When this service pole was installed near the southeast corner of the property, the soil was noted to have a fuel odor. The extent of the reported soil contamination and potential for groundwater contamination are not known.

3.3.2 GPR Survey

A GPR survey was not performed at the Holder south service pole. The presence of contaminated soil had not been confirmed when the GPR was available for use. In addition, the proximity of the chain-link fence would have limited the effectiveness of GPR at this location.

3.3.3 Test Pit Observations

On September 29, 2000, the surface and near-surface soil backfilled around the south service pole were field screened to verify the report of fuel contamination. The backfilled soils (assumed to originate from this site) had a slight weathered fuel odor. A near-surface sample (928-092900-018) was collected from the undisturbed (native) fine sand and silt about 2.5 feet from the pole at 1.2 feet deep. The soils had a strong odor of cedar.

Test pit TP-20 was excavated about 4 feet from the service pole on October 13, 2000, to determine the depth of soil contamination (see Figure 1). Soils in the 2-foot-wide by 6-foot-long by 4-foot-deep trench consisted of less than 6 inches of native organics underlain by silt and fine sand with scattered organics to about 4 feet, and gravelly sand and gravel at the water table. The subsurface soils had an odor of cedar. PID readings were 50 to 125 ppm on the *in situ* soil, and more than 2,000 ppm on the warmed field screening samples. No surface or subsurface soil staining was visible. Groundwater was observed at about 4.5 feet, and no sheen was apparent. The soil in the test pit had not been disturbed, and no foreign objects were observed. No obvious indication of a contamination source (i.e., drums) was observed in the area. Sample 928-101300-

3.3.4 Analytical Results

The three samples from this area were analyzed for DRO, RRO, and VOCs. DRO was reported at 6,460 mg/kg in sample 928-092900-018, 1,700 mg/kg in 928-101300-025, and 2,980 mg/kg in 928-101300-026. RRO was reported at 314 mg/kg in 928-092900-018, 66.4 mg/kg in 928-101300-025, and less than 178 mg/kg in 928-101300-026. The following eight VOCs were reported in 928-101300-026 at up to 0.111 mg/kg: *n*-butylbenzene, *sec*-butylbenzene, *tert*-butylbenzene, ethylbenzene, 4-isopropyltoluene, naphthalene, 1,3,5-trimethylbenzene, and *o*-xylene. VOCs were not reported above detection limits in the other two samples. Analytical results are summarized in Table 2.

3.3.5 Discussion

Soil at the south service pole, to at least 4 feet below the ground surface, exceeds the ADEC DRO soil cleanup level. RRO in the soil did not exceed the cleanup level. With the exception of 4-isopropyltoluene, the VOCs reported in sample 928-101300-026 are associated with petroleum hydrocarbons and were reported at a fraction of their cleanup levels. Based on the laboratory remarks and the ratio of diesel-range to residual-range hydrocarbons, the soil is contaminated with a middle distillate/diesel fuel. The origin of petroleum hydrocarbon contamination at the south service pole is not known. Like most of the Holder property, vehicle/equipment storage/use occurred here, but no specific potential source of the contamination was noted in historic air photos. VOCs were not detected in the nearest downgradient groundwater probe, about 300 feet away. In our opinion the groundwater in the immediate area of the service pole is not likely contaminated, based on the low VOC soil concentrations.

3.4 Walsky Property Source Area W-1

3.4.1 Description

Walsky source area W-1 is approximately 150 feet in diameter and located just south of the shop building on the property. The highest TCE groundwater concentrations on the Holder or Walsky properties were reported at this source area in the 1998/1999 study. W-1 was also determined to be a source of the VOC 1,1,1-trichloroethane (TCA) in the groundwater.

3.4.2 GPR Results

Racks of pipe, equipment, miscellaneous materials, and two aboveground storage tanks were present at W-1. GPR penetration depths to 20 feet were achieved across much of W-1, but were

limited in areas by increased soil conductivity. The following GPR findings are shown in Figure 5.

The GPR delineated a utilidor and branch utilidor, scattered shallow debris, and a few groups of metallic/miscellaneous debris at various depths. One unique anomaly (Feature C) was detected at depth near the southwest corner of the survey grid.

The GPR signatures of Feature A indicate a previous excavation or local subsurface subsidence; a round piece of debris was delineated at shallow depth at this feature. Several GPR transects to the west suggest a utility or pipe passing through Feature A.

Feature B is the location of a pair of anomalous signatures, one metallic, and the nature of the other unknown. The metallic signature appeared round, drum-sized, and buried 5 to 10 feet deep. The adjacent, shallower, apparently round anomaly may be a pipe or other debris.

The GPR was pulled over Feature C in three transects. The anomalous signature is unique in contrast with the surrounding soil structure and not recognized from previous experience. The GPR signatures of the feature are hyperbolic and symmetrical. The symmetry suggests a curved upper surface about 8 to 10 feet deep; the feature may be 5 to 10 feet across. A small-diameter pipe is inferred a few feet below the ground surface. Shallow subsurface subsidence is indicated above the anomaly in the profiles. The GPR could not discern whether the large anomaly is natural or manmade. Feature C is interpreted to be a shaft over a large anomaly at depth.

3.4.3 Test Pit Observations

Seven test pits (TP-1 through TP-3, and TP-5 through TP-8) were excavated in source area W-1 on September 11 and 12, 2000. Soil samples were collected from two of the test pits. In about half of the test pits, a thick layer of black organic matter (peat, decomposed wood, etc) was observed under the gravel fill. Photographs of several test pits are included in Appendix B.

Test pit TP-1 was excavated at the eastern side of W-1, where debris and high conductivity soil were inferred. The final size of the excavation was about 10 feet wide by 10 feet long by 6 feet deep. The soil consisted of a few inches of native organic soil, underlain by silt to 3 feet and then sandy gravel. Debris was not observed in TP-1. This test pit is at the edge of the gravel pad on the site and did not appear to have been excavated or filled. Groundwater was observed at 6

then sandy gravel. Debris was not observed in TP-1. This test pit is at the edge of the gravel pad on the site and did not appear to have been excavated or filled. Groundwater was observed at 6 feet and did not have a sheen. PID readings on *in situ* soil were not above 0 ppm. This test pit was not sampled.

Test pit TP-2 was excavated at Feature B, the inferred previous excavation with debris/possible drum. Soil in the 10-foot-wide by 15-foot-long by 5-foot-deep excavation consisted of sandy gravel fill to about 4 feet over a 0.5-foot-thick native organic mat, over dark grey, fine sandy silt. No debris was observed in the test pit. Sample 928-091200-007 was collected from 4.5 feet bgs in the native sandy silt. PID readings were not available.

Test pit TP-3 was excavated at Feature C, which was inferred to be a shaft over a large anomaly. The soil in the 15-foot-wide by 15-foot-long by 10-foot-deep excavation consisted of 3 feet of sandy gravel fill over about 2 feet of dark brown native organics, a few inches of dark grey silt at 5 feet, over sandy gravel. The only debris in the excavation were a few pieces of lumber and a piece of copper pipe in the fill soils. The test pit was excavated to about 10 feet deep, much deeper than the top of the undisturbed native soil, but a manmade cause of the anomaly was not observed. Groundwater was encountered at a depth of 10 feet and did not have a sheen. PID readings were not available. This test pit was not sampled.

Test pit TP-5 was excavated at the inferred utilidor at the west side of W-1. Soil in the 8-foot-wide by 10-foot-long by 6-foot-deep test pit was sandy gravel fill. At 2 feet bgs it was stained dark grey and had a moderate weathered hydrocarbon odor. Abandoned electric lines inside a small wooden utilidor were uncovered at 4 feet bgs, underlain by pea gravel bedding. Sample 928-091200-005 was collected in the stained gravel fill at 2 feet bgs. Sample 928-091200-006 was collected in the pea gravel at 5 feet bgs. The *in situ* soil exhibited low PID readings (2 ppm); the field screening sample collected in the stained soil had a PID reading of 25 ppm when warmed. Groundwater was encountered at 6 feet and had a rusty color.

Test pits TP-6 and TP-7 were excavated at the inferred utility/pipe. Soil in TP-6 (10 feet wide by 10 feet long by 5 feet deep) was sandy gravel fill to 4 feet, about 6 inches of dark brown native organics, and grey sand. A piece of asphalt-cemented gravel was observed at about 1 foot bgs. TP-7 was excavated just north of TP-6, across the inferred pipe location. Soil in the 2-foot-wide by 15-foot-long by 8-foot-deep trench was sandy gravel fill to about 5 feet, over native silt to the bottom of the excavation. A strong septic odor was noted in both excavations but was stronger

in TP-7. No debris other than asphalt was observed in either test pit. PID readings were not above 0 ppm in the *in situ* soil. No samples were collected from these test pits.

Test pit TP-8 was excavated at the inferred shallow debris at the southeast portion of W-1. In the 2-foot-wide by 10-foot-long by 3-foot-deep trench, 3 feet of sandy gravel fill were present over native silt. Debris consisted of pieces of asphalt, a 3- by 3-foot piece of steel, and bedsprings at 3 feet bgs. PID readings were not above 0 ppm in the *in situ* soil. This test pit was not sampled.

3.4.4 Analytical Results

The samples from W-1 were analyzed for VOCs and PAHs. Sample 928-091200-005 from TP-5 contained 0.361 mg/kg naphthalene and the following six VOCs up to 0.654 mg/kg: *n*-butylbenzene, *sec*-butylbenzene, 4-isopropyltoluene, naphthalene, *n*-propylbenzene, and 1,3,5-trimethylbenzene. Sample 928-091200-006 from TP-5 contained 0.0160 mg/kg naphthalene and 0.0192 mg/kg TCE; PAHs were not reported above detection limits. PAHs and VOCs were not reported above detection limits in sample 928-091200-007 from TP-2. Analytical results are summarized in Table 3.

3.4.5 Discussion

Except for TCE, the VOCs reported in samples 928-091200-005 and 928-091200-006 in TP-5 are associated with petroleum hydrocarbons. VOCs and PAHs were less than ADEC cleanup levels. Staining and odor evident in this excavation indicate hydrocarbon contamination. The presence of a utilidor at TP-5 corroborates the GPR inferences at that location. Shallow buried debris was also confirmed at TP-8. It appears the thick layer of organic soils in half of the test pits at W-1 was interpreted by the GPR to be debris. A septic system may have been located near the south end of W-1, based on the septic odor observed in test pits TP-6 and TP-7 and several 1998/1999 groundwater probes in this area.

3.5 Walsky Property Source Area W-2

3.5.1 Description

Walsky source area W-2, just east of Lu Anne Road, is approximately 50 feet wide by 150 feet long. A series of 4-inch-diameter plastic standpipes protruding from the ground are located within this heavily wooded area, suggesting this was a leach field of some kind (Photo 15 in Appendix B). A 2-inch-diameter steel pipe observed at the east side of W-2 appeared to be a fill

pipe for an underground storage tank (UST). The 1998/1999 investigation indicated that W-2 is a source of TCA in the groundwater.

3.5.2 GPR Results

An array of 4-inch-diameter stand pipes exists in a 40- by 75-foot area toward the north end of source area W-2 (Figure 6). All of source area W-2 is heavily wooded, so the GPR survey was limited to east and west of the array of stand pipes. GPR transects were completed along two sides of this apparent drain field: in Luanne Road and just east of the standpipes. In general, profile resolution was poor throughout the penetration depths along these transects. High soil conductivity prevented detailed interpretation. The rows of regularly spaced plastic riser pipes are echoed in the GPR profile for transect T1, east of the pipe array. The number of stand pipes between transects corresponded with the number of metallic signatures in the GPR profile. Weak GPR signals at the east side of the array may indicate underground connection with other pipes. The depth(s) of the metallic anomalies was masked by high soil conductivity.

Feature A is a 2-inch-diameter steel pipe protruding from the ground. The GPR indicated the pipe was within a zone of high conductivity.

High soil conductivity and poor resolution characterize the transect T2 profile in Luanne Road. Other than a culvert near the south end of the transect, buried metallic anomalies were not detected.

3.5.3 Test Pit Observations

On September 11, 2000, one test pit (TP-4) was excavated at the 2-inch steel pipe which was thought to be a UST fill pipe. In the 4-foot-wide by 10-foot-long by 8-foot-deep excavation, this pipe was revealed to be a 20-foot-long steel pipe inside a 4-inch plastic pipe like the other standpipes in the inferred leach field. The soil in the test pit was a few inches of native organic soil over mottled, light brown/light grey, silt grading to sand. A slight septic odor was noted during excavation. Aside from the pipe, no foreign material was encountered. Sample 928-091100-004 was collected at about 8 feet bgs in the damp native sand. Groundwater was present at about 8 feet. No pipe connections or other pipes were visible in the test pit before loose sand caused the sidewalls to cave. Photographs of TP-4 are included in Appendix B.

3.5.5 Discussion

VOC and PAH contaminants were not reported in the soil sample from TP-4. Though a septic odor was observed, the test pit may have been located too far east to be within the inferred contaminated soil source. The 2-inch steel pipe was not associated with an UST as earlier thought.

3.6 Walsky Property Source Area W-3

3.6.1 Description

Walsky source area W-3 is near the former location of an asphalt batch plant. Relatively low TCE groundwater concentrations (compared to those at W-1) were reported here. The extent of this source area is not well defined.

3.6.2 GPR Results

Source area W-3 is west of a former asphalt batch plant and between gravel stockpiles. An area of viscous asphalt on the ground surface was not surveyed with the GPR. GPR penetration depths to 20 feet were obtained across much of the survey area, but were limited around the asphalt surface and another area by increased soil conductivity.

The GPR delineated scattered shallow debris, a few groups of mixed metallic and other debris buried less than 5 feet deep, a debris pit, and several excavations. Two excavations are located at the north and south sides of a gravel stockpile (Features A and C) at the northwest corner of the survey grid. Two other excavations are separated by a gravel stockpile, one along transect S2, and the other outside the survey grid (Feature B). These excavations may extend beneath the stockpiles. Increased soil conductivity may be associated with buried debris at the intersections of GPR transects S2, S4, and T2.

Feature A contains a shallow metallic anomaly whose size suggests a crushed drum or other flat object. Similar size shallow anomalies were detected on transects T2 and S4. Features B and C are miscellaneous debris less than 5 feet deep. Feature B debris is probably not metallic. The GPR delineated small metal pieces (e.g., nails, bolts, or other scrap metal) and some flat objects buried at Feature C. The inferred GPR features are shown in Figure 7.

3.6.3 Test Pit Observations

Three test pits were excavated on September 12, 2000, in source area W-3: TP-11, TP-12, and TP-13. PID readings were not available. Two of the test pits were sampled. Photographs of the test pits are included in Appendix B.

Test pit TP-11 was excavated at Feature B, which was inferred to be a previously excavated area with much debris. Soil in the 15-foot-diameter by 6-foot-deep excavation consisted of about 1 foot of asphalt and gravel, underlain by sandy gravel fill to 4 feet and mottled native silt to the bottom of the excavation. Aside from the asphalt, no debris was observed in TP-11. No samples were collected from this test pit.

Test pit TP-12 was excavated at Feature A, the inferred crushed drum in a former excavation. The final size of the excavation was 20-foot-wide by 20-foot-long by 4 feet deep. Soil consisted of about 1.5 feet of sandy gravel fill; stained, asphalt-bonded, silty gravel fill with a slight weathered hydrocarbon odor in most of the test pit at 1.5 to 2 feet, and brown native silt with scattered organics from 2 to 4 feet bgs. Debris consisted of two pieces of metal at 2 feet bgs. Sample 928-091200-008 was collected in the silty gravel fill at 1.5 feet.

Test pit TP-13 was excavated at Feature C, where miscellaneous debris in a previously excavated area was inferred. Gravel fill to at least 4 feet was present in the 15- to 20-foot-diameter by 4- to 10-foot-deep excavation, underlain by native sands and silts. Several pieces of lumber, plywood, and chunks of asphalt were found within the fill soils. Sample 928-091200-009 was collected from native sand and silt at approximately 10 feet bgs. Groundwater was entering the base of the test pit.

3.6.4 Analytical Results

Soil samples were analyzed for VOCs and PAHs. Samples 928-091200-008 from TP-12 and 928-091200-009 from TP-13 did not contain VOCs or PAHs above the detection limits. Analytical results for the soil samples are summarized in Table 3.

3.6.5 Discussion

While the presence of debris at Features A and C was confirmed, the miscellaneous debris suggested by the GPR findings at Feature B was determined to be chunks of asphalt. The lack of

VOCs and PAHs in sample 928-091200-008 indicates that what appears to be hydrocarbon staining has not affected the soil at TP-12. ADEC soil cleanup levels were not exceeded.

3.7 Walsky Property Source Area W-4

3.7.1 Description

The area between the shop building and Quonset hut on the Walsky property is called source area W-4. A temporary monitoring well (TMW-5) was installed here in 1996. A soil sample from that boring contained DRO, RRO, and tetrachloroethylene (PCE) above ADEC cleanup levels. Debris was also observed in the drill cuttings. A sheen was observed on the groundwater in a 1999 groundwater probe installed in this area. While soil contamination is present, the 1998/1999 investigation indicated that W-4 does not appear to be a source of VOCs in groundwater.

3.7.2 GPR Results

Penetration depths to 20 feet were possible across the eastern half of the GPR survey area and between zones of increased soil conductivity. GPR penetration was limited by increased soil conductivity over much of the western half of the area surveyed, particularly north of the shop building toward the dirt road. Indications of three former excavations, one (Feature E) smaller and shallower than the others (Features B and D), are visible in the GPR profiles. The following GPR findings are depicted in Figure 8.

Feature A is a metallic drum-size anomaly, possibly a pipe, less than 5 feet bgs. Feature C is of similar width and depth, but appears flat and nonmetallic. Feature B appears to be a former excavation 25 to 30 feet across, with metallic and other debris less than 8 feet deep. Increased soil conductivity masks the size and shape of metallic anomalies. Feature D is a group of metallic anomalies approximately 1 to 2 feet across and buried less than 10 feet deep; one anomaly appears round. There is indication of increased soil conductivity above these anomalies. Feature E is a shallow former excavation with debris similar to that of Feature B; the metallic signatures are small and do not resemble drums.

Features A and B are within a zone of increased soil conductivity that appears to extend north from the concrete apron of the shop building. The zone of increased soil conductivity at the west

end of the survey grid appears to taper from the road. Transect A1 across the road had high conductivity and poor resolution from the ground surface downward, suggesting road oiling.

3.7.3 Test Pit Observations

Three test pits were excavated in source area W-4: TP-9, TP-10, and TP-14 on September 11 and 12, 2000. PID readings were not available. One test pit was sampled. Photographs are included in Appendix B.

Test pit TP-9 was excavated at Feature B, the previous excavation with metallic and other debris just north of the shop. Soil in the 10-foot-wide by 15-foot-long by 2 to 3-foot-deep excavation consisted of gravel fill with a few inches of surficial asphalt staining. Some asphalt-cemented chunks of gravel and a 1.5-foot-square piece of metal were noted at 3 feet. This test pit was not sampled.

Test pit TP-10 was excavated at Feature D, where several possible drums were inferred. Soil in the 2-foot-wide by 10-foot-long by 8-foot-deep trench consisted of sandy gravel fill with asphalt and staining in the top several inches. Debris observed in the test pit consisted of a piece of rebar and a small, crushed, rusted, paint-can-size container at 3 feet bgs. No samples were collected from the test pit.

Test pit TP-14 was excavated at the approximate location of 1996 temporary monitoring well TMW-5. Soil in the 15-foot-wide by 30-foot-long by 1- to 5-foot-deep excavation was sandy gravel fill with trace organics at 5 feet. Asphalt-stained soil was present from the ground surface to about 0.5 foot. The following foreign objects were observed in the test pit at about 3 feet bgs: three crushed 55-gallon drums, bulldozer tracks, lumber, timber, visqueen, rubber hose, and scrap metal. Sample 928-091200-010 was collected from the wet sandy gravel fill inside one of the drums at 3 feet bgs. Rusty-colored groundwater was present at about 5 feet in a void in the debris and did not have a sheen. Since it was in direct contact with potentially contaminated solid waste, groundwater sample 928-091200-011 was collected using a disposable bailer. Soil sample 928-091200-012 was collected at 5 feet bgs in the sandy gravel fill.

3.7.4 Analytical Results

Sample 928-091200-010 from TP-14 contained 37.2 mg/kg DRO, 321 mg/kg RRO, 0.0227 mg/kg TCE, and the following six PAHs at up to 0.00575 mg/kg: benzo[k]fluoranthene, benzo-

[g,h,i]perylene, chrysene, fluoranthene, phenanthrene, and pyrene. Sample 928-091200-012 contained 87.4 mg/kg DRO and 195 mg/kg RRO; VOCs and PAHs were not reported above detection limits in this sample. The laboratory reported the DRO/RRO chromatograms for samples 928-091200-010 and 928-091200-012 had a "lube oil pattern." VOCs were not reported above detection limits in groundwater sample 928-091200-011. Analytical results for the soil and water samples are summarized in Table 3.

3.7.5 Discussion

GPR-inferred debris was confirmed in test pits TP-9 and TP-10. The area near TP-14 appears to have been used for solid waste disposal. The soil samples in and under the waste contain DRO and RRO at less than ADEC cleanup levels. This petroleum hydrocarbon contamination is primarily in the residual range. TCE was detected in a soil sample within a crushed drum at less than the ADEC cleanup level. The six PAHs reported in the same sample are associated with petroleum hydrocarbons, and were found at concentrations much less than cleanup levels.

In 1996 the depth to groundwater in temporary monitoring well TMW-5 was about 6 feet. Groundwater sample 928-091200-011 is not necessarily representative of actual groundwater conditions, and may have been isolated from "regional" groundwater by the surrounding debris. The lack of VOCs in this water sample suggests the soil contamination and solid wastes have not affected the water at this location.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

The purpose of this portion of the project was to assess the type and magnitude of contamination associated with GPR-identified subsurface anomalies and buried debris at the source areas. The limited amount of analytical data obtained from this investigation was used to characterize the anomalies/debris, and not intended to fully characterize source areas. The Quality Assurance Project Plan (QAPP) for this project was incorporated in the *Sampling and Analysis Plan* portion of Shannon & Wilson's *General Work Plan for Site Investigations, Six Mile Richardson Highway Properties* (August 1998). The QAPP included quality assurance/quality control (QA/QC) goals to ensure that data of known and acceptable quality were generated. This section summarizes the results of the data quality assessment.

4.1 Field Quality Control

Field personnel did not encounter problems with sample collection, storage, or transport. With the following exception, all samples were preserved and submitted in the sample containers specified in Table 4-2 of the *Work Plan*. Nine of the soil samples submitted for VOC analysis were extracted at the laboratory, not in the field, as specified in the *Work Plan* and the 2000 *Request for Amendment*. All samples were received at the laboratory in satisfactory condition and analyzed within holding times.

Field quality control samples in this portion of the project consisted of two trip blanks and two duplicate samples. Trip blanks are used to indicate potential contamination by VOCs during sample shipment and handling, and duplicates sample results are used to assess the precision of the sample collection process.

Soil trip blanks were prepared by the laboratory, accompanied samples, and were submitted for analysis for VOCs. Trip blank sample 928-101300-TB was submitted with the soil samples from the Holder south service pole. VOCs were not reported above detection limits in this sample, indicating that cross-contamination of samples probably did not occur. Trip blank sample 928-091300-TB accompanied samples from source area H-1. Carbon tetrachloride was reported in this sample at 0.132 mg/kg, about ten times its detection limit. It was not reported in any project sample above its detection limit. Carbon tetrachloride is not used at the laboratory for extraction or analysis, and it is not a laboratory contaminant. It cannot be attributed to carry-over from

other laboratory samples in the batch. While its source is unexplained, it is of little consequence to the project goals.

The duplicate sample results were used to calculate the relative percent difference (RPD), a measure of precision. The RPDs for DRO and RRO (12 percent and 46 percent, respectively) in sample 928-091300-014 and duplicate 928-091300-015 from TP-16 were within the allowable limits (± 50 percent). The RPDs for VOCs could not be calculated because analytes were not detected in either sample. Sample 928-101300-023 and duplicate sample 928-101300-024 were collected in source area H-2 and analyzed for VOCs. The RPD could not be calculated, since analytes were not reported above detection limits in either sample. The RPD results that could be calculated meet Shannon & Wilson quality assurance goals, indicating satisfactory precision in the sample collection procedures.

4.2 Laboratory Quality Control

Laboratory quality control procedures include the analysis of surrogates, laboratory control samples/laboratory control sample duplicates (LCS/LCSD), method blanks (MB), and continuing calibration verification (CCV) samples. A summary of the laboratory QC data review follows.

In five of the project samples, DRO and/or RRO surrogate recoveries did not meet QC goals due to matrix interference and/or sample dilution. Results were not affected. Three samples from the Walsky property had elevated PAH detection limits resulting from dilution required by hydrocarbon levels. Detection limits were not above ADEC cleanup levels. In sample 928-091300-014 the VOC detection limits were elevated, because two aliquots of methanol were used for field preservation. It is possible that TCE was present in this sample below the detection limit but above the soil cleanup level. A nearby sample was confirmed to have TCE above the cleanup level.

The PAH phenanthrene was reported at less than two times its detection limit in a method blank. This and five other PAH compounds were detected in a project sample analyzed in the same batch. Naphthalene was reported in another method blank at less than two times its detection limit. Methylene chloride, toluene, *p*&*m*-xylenes, 1,2,4- and 1,2,3-trichlorobenzene, DRO, RRO, and anthracene were reported in method blanks at less than their detection limits, and were "J" flagged as estimated in the method blank results.

In the LCS/LCSDs for VOCs, surrogate recoveries and/or RPDs for a number of VOC compounds did not meet our data quality goals. Results were not affected or may be estimated. For PAH analysis, recovery of one compound in the LCSD was biased high, but the results were not significantly affected.

For the laboratory's continuing calibration verification (CCV) VOC samples, chloroethane and bromomethane did not meet QC recovery goals. Results are not affected since the analytes were not reported in the project samples.

4.3 Conclusions

Field QC samples indicated no external contamination of the samples. The presence of carbon tetrachloride in a trip blank is unexplained. Laboratory QC results were generally in compliance with our data quality objectives. The elevated detection limits did not affect project goals. The surrogate spikes and internal standards indicated occasional matrix interference, which is not unexpected in samples with high petroleum hydrocarbon or organic content, such as these. The project analytical data were not given qualifying flags by the laboratory. In conclusion, the data were of satisfactory quality to meet project goals.

5.0 CONCLUSIONS/RECOMMENDATIONS

Ground-penetrating radar (GPR) was used to locate buried debris, subsurface anomalies, or other subsurface conditions that could potentially be associated with groundwater contamination at the source areas on the Holder and Walsky properties. The extent of the GPR surveys was limited at several of the source areas due to surface obstructions, such as fences, material stockpiles, and dense vegetation. The GPR signal was generally able to penetrate to a depth of 20 feet, although variations in conductivity due to soil type limited penetration at some locations. The GPR detected signs of previous excavations containing scattered debris or foreign objects within source area soils. Given the activities that occurred on the subject properties, other fill areas containing debris outside the limits of the GPR surveys likely exist.

Test pits were excavated to verify subsurface conditions where the GPR had indicated anomalies. About half of the GPR inferences of debris were confirmed in the test pits. Debris was observed at five of the six source areas and generally consisted of scrap metal (iron pipe, angle iron, nails, etc.), wood/timbers, and other ordinary objects. One crushed 55-gallon drum was uncovered at the Holder property, and three were unearthed in an apparent debris burial site north of the shop building on the Walsky property. No intact drums or other containers with product were unearthed, and no direct evidence of contaminants contributing to the source area contamination at the Holder or Walsky properties was discovered.

Based on information obtained from this and previous investigations, Shannon & Wilson presents the following conclusions:

- ▶ GPR was a conservative technique for detecting buried manmade objects at the sites investigated.
- ▶ Previous excavations containing buried debris are present at each of the source areas (except the Holder south service pole), although debris was not encountered at all anomalies identified by the GPR survey.
- ▶ Buried debris, including a drum, is present at Holder source area H-1.
- ▶ Buried debris, including drums, is present near the location of temporary monitoring well TMW-5 at Walsky source area W-4.
- ▶ Little or no significant debris (i.e., drums) was present in the test pits at the other source areas (H-2, W-1, W-2, and W-3).

- ▶ A former septic system may be present at Walsky source area W-1.
- ▶ Soil at the south service pole on the Holder property exceeds the ADEC cleanup level for diesel range organics (DRO).
- ▶ Soil at Holder source area H-1 exceeds the ADEC cleanup level for trichloroethylene (TCE).
- ▶ Soil at Holder source area H-2 exceeds the ADEC cleanup level for *cis*-1,2-dichloroethylene.
- ▶ While low levels of TCE were reported at two Walsky source areas, there were no exceedances of soil cleanup levels at the test pits sampled on the Walsky property.
- ▶ While none of the buried objects observed in the test pits are attributable to the TCE groundwater contamination, the presence of TCE, *cis*-1,2-dichloroethylene, and *trans*-1,2-dichloroethylene in soil samples from four source areas and observed debris suggests past activities in these areas contributed to the groundwater contamination.

Evidence suggests solid waste disposal occurred on the subject properties. Observations and data obtained from this investigation support the conclusions that H-1, H-2, W-1, and W-4 are sources of groundwater contamination and W-2 and W-3 as possible source areas. While no significant soil contamination was identified, the limited soil sampling program was not intended to fully characterize the soil source areas. Shannon & Wilson presented several possible soil and groundwater remedial options in our December 1999, *Remedial Alternatives Screening Reports* for the Holder and Walsky properties. In the event that treatment of the soil sources on the Holder and/or Walsky properties is to be pursued, Shannon & Wilson recommends a level of site characterization appropriate to the selected corrective action alternative.

DRO exceeds the ADEC soil cleanup level at the south service pole on the Holder property. Shannon & Wilson recommends delineation of the petroleum contaminated soil and assessment of the potential impact to receptors in the area. If a significant risk to human health or the environment is identified, corrective measures appropriate to the risk should be developed and implemented. Corrective measures may include scarifying the soil to promote natural attenuation or applying a cover to limit direct exposure.

6.0 LIMITATIONS

The findings we have presented are based on geophysical surveys, intrusive investigation, and analytical sampling performed in accordance with our scope of services. The GPR results should not be construed as a definite conclusion about the environmental characteristics of the investigated areas. GPR survey findings are subject to interpretation of physical discoveries and suspect subsurface conditions.

Shannon & Wilson, Inc., performed the geophysical surveys in accordance with general practice at the time the surveys were conducted. The surveys were conducted at target sites suspected to have subsurface features of environmental significance; other features may be present in the subsurface beyond the limits of our GPR surveys.

This report presents discussions and conclusions based on a limited number of soil samples collected during the excavation of exploratory test pits at suspect GPR locations, and should not be construed as a comprehensive study of the soil quality at the sites. The soil samples were intended to evaluate the presence or absence of contamination at the locations selected. The limited amount of sampling performed in this project was not intended to fully characterize the nature and extent of source area soils. It is possible that our subsurface tests do not represent the highest levels of contamination. It was not the intent of our sampling to detect the presence of soil contaminants other than those for which laboratory analyses were performed. No conclusions can be drawn on the presence or absence of other contaminants. In addition, our services were not intended to include geotechnical assessment of the properties.

The data presented in this report should be considered representative of the time of our geophysical investigation, site observations, and sample collection. Changes due to natural forces or human activity can occur on the site. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

This report was prepared for the use of the Alaska Department of Environmental Conservation. If it is made available to others, it should be for information on factual data only and not as a warranty of subsurface conditions, such as those interpreted from the discussions of subsurface conditions included in this report. To assist you and others in further understanding the uses and

limitations of our report, Shannon & Wilson, Inc., has prepared the attached document *Important Information About Your Environmental Report*.

TABLE 1 - SUMMARY OF GPR AND TEST PIT FINDINGS
SOURCE AREA INVESTIGATION REPORT
HOLDER AND WALSKY PROPERTIES

Source Area	Test Pit	Inferred GPR Feature	Test Pit Dimensions	Soil Sample Number (sample depth)	Soil Profile	Notes
H-1	TP-15	Feature A2: Very high conductivity, numerous drums and debris	4' x 10' x 4-5' deep	— 928-091300-013 (5')	Organics/topsoil (0- <0.5') Gravelly silty sand grading to gravelly sand fill (5'). Native at approximately 5'.	Crushed 55-gallon drum, bucket or drum top with bung, angle iron, burlap, iron pipe, steel door panel (military?), sheet metal (4'). PID = 0 ppm. Groundwater at 5' (no sheen). Steel form tie (4'). PID = 0 ppm.
	TP-16	Feature A1: Very high conductivity, numerous drums and debris	6' x 11' x 5' deep	— 928-091300-014 (4') 928-091300-015 (4')	Gravelly sandy silt fill (0-4') Dark grey native silt (4-5')	
	TP-17	Feature B: Several drums in high conductivity soil and previous excavation	15' x 18' x 3' deep	928-101300-020 (1.7') 928-101300-019 (3')	Dark brown silty sandy gravel fill (0-2.5') Native dark brown/black organics (2.5-3'). PID = 870 ppm (HS)	Few pieces lumber, nail, rubber tubing, small piece tar paper with nail (0.5'). PID < 2 ppm. PID > 2000 ppm (HS).
H-2	TP-18	Abundant debris	14' x 17' x 2-3' deep	— —	Light/dark grey fine sand (3') Sandy gravel fill (0-0.5')	Few pieces wood, organics (0.5'). PID < 2 ppm. PID > 2000 ppm (HS).
	TP-19	Feature A: Possible buried tank, high conductivity soil	7.5' x 12' x 2-3' deep	— 928-101300-022 (1.5') — 928-101300-023 (3') 928-101300-024 (3')	Gravel fill (0- <0.5') Light grey native silt and fine sand (0.5-2.8'). PID > 2000 ppm (HS) Rust-colored fine gravel (2.8-3') Sandy gravel (3'). PID = 210 ppm (HS)	Fabric glove (0.5'). PID = 0 ppm.
	TP-20	(GPR survey not performed here)	2' x 6' x 4' deep	— 928-101300-025 (2.2') 928-101300-026 (4')	Native organics/topsoil (0- <0.5') Silt/light grey fine sand with organics (0.5-4') Damp fine-coarse gravelly sand and gravel (4')	No debris. Odor of cedar. Groundwater at 4.5' (no sheen). PID = 50-125 ppm. PID > 2000 ppm (HS).
W-1	TP-1	Debris	10' x 10' x 6' deep	— — —	Native organics/topsoil (0- <0.5') Silt (<0.5-3') Sandy gravel (3-6')	No debris. Groundwater at 6' (no sheen). PID = 0 ppm.
	TP-2	Feature B: Previous excavation with debris/drum	10' x 15' x 5' deep	— —	Sandy gravel fill (0-4') Brown native organic mat (4-4.5')	No debris. (PID readings not available)
	TP-3	Feature C: Large anomaly at depth	15' x 15' x 10' deep	928-091200-007 (4.5') — — — —	Dark grey fine sandy silt (4.5-5') Sandy gravel fill (0-3') Brown native organics (3-5') Dark grey silt (<0.5') Sandy gravel (5-10')	Few small pieces lumber, short piece copper pipe (3'). Groundwater at 10' (rising). (PID readings not available)

TABLE 1 - SUMMARY OF GPR AND TEST PIT FINDINGS
SOURCE AREA INVESTIGATION REPORT
HOLDER AND WALSKY PROPERTIES

Source Area	Test Pit	Inferred GPR Feature	Test Pit Dimensions	Soil Sample Number (sample depth)	Soil Profile	Notes
W-1	TP-5	Utilidor in trench/excavation	8' x 10' x 6' deep	—	Sandy gravel fill (0-5')	Steel cables in wooden "utilidor" (4').
				928-091100-005 (2')	Dark grey hydrocarbon stain (2-2.5'). PID = 25 ppm (HS).	Moderate hydrocarbon odor. Rusty-colored groundwater at 6'.
	TP-6	Feature A: Possible utility pipe	10' x 10' x 5' deep	—	Pea gravel fill under utilidor (5-6'). PID = 2 ppm.	Piece of asphalt-cemented gravel (1').
				—	Sandy gravel fill (0-4')	Septic odor. No debris other than asphalt. PID = 0 ppm.
W-2	TP-7	Possible pipe	2' x 15' x 8' deep	—	Dark brown native organics (4-4.5')	Strong septic odor in gravel. No debris. PID = 0 ppm.
	TP-8	Shallow debris	2' x 10' x 3' deep	—	Grey sand with septic odor (4.5-5')	3x3' piece of steel, few pieces asphalt, bedsprings (3'). PID = 0 ppm.
				—	Sandy gravel fill (0-5')	20' steel pipe in 4" plastic riser. Septic odor? Groundwater entering excavation. (PID readings not available)
				—	Native silt (5-8')	No debris other than asphalt. (PID readings not available)
W-3	TP-4	Feature A: Zone of high conductivity	4' x 10' x 8' deep	—	Sandy gravel fill (0-3')	0.5x1.5' metal sheet, rusted piece sheet metal (2'). (PID readings not available)
				—	Native organics/topsoil (0-<0.5')	Lumber, plywood, asphalt pieces (4').
	TP-11	Feature B: Previously excavated area with much debris	15' diam x 6' deep	—	Native sand/silt (4-10')	Groundwater entering excavation. (PID readings not available)
				—	Asphalt/gravel fill (0-1')	Asphalt-cemented gravel, 1.5x1.5' piece yellow-painted metal (3'). (PID readings not available)
W-4	TP-12	Feature A: Previously excavated area with debris/crushed drum	20' x 20' x 4' deep	—	Sandy gravel fill (1-4')	Crushed, rusted paint-can-sized object, rebar (3'). (PID readings not available)
	TP-13	Feature C: Previously excavated area with much debris	15-20' diam x 4-10' deep	—	Mottled grey/brown/orange native silt (4-6')	3 crushed drums, dozer tracks, rubber hose, timber, visqueen, lumber, scrap metal. Groundwater (5'), rusty, no sheen. (PID readings not available)
				—	Sand/fine gravel fill (0-1.5')	
				—	Asphalt-stained bonded silty gravel fill (1.5-2')	
W-4	TP-9	Feature B: Several possible drums in high conductivity soil	10' x 15' x 2-3' deep	—	Brown native silt, scattered organics (2-4')	
	TP-10	Feature D: Several possible drums	2' x 10' x 8' deep	—	Gravel fill (0-4')	
	TP-14	TMW-5 (GPR survey not performed here)	15' x 30' x 1-5' deep	—	Native sand/silt (4-10')	
				—	Asphalt-stained gravel fill (0-<0.5')	
W-4				—	Gravel fill (0.5-3')	
				—	Asphalt-stained gravel, asphalt (0-<0.5')	
				—	Sandy gravel fill (0.5-8')	
				—	Asphalt-stained gravel fill (0-<0.5')	
W-4				928-091200-010 (3')	Sandy gravel fill (0.5-5')	
				928-091200-011 (5')	Sandy gravel, trace organics (5')	
				928-091200-012 (5')		

Table 1 Notes

— Sample not collected at this depth.

PID Photoionization detector reading (insitu, unless noted as "HS").

ppm parts per million

HS Warmed, headspace PID sample reading.

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS
HOLDER PROPERTY TEST PIT SAMPLES
SOURCE AREA INVESTIGATION REPORT
HOLDER AND WALSKY PROPERTIES

Analyte	Sample Number	H-1			H-2			South Service Pole			928-101300-TB (trip blank)	ADEC Cleanup Levels				
		TP-15	TP-16	TP-16 (duplicate)	928-091300-TB (trip blank)	TP-17	TP-17	TP-18	TP-19	TP-19			TP-19 (duplicate)	928-092900-018	928-101300-025	928-101300-026
Source Area	TP-15	TP-16	TP-16	TP-17	TP-17	TP-18	TP-19	TP-19	TP-19	TP-19	TP-20	TP-20	TP-20			
Test Pit	5	4	4	—	3	1.7	2.5	1.5	3	3	3	1.2	2.2	4		
Depth (ft)	5	4	4	—	3	1.7	2.5	1.5	3	3	3	1.2	2.2	4		
Petroleum Range Hydrocarbons																
Diesel Range Organics	mg/kg	16.3	17.1	15.2	—	—	—	—	—	—	—	6,460 ^a	1,700 ^a	2,980 ^a	250	
Residual Range Organics	mg/kg	<18.5	60.8	97.0	—	—	—	—	—	—	—	314 ^a	66.4 ^a	<178 ^a	10,000	
Volatile Organic Compounds ^c																
n-Butylbenzene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	0.0240	<0.0148	
sec-Butylbenzene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	0.0185	<0.0148	
tert-Butylbenzene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	0.0469	<0.0148	
Carbon tetrachloride	mg/kg	<0.0130	<0.0286	<0.0184	0.132	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	<0.0144	0.03	
cis-1,2-Dichloroethylene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	0.0615	<0.0137	0.567	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	<0.0144	0.2	
trans-1,2-Dichloroethylene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	0.0398	<0.0137	0.0858	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	<0.0144	0.4	
Ethylbenzene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	0.0168	5.5	
4-Isopropyltoluene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	0.111	<0.0148	
Naphthalene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	0.102	43	
Trichloroethylene	mg/kg	0.0429	<0.0286 ^b	<0.0184	<0.0135	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	<0.0144	0.027	
1,3,5-Trimethylbenzene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	0.0563	—	
o-Xylene	mg/kg	<0.0130	<0.0286	<0.0184	<0.0135	<0.0127	<0.0137	<0.0225	<0.0118	<0.0180	<0.0105	<0.0153	<0.0134	0.0193	78	

Table 2 Notes:

Only detected analytes are shown. Refer to laboratory report for complete list of analytes.

< Analyte not reported above given detection limit.

— Analysis not performed, or Not Applicable.

shading Analyte reported above ADEC cleanup level.

a Pattern consistent with weathered middle distillate.

b Detection limit exceeds cleanup level.

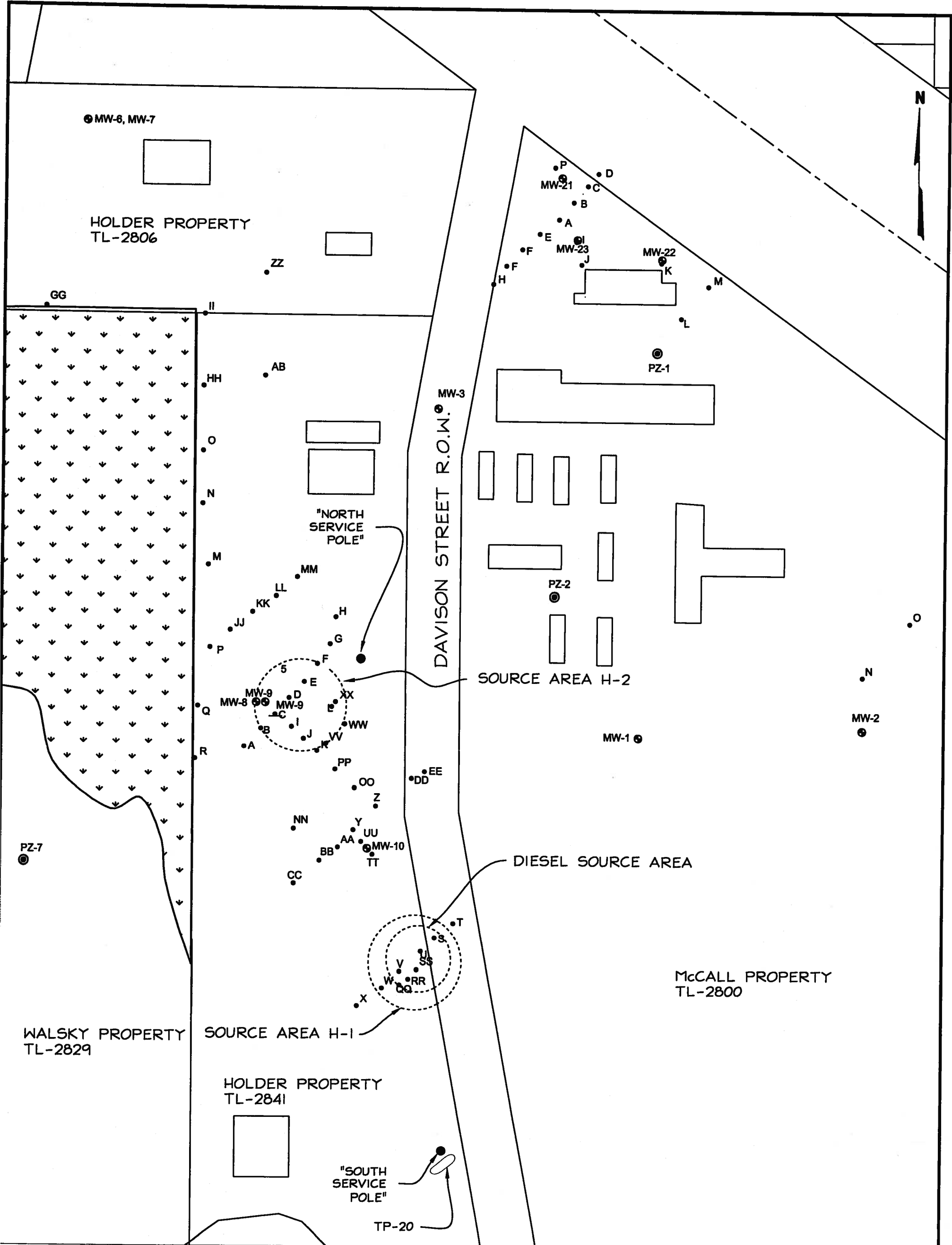
c Soil samples extracted in field.

TABLE 3 - SUMMARY OF ANALYTICAL RESULTS
WALSKY PROPERTY TEST PIT SAMPLES
SOURCE AREA INVESTIGATION REPORT
HOLDER AND WALSKY PROPERTIES

Analyte	Sample Number	928-091100-005		928-091100-006		928-091200-007		928-091100-004		928-091200-008		928-091200-009		928-091200-010		928-091200-011 (water sample, mg/L)		928-091200-012		ADEC Cleanup Levels	
		W-1		W-2		W-3		W-4		W-4		W-4		W-4		W-4					
		TP-5	TP-5	TP-2	TP-4	TP-12	TP-13	TP-14	TP-14	TP-14	TP-14	TP-14	TP-14	TP-14	TP-14	TP-14	TP-14				
		Depth (ft)	2	5	4.5	8	1.5	10	3	5	5										
Petroleum Range Hydrocarbons																					
Diesel Range Organics		mg/kg		—		—		—		—		—		37.2		—		87.4		250	
Residual Range Organics		mg/kg		—		—		—		—		—		321 ^a		—		195 ^a		10,000	
Volatile Organic Compounds^c																					
n-Butylbenzene		mg/kg		0.0913		<0.0126		<0.0159		<0.0168		<0.0133		<0.0161		<0.0142		<0.00100		<0.0135	—
sec-Butylbenzene		mg/kg		0.0689		<0.0126		<0.0159		<0.0168		<0.0133		<0.0161		<0.0142		<0.00100		<0.0135	—
4-Isopropyltoluene		mg/kg		0.116		<0.0126		<0.0159		<0.0168		<0.0133		<0.0161		<0.0142		<0.00100		<0.0135	—
Naphthalene		mg/kg		0.654		0.0160		<0.0159		<0.0168		<0.0133		<0.0161		<0.0142		<0.00100		<0.0135	43
n-Propylbenzene		mg/kg		0.023		<0.0126		<0.0159		<0.0168		<0.0133		<0.0161		<0.0142		<0.00100		<0.0135	—
Trichloroethylene		mg/kg		<0.0137		0.0192		<0.0159		<0.0168		<0.0133		<0.0161		0.0227		<0.00100		<0.0135	0.027
1,3,5-Trimethylbenzene		mg/kg		0.140		<0.0126		<0.0159		<0.0168		<0.0133		<0.0161		<0.0142		<0.00100		<0.0135	—
Polynuclear Aromatic Hydrocarbons																					
Benzo [k] fluoranthene		mg/kg		<0.249		<0.00230		<0.283 ^b		<0.00295		<0.232 ^b		<0.00306		0.00575		—		<0.225 ^b	110
Benzo [g,h,i] perylene		mg/kg		<0.249		<0.00230		<0.283 ^b		<0.00295		<0.232 ^b		<0.00306		0.00343		—		<0.225 ^b	—
Chrysene		mg/kg		<0.249		<0.00230		<0.283 ^b		<0.00295		<0.232 ^b		<0.00306		0.00412		—		<0.225 ^b	620
Fluoranthene		mg/kg		<0.249		<0.00230		<0.283 ^b		<0.00295		<0.232 ^b		<0.00306		0.00278		—		<0.225 ^b	2,100
Naphthalene		mg/kg		0.361		<0.00230		<0.283 ^b		<0.00295		<0.232 ^b		<0.00306		<0.00275		—		<0.225 ^b	43
Phenanthrene		mg/kg		<0.249		<0.00230		<0.283 ^b		<0.00295		<0.232 ^b		<0.00306		0.00389		—		<0.225 ^b	—
Pyrene		mg/kg		<0.249		<0.00230		<0.283 ^b		<0.00295		<0.232 ^b		<0.00306		0.00359		—		<0.225 ^b	1,500

Table 3 Notes:

- < Only detected analytes are shown. Refer to laboratory report for complete list of analytes.
- Analyte not reported above given detection limit.
- ^a Analysis not performed, or Not Applicable.
- ^b Pattern consistent with lube oil.
- ^c Elevated detection limits.
- ^c Soil samples extracted at laboratory.



WOODED AREA

EE • 1998/99 GEOPROBE


TMW-6 ○ 1996 TEMPORARY MONITORING WELL

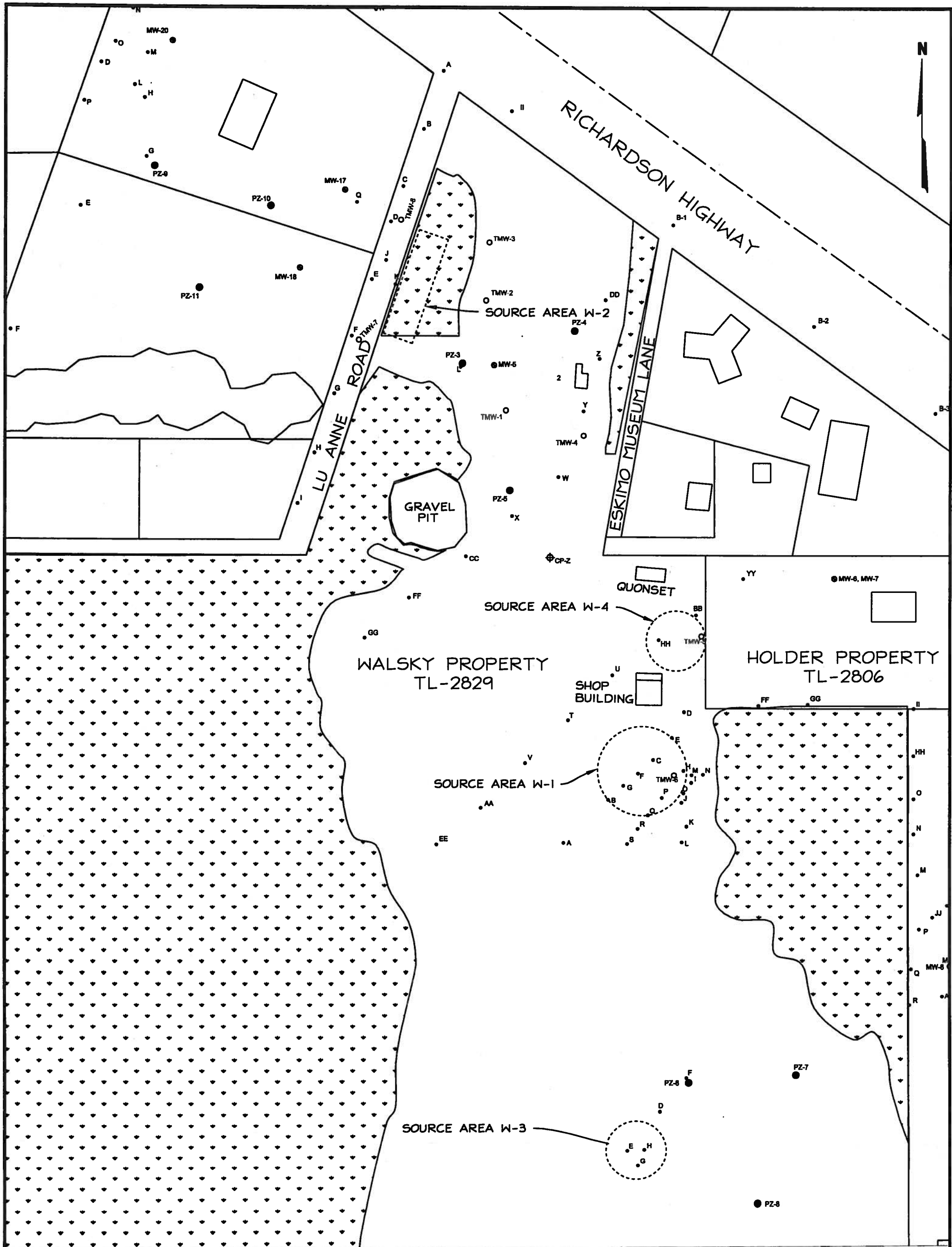
PZ-5 ● PIEZOMETER

MW-18 ● MONITORING WELL



APPROX. SCALE 1 INCH = 100 FEET

Holder Property Six Mile Richardson Highway	
SOURCE AREAS	
February 2001	31-1-10928-133
 SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS	Figure 1



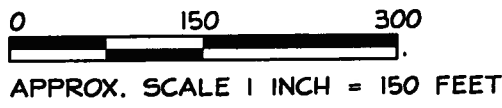
WOODED AREA


EE • 1998/99 GEOPROBE

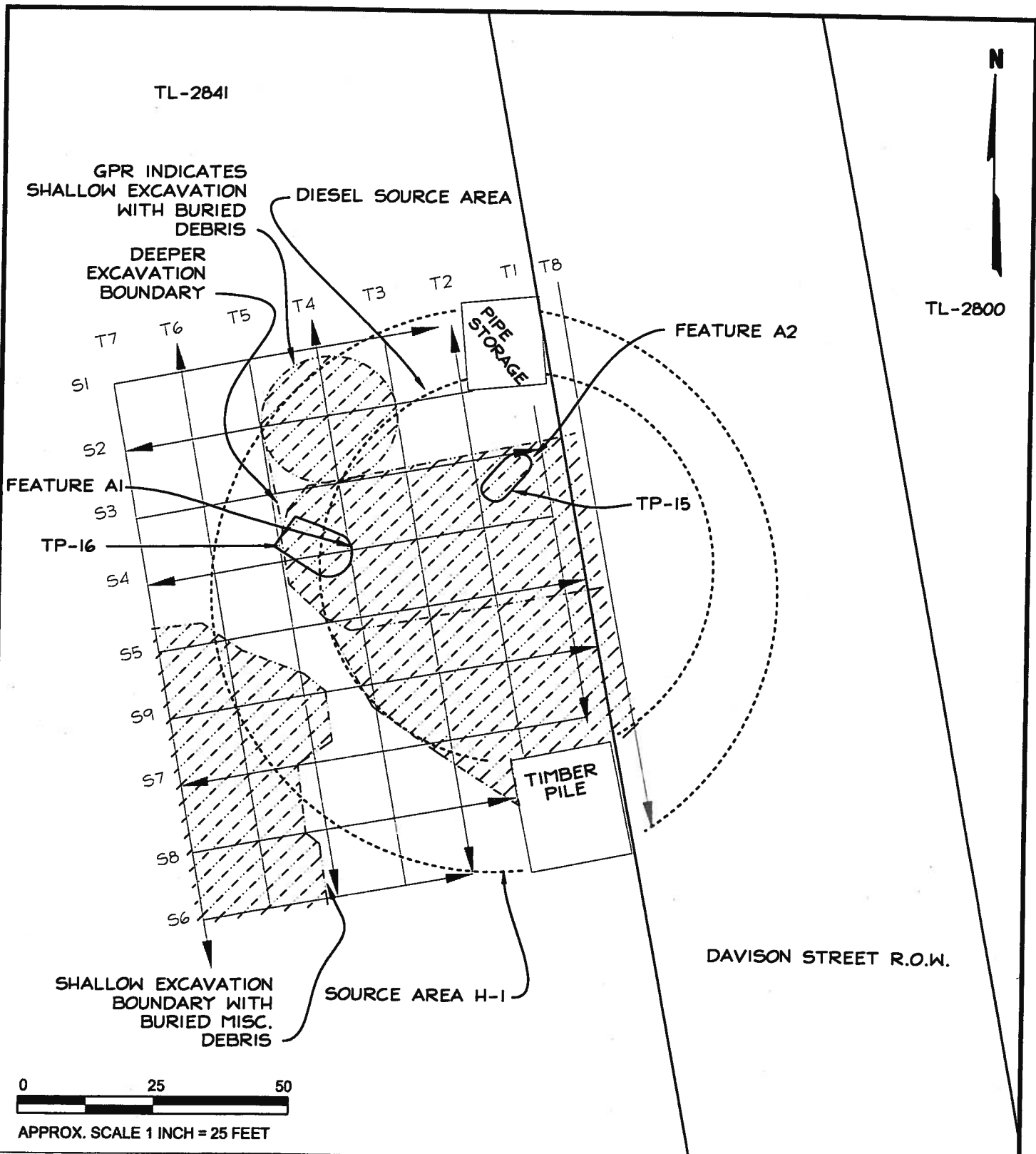
TMW-6 ○ 1996 TEMPORARY MONITORING WELL


PZ-5 ● PIEZOMETER

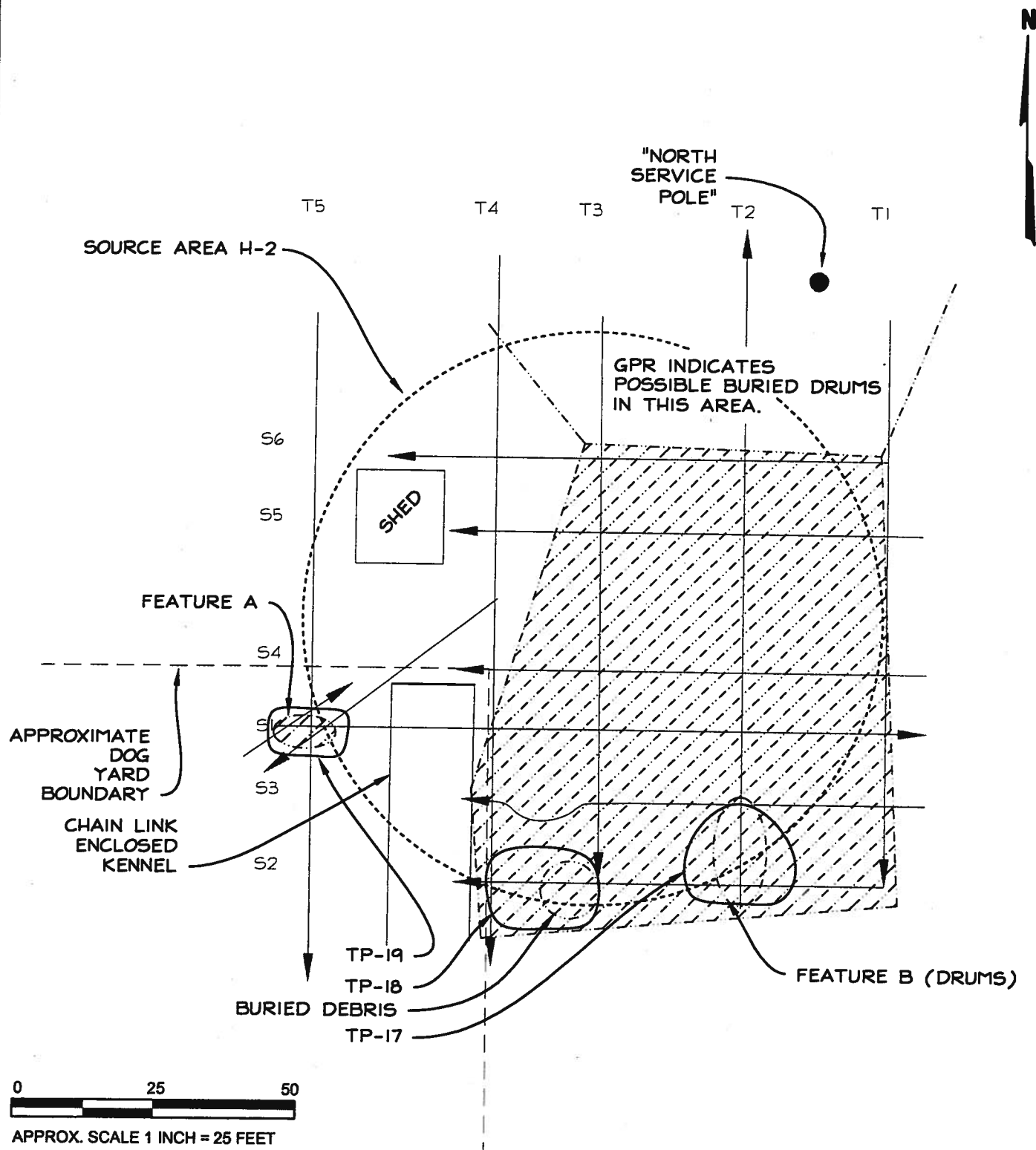
MW-18 ● MONITORING WELL



Walsky Property Six Mile Richardson Highway	
SOURCE AREAS	
February 2001	31-1-10928-143
 SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS	Figure 2



Holder Property Six Mile Richardson Highway	
SOURCE AREA H-1 GPR TRANSECT AND TEST PIT LOCATIONS February 2001 31-1-10928-143	
 SHANNON & WILSON, INC. <small>GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS</small>	Figure 3



LEGEND:

GPR TRANSECT LINE
AND DIRECTION TRAVELED

TEST PIT LOCATION

AREAS OF INCREASED
SOIL CONDUCTIVITY



Holder Property
Six Mile Richardson Highway

SOURCE AREA H-2
GPR TRANSECT AND TEST PIT LOCATIONS

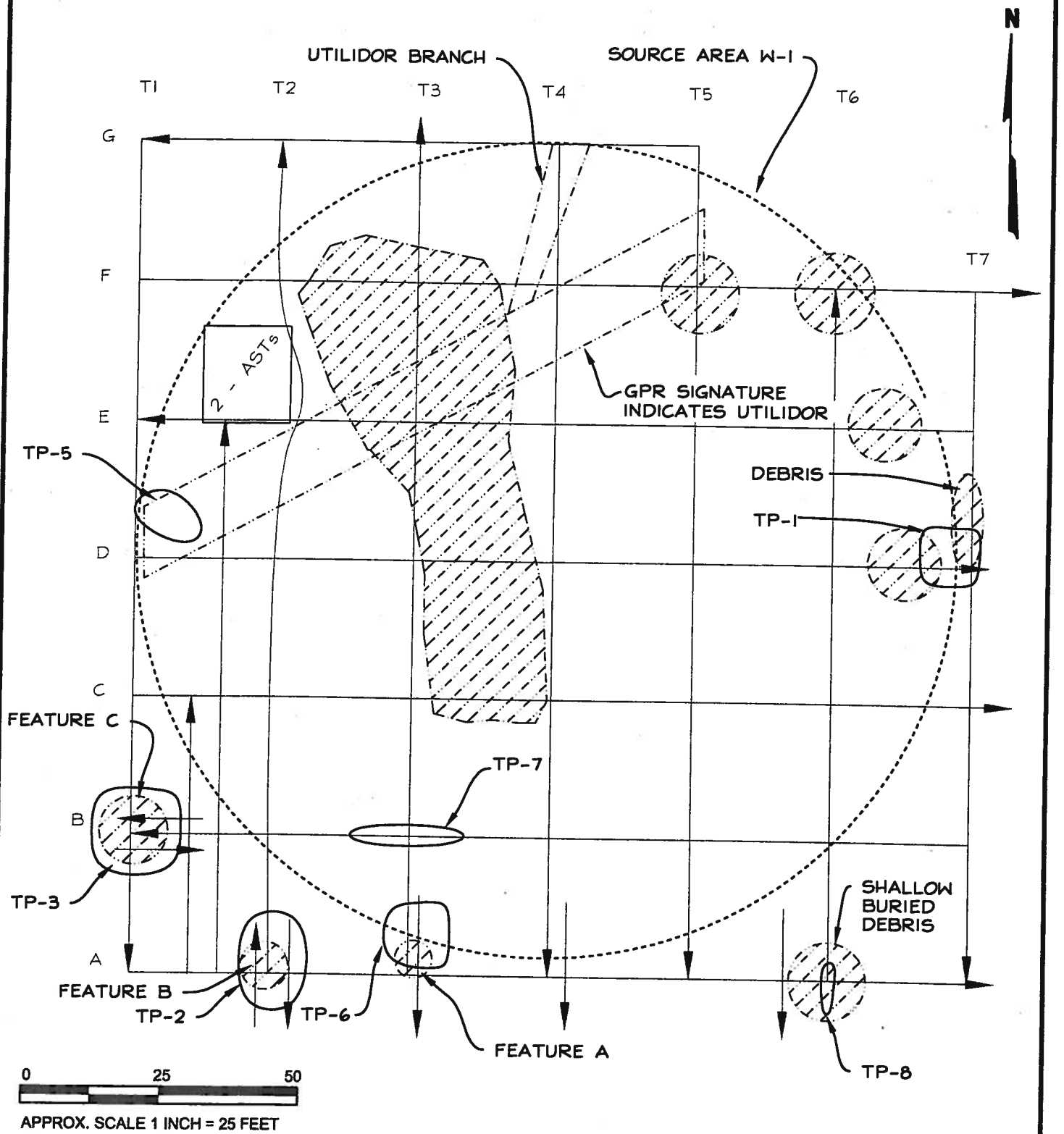
February 2001

31-1-10928-143



SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 4



LEGEND:

GPR TRANSECT LINE
AND DIRECTION TRAVELED

TEST PIT LOCATION

AREAS OF INCREASED
SOIL CONDUCTIVITY



Walsky Property
Six Mile Richardson Highway

SOURCE AREA W-1
GPR TRANSECT AND TEST PIT LOCATIONS

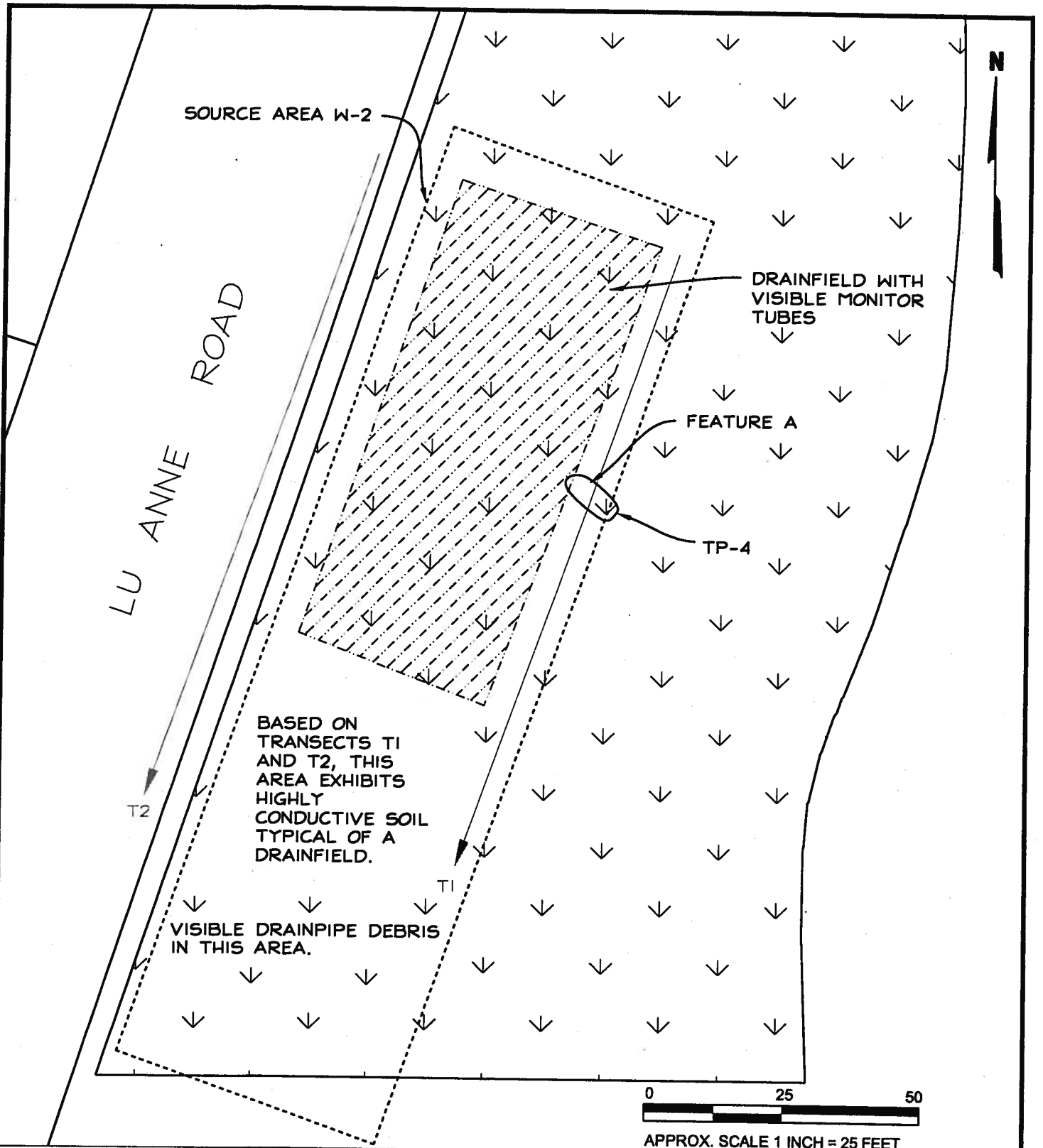
February 2001

31-1-10928-143



SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 5



LEGEND:

GPR TRANSECT LINE AND DIRECTION TRAVELED

TEST PIT LOCATION

AREAS OF INCREASED SOIL CONDUCTIVITY



Walsky Property
Six Mile Richardson Highway

SOURCE AREA W-2
GPR TRANSECT AND TEST PIT LOCATIONS

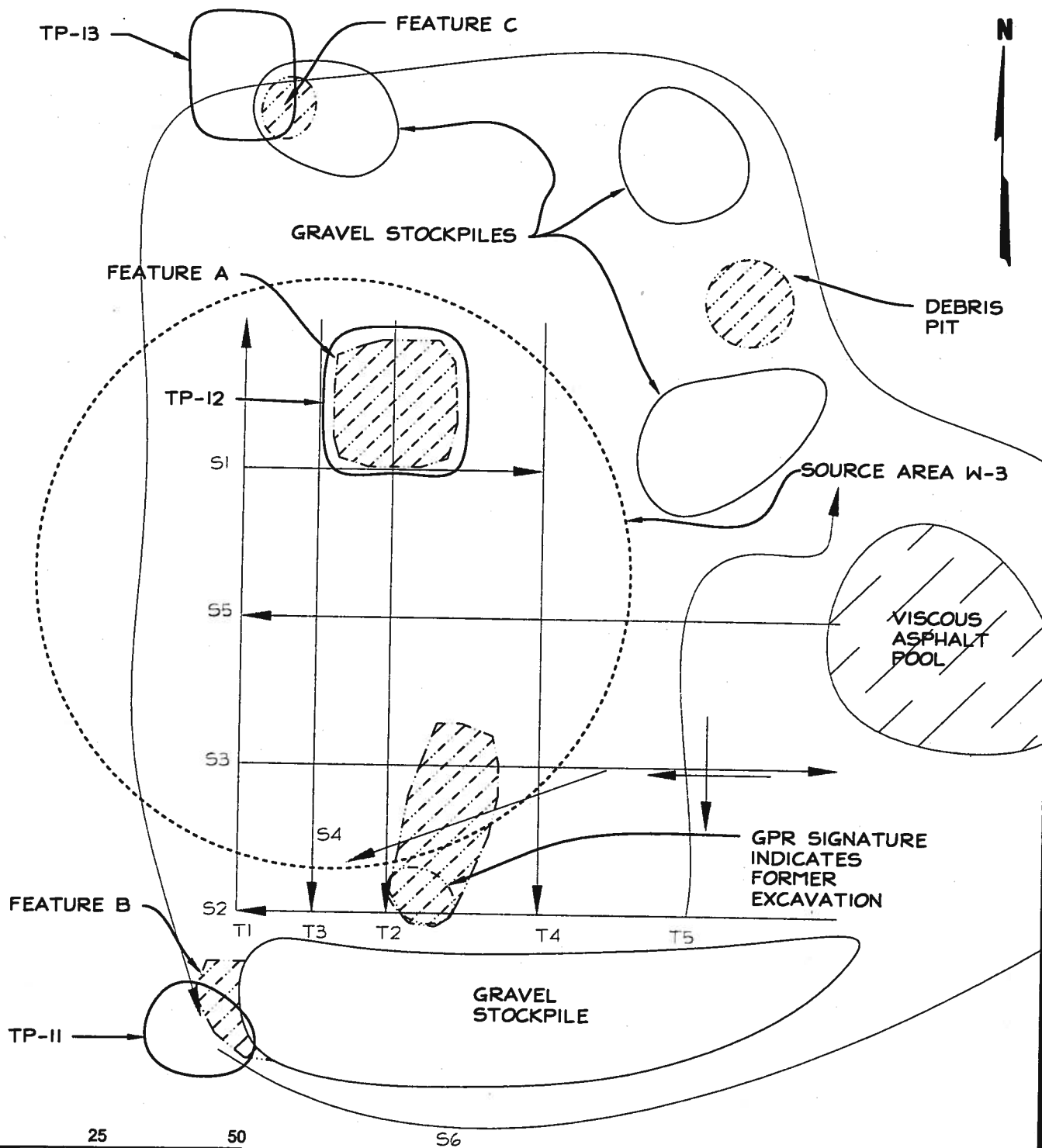
February 2001

31-1-10928-143



SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 6



LEGEND:

GPR TRANSECT LINE
AND DIRECTION TRAVELED

TEST PIT LOCATION

AREAS OF INCREASED
SOIL CONDUCTIVITY



Walsky Property
Six Mile Richardson Highway

SOURCE AREA W-3
GPR TRANSECT AND TEST PIT LOCATIONS

February 2001

31-1-10928-143



SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 7

QUONSET HUT

N

SOURCE AREA W-4

TP-14
(SHALLOW EXPLORATION)

FEATURE A

FEATURE C

FORMER
TMW-5

T3

A1

T2

T1

BURIED
DEBRIS

TP-10

TP-9 FEATURE D

S1

S2

S3

S4

S5

S6

S7

S8

S9

S10

S11

S12

S13

S14

FEATURE B

FEATURE E

SHOP BUILDING

0 25 50

APPROX. SCALE 1 INCH = 25 FEET

LEGEND:

GPR TRANSECT LINE
AND DIRECTION TRAVELED

TEST PIT LOCATION

AREAS OF INCREASED
SOIL CONDUCTIVITY



Walsky Property
Six Mile Richardson Highway

SOURCE AREA W-4
GPR TRANSECT AND TEST PIT LOCATIONS

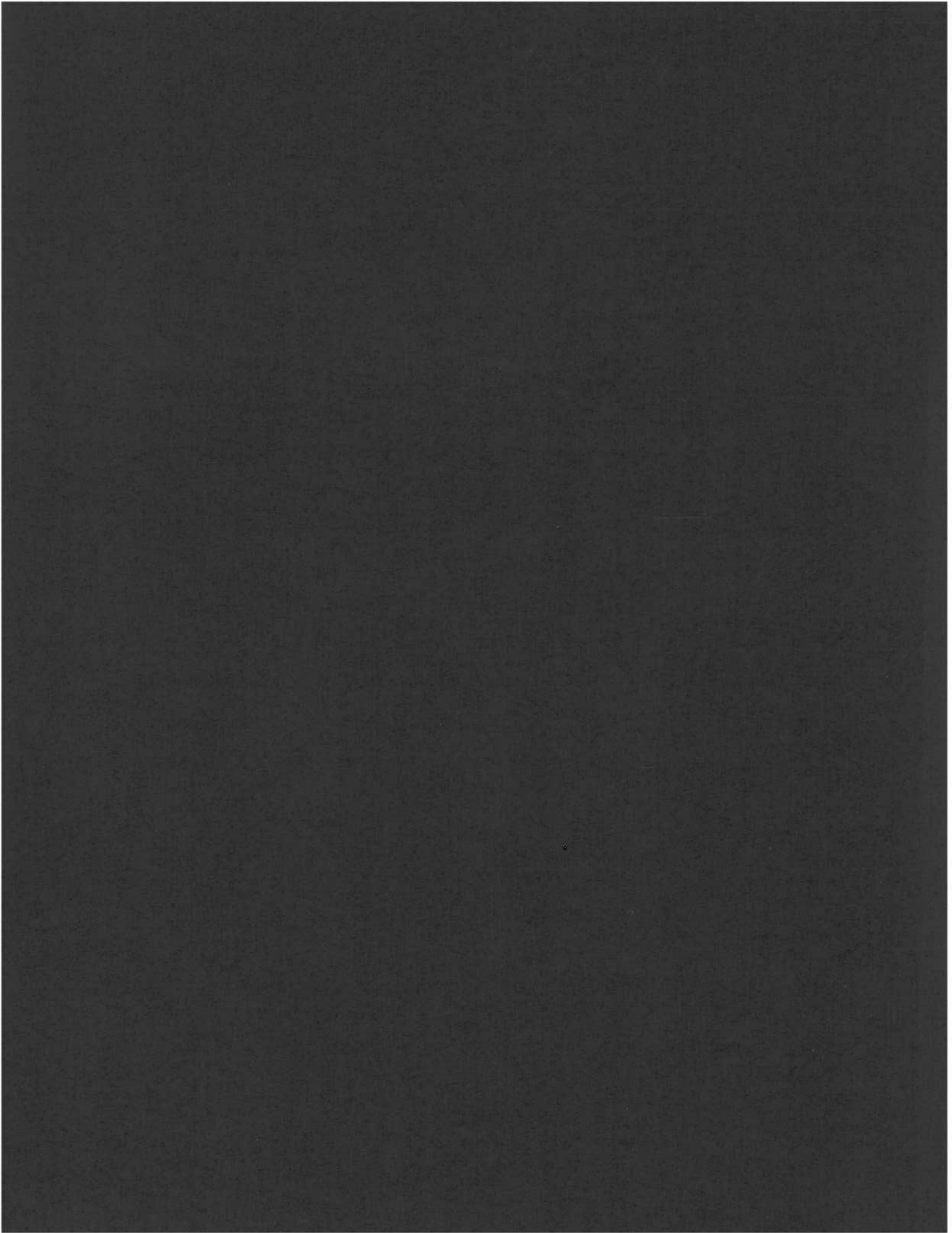
February 2001

31-1-10928-143



SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 8



SHANNON & WILSON, INC.

APPENDIX A

ANALYTICAL LABORATORY REPORTS

**CTE Environmental Services
Alaska Division
Laboratory Data Report**

Project: 31-10928-142 Walsky

Client: Shannon & Wilson-Fairbanks

CTE Work Order: 1005136

Contents:

Chain of Custody
Quality Control Summary Forms

Note:

Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the proper regulatory authority and/or CTE's Quality Assurance Program Plan.

1005136

Shannon & Wilson, Inc.
 400 N. 34th Street, Suite 100 11500 Olive Blvd., Suite 276
 Seattle, WA 98103 St. Louis, MO 63141
 (206) 632-8020 (314) 872-8170
 2055 Hill Road 5430 Fairbanks Street, Suite 3
 Fairbanks, AK 99707 Anchorage, AK 99518
 (907) 479-0800 (907) 561-2120

Chain of Custody Record

Analysis Parameters/Sample Container Description
 (Include preservative if used)

Comp.	Grab	WCS (8/12/08)	PAHs (8/12/08)	DRs (8/12/08)	Total Number of Containers
✓	✓	✓	✓	✓	2
✓	✓	✓	✓	✓	2
✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	2
✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	1
✓	✓	✓	✓	✓	2
✓	✓	✓	✓	✓	2
✓	✓	✓	✓	✓	2

Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix
928-091100-004 ①		1140	9-11-00	2 Soil
928-091100-005 ②		1300	9-11	2
928-091100-006 ③		1315	9-11	1
928-091200-007 ④		0955	9-12-00	2
928-091200-008 ⑤		1130	9-12	1
928-091200-009 ⑥		1315	9-12	1
928-091200-010 ⑦		1410	9-12	1
928-091200-011 ⑧		1540	9-12	2 WATER
928-091200-012 ⑨		1605	9-12	2 Soil

Project Information		Sample Receipt	
Project Number: 31-10928-142	Total Number of Containers: 21		
Project Name: WALSKY	COC Seals/Intact? Y/N: N/A		
Contact: JULIE KEENER	Received Good Cond (COC): 5.8		
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method: HAND		
Sampler: J. KEENER	(attach shipping bill, if any)		

Instructions	
Requested Turn Around Time: STANDARD	
Special Instructions:	

Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Signature: Julie Keener	Time: 0855	Signature: J. A. J.	Time: 1140	Signature:	Time:
Printed Name: JULIE KEENER	Date: 9-14-00	Printed Name: STEPHANIE A. FOGGIA	Date: 10-18	Printed Name:	Date:
Company: SHANNON & WILSON		Company: CTE		Company:	

Received By: 1.		Received By: 2.		Received By: 3.	
Signature: J. A. J.	Time: 1140	Signature:	Time:	Signature:	Time:
Printed Name: STEPHANIE A. FOGGIA	Date: 11-30	Printed Name:	Date:	Printed Name:	Date:
Company: CTE		Company:		Company:	

Distribution: White - shipment - returned to Shannon & Wilson w/ Laboratory report
 Yellow - shipment - for consignee files
 Pink - Shannon & Wilson - Job File



CT&E Environmental Services Inc.

Laboratory Division

Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.cteesi.com>

Julie Keener
Shannon & Wilson-Fairbanks
2055 Hill Rd
Fairbanks, AK 99709

Work Order:	1005136 31-10928-142 Walsky
Client:	Shannon & Wilson-Fairbanks
Report Date:	October 02, 2000

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

- U Indicates the analyte was analyzed for but not detected.
- J Indicates an estimated value that falls below PQL, but is greater than the MDL.
- B Indicates the analyte is found in the blank associated with the sample.
- * The analyte has exceeded allowable limits.
- GT Greater Than
- D Secondary Dilution
- LT Less Than
- ! Surrogate out of range

SGS Member of the SGS Group (Societe Generale de Surveillance)

200 W. Potter Drive, Anchorage, AK 99518-1605 — Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road, Fairbanks, AK 99709-5471 — Tel: (907) 474-8656 Fax: (907) 474-9685



CT&E Ref.# 1005136001
 Client Name Shannon & Wilson-Fairbanks
 Project Name/# 31-10928-142 Walsky
 Client Sample ID 928-091100-004
 Matrix Soil/Solid
 Ordered By

Client PO#
 Printed Date/Time 10/02/2000 17:37
 Collected Date/Time 09/11/2000 11:40
 Received Date/Time 09/14/2000 17:50
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
cis-1,3-Dichloropropene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
4-Methyl-2-pentanone (MIBK)	0.322 U	0.322	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Toluene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
trans-1,3-Dichloropropene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Tetrachloroethene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,3-Dichloropropane	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
2-Hexanone	0.322 U	0.322	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Dibromochloromethane	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2-Dibromoethane	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,1,1,2-Tetrachloroethane	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Chlorobenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Ethylbenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
P & M -Xylene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
o-Xylene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Styrene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Bromoform	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Isopropylbenzene (Cumene)	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Bromobenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2,3-Trichloropropane	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
n-Propylbenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,1,2,2-Tetrachloroethane	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
2-Chlorotoluene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
4-Chlorotoluene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,3,5-Trimethylbenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
tert-Butylbenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2,4-Trimethylbenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
sec-Butylbenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,3-Dichlorobenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
4-Isopropyltoluene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,4-Dichlorobenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2-Dichlorobenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
n-Butylbenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2-Dibromo-3-chloropropane	0.322 U	0.322	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2,4-Trichlorobenzene	0.0168 U	0.0168	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM



CT&E Environmental Services Inc.
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CT&E Ref.# 1005136001
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091100-004
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/11/2000 11:40
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS								
Chrysene-d12 <sur/IS>	48.6		%	PAH SIM	10-140	09/21/00	09/27/00	KWM



CT&E Ref.# 1005136002
 Client Name Shannon & Wilson-Fairbanks
 Project Name/# 31-10928-142 Walsky
 Client Sample ID 928-091100-005
 Matrix Soil/Solid
 Ordered By

Client PO#
 Printed Date/Time 10/02/2000 17:37
 Collected Date/Time 09/11/2000 13:00
 Received Date/Time 09/14/2000 17:50
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
cis-1,3-Dichloropropene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
4-Methyl-2-pentanone (MIBK)	0.264 U	0.264	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Toluene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
trans-1,3-Dichloropropene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Tetrachloroethene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,3-Dichloropropane	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
2-Hexanone	0.264 U	0.264	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Dibromochloromethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2-Dibromoethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,1,1,2-Tetrachloroethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Chlorobenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Ethylbenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
P & M -Xylene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
o-Xylene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Styrene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Bromoform	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Isopropylbenzene (Cumene)	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Bromobenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2,3-Trichloropropane	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,1,2,2-Tetrachloroethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
n-Propylbenzene	0.0230	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
2-Chlorotoluene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
4-Chlorotoluene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,3,5-Trimethylbenzene	0.140	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
tert-Butylbenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2,4-Trimethylbenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
sec-Butylbenzene	0.0689	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,3-Dichlorobenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
4-Isopropyltoluene	0.116	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,4-Dichlorobenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2-Dichlorobenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
n-Butylbenzene	0.0913	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2-Dibromo-3-chloropropane	0.264 U	0.264	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2,4-Trichlorobenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM



CT&E Environmental Services Inc.
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CT&E Ref.# 1005136002
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091100-005
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/11/2000 13:00
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS								
Chrysene-d12 <surrogate>	93.8		%	PAH SIM	10-140	09/21/00	09/28/00	KWM



CT&E Ref.# 1005136003
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091100-006
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/11/2000 13:15
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
cis-1,3-Dichloropropene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
4-Methyl-2-pentanone (MIBK)	0.243 U	0.243	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Toluene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
trans-1,3-Dichloropropene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Tetrachloroethene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,3-Dichloropropane	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
2-Hexanone	0.243 U	0.243	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Dibromochloromethane	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2-Dibromoethane	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,1,1,2-Tetrachloroethane	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Chlorobenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Ethylbenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
P & M -Xylene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
o-Xylene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Styrene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Bromoform	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Isopropylbenzene (Cumene)	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
Bromobenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2,3-Trichloropropane	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,1,2,2-Tetrachloroethane	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
n-Propylbenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
2-Chlorotoluene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
4-Chlorotoluene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,3,5-Trimethylbenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
tert-Butylbenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2,4-Trimethylbenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
sec-Butylbenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,3-Dichlorobenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
4-Isopropyltoluene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,4-Dichlorobenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2-Dichlorobenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
n-Butylbenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2-Dibromo-3-chloropropane	0.243 U	0.243	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM
1,2,4-Trichlorobenzene	0.0126 U	0.0126	mg/Kg	SW846-8260B		09/11/00	09/24/00	SPM



CT&E Environmental Services Inc.
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CT&E Ref.# 1005136003
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091100-006
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/11/2000 13:15
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS								
Chrysene-d12 <surrogate>	63		%	PAH SIM	10-140	09/21/00	09/27/00	KWM



CT&E Ref.# 1005136004
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091200-007
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 9:55
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
cis-1,3-Dichloropropene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Methyl-2-pentanone (MIBK)	0.306 U	0.306	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Toluene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
trans-1,3-Dichloropropene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Tetrachloroethene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3-Dichloropropane	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Hexanone	0.306 U	0.306	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Dibromochloromethane	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dibromoethane	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,1,2-Tetrachloroethane	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Chlorobenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Ethylbenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
P & M -Xylene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
o-Xylene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Styrene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromoform	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Isopropylbenzene (Cumene)	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromobenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,3-Trichloropropane	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,2,2-Tetrachloroethane	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
n-Propylbenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Chlorotoluene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Chlorotoluene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3,5-Trimethylbenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
tert-Butylbenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,4-Trimethylbenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
sec-Butylbenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3-Dichlorobenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Isopropyltoluene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,4-Dichlorobenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dichlorobenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
n-Butylbenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dibromo-3-chloropropane	0.306 U	0.306	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,4-Trichlorobenzene	0.0159 U	0.0159	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM



CT&E Environmental Services Inc.

CT&E Ref.# 1005136004
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091200-007
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 9:55
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS								
Chrysene-d12 <surrogate>	88.9		%	PAH SIM	10-140	09/21/00	09/28/00	KWM



Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 11:30
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
cis-1,3-Dichloropropene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Methyl-2-pentanone (MIBK)	0.256 U	0.256	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Toluene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
trans-1,3-Dichloropropene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Tetrachloroethene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3-Dichloropropane	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Hexanone	0.256 U	0.256	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Dibromochloromethane	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,1,2-Tetrachloroethane	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dibromoethane	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Chlorobenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Ethylbenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
P & M -Xylene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
o-Xylene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Styrene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromoform	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Isopropylbenzene (Cumene)	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromobenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,3-Trichloropropane	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
n-Propylbenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,2,2-Tetrachloroethane	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Chlorotoluene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Chlorotoluene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3,5-Trimethylbenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
tert-Butylbenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,4-Trimethylbenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
sec-Butylbenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3-Dichlorobenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Isopropyltoluene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,4-Dichlorobenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dichlorobenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
n-Butylbenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dibromo-3-chloropropane	0.256 U	0.256	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,4-Trichlorobenzene	0.0133 U	0.0133	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM



CT&E Environmental Services Inc.

CT&E Ref.# 1005136005
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091200-008
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 11:30
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS								
Chrysene-d12 <surrogate>	86.4		%	PAH SIM	10-140	09/21/00	09/28/00	KWM



CT&E Ref.# 1005136006
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091200-009
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 13:15
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
cis-1,3-Dichloropropene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Methyl-2-pentanone (MIBK)	0.309 U	0.309	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Toluene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
trans-1,3-Dichloropropene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Tetrachloroethene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3-Dichloropropane	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Hexanone	0.309 U	0.309	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Dibromochloromethane	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dibromoethane	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,1,2-Tetrachloroethane	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Chlorobenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Ethylbenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
P & M -Xylene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
o-Xylene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Styrene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromoform	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Isopropylbenzene (Cumene)	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromobenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,3-Trichloropropane	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
n-Propylbenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,2,2-Tetrachloroethane	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Chlorotoluene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Chlorotoluene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3,5-Trimethylbenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
tert-Butylbenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,4-Trimethylbenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
sec-Butylbenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3-Dichlorobenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Isopropyltoluene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,4-Dichlorobenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dichlorobenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
n-Butylbenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dibromo-3-chloropropane	0.309 U	0.309	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,4-Trichlorobenzene	0.0161 U	0.0161	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM



CT&E Environmental Services Inc.
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CT&E Ref.# 1005136006
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091200-009
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 13:15
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS								
Chrysene-d12 <surrogate>	37.4		%	PAH SIM	10-140	09/21/00	09/27/00	KWM



CT&E Ref.# 1005136007
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091200-010
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 14:10
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Bromochloromethane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Chloroform	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Carbon tetrachloride	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Benzene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1-Dichloropropene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dichloroethane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Trichloroethene	0.0227	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dichloropropane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Dibromomethane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromodichloromethane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,2-Trichloroethane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Chloroethyl Vinyl Ether	0.274 U	0.274	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
cis-1,3-Dichloropropene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Methyl-2-pentanone (MIBK)	0.274 U	0.274	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Toluene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
trans-1,3-Dichloropropene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Tetrachloroethene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3-Dichloropropane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Hexanone	0.274 U	0.274	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Dibromochloromethane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dibromoethane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,1,2-Tetrachloroethane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Chlorobenzene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Ethylbenzene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
P & M -Xylene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
o-Xylene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Styrene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromoform	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Isopropylbenzene (Cumene)	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromobenzene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,3-Trichloropropane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
n-Propylbenzene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,2,2-Tetrachloroethane	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Chlorotoluene	0.0142 U	0.0142	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM



CT&E Ref.# 1005136007
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091200-010
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 14:10
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatile Organic GC/MS								
Chrysene	4.12	2.75	ug/Kg	PAH SIM		09/21/00	09/27/00	KWM
Benzo[b]Fluoranthene	2.75 U	2.75	ug/Kg	PAH SIM		09/21/00	09/27/00	KWM
Benzo[k]fluoranthene	5.75	2.75	ug/Kg	PAH SIM		09/21/00	09/27/00	KWM
Benzo[a]pyrene	2.75 U	2.75	ug/Kg	PAH SIM		09/21/00	09/27/00	KWM
Indeno[1,2,3-c,d] pyrene	2.75 U	2.75	ug/Kg	PAH SIM		09/21/00	09/27/00	KWM
Dibenzo[a,h]anthracene	2.75 U	2.75	ug/Kg	PAH SIM		09/21/00	09/27/00	KWM
Benzo[g,h,i]perylene	3.43	2.75	ug/Kg	PAH SIM		09/21/00	09/27/00	KWM
Surrogates								
Naphthalene-d8 <surr/IS>	37.4		%	PAH SIM	10-148	09/21/00	09/27/00	KWM
Acenaphthene-d10 <surr/IS>	39.9		%	PAH SIM	10-163	09/21/00	09/27/00	KWM
Chrysene-d12 <surr/IS>	65.9		%	PAH SIM	10-140	09/21/00	09/27/00	KWM



CT&E Ref.# 1005136008
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091200-011
Matrix Water (Surface, Eff., Ground)
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 15:40
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Dibromochloromethane	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,2-Dibromoethane	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
Chlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,1,1,2-Tetrachloroethane	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
Ethylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
P & M -Xylene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
o-Xylene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
Styrene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
Bromoform	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
Isopropylbenzene (Cumene)	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
Bromobenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,1,2,2-Tetrachloroethane	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,2,3-Trichloropropane	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
n-Propylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
2-Chlorotoluene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
4-Chlorotoluene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,3,5-Trimethylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
tert-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,2,4-Trimethylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
sec-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,3-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
4-Isopropyltoluene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,4-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,2-Dichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
n-Butylbenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,2-Dibromo-3-chloropropane	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,2,4-Trichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
Hexachlorobutadiene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
Naphthalene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
1,2,3-Trichlorobenzene	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS
4-Methyl-2-pentanone (MIBK)	0.0100 U	0.0100	mg/L	SW846-8260B			09/23/00	SMS
2-Hexanone	0.0100 U	0.0100	mg/L	SW846-8260B			09/23/00	SMS
Methyl-t-butyl ether	0.00100 U	0.00100	mg/L	SW846-8260B			09/23/00	SMS



CT&E Ref.# 1005136009
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-10928-142 Walsky
Client Sample ID 928-091200-012
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/02/2000 17:37
Collected Date/Time 09/12/2000 16:05
Received Date/Time 09/14/2000 17:50
Technical Director Stephen C. Ede

Released By *Shannon Fairbanks*

Sample Remarks:

RRO - Surrogate does not meet QC goals due to matrix interference. Results are not affected.
DRO/RRO - Pattern consistent with lube oil.

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	93.9		%	SM20 2540G			09/18/00	MAH
Semivolatile Organic Fuels Department								
Diesel Range Organics	87.4	9.37	mg/Kg	AK102/103		09/20/00	09/22/00	MCM
Residual Range Organics GC	195	15.5	mg/Kg	AK102/103		09/20/00	09/22/00	MCM
Surrogates								
5a Androstane <surr>	138		%	AK102/103	50-150	09/20/00	09/22/00	MCM
d-Triacontane <Surr>	200	!	%	AK102/103	50-150	09/20/00	09/22/00	MCM
Volatile Gas Chromatography/Mass Spectroscopy								
Dichlorodifluoromethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Chloromethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Vinyl chloride	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromomethane	0.260 U	0.260	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Chloroethane	0.260 U	0.260	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Trichlorofluoromethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1-Dichloroethene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Carbon disulfide	0.260 U	0.260	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Methylene chloride	0.130 U	0.130	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
trans-1,2-Dichloroethene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2-Butanone (MEK)	0.260 U	0.260	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
2,2-Dichloropropane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1-Dichloroethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,1,1-Trichloroethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
cis-1,2-Dichloroethene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Bromochloromethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM



CT&E Ref.# 1005136009
 Client Name Shannon & Wilson-Fairbanks
 Project Name/# 31-10928-142 Walsky
 Client Sample ID 928-091200-012
 Matrix Soil/Solid
 Ordered By

Client PO#
 Printed Date/Time 10/02/2000 17:37
 Collected Date/Time 09/12/2000 16:05
 Received Date/Time 09/14/2000 17:50
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
1,3,5-Trimethylbenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
tert-Butylbenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,4-Trimethylbenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
sec-Butylbenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,3-Dichlorobenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
4-Isopropyltoluene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,4-Dichlorobenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dichlorobenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
n-Butylbenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2-Dibromo-3-chloropropane	0.260 U	0.260	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,4-Trichlorobenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Hexachlorobutadiene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Naphthalene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
1,2,3-Trichlorobenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Methyl-t-butyl ether	0.0260 U	0.0260	mg/Kg	SW846-8260B		09/12/00	09/24/00	SPM
Surrogates								
Dibromofluoromethane <surr>	97.4		%	SW846-8260B	80-118	09/12/00	09/24/00	SPM
1,2-Dichloroethane-D4 <surr>	101		%	SW846-8260B	74-123	09/12/00	09/24/00	SPM
Toluene-d8 <surr>	99.7		%	SW846-8260B	79-130	09/12/00	09/24/00	SPM
4-Bromofluorobenzene <Surr>	92.5		%	SW846-8260B	71-141	09/12/00	09/24/00	SPM
Semivolatile Organic GC/MS								
Naphthalene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM
Acenaphthylene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM
Acenaphthene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM
Fluorene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM
Phenanthrene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM
Anthracene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM
Fluoranthene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM
Pyrene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM
Benzo(a)Anthracene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM
Chrysene	225 U	225	ug/Kg	PAH SIM		09/21/00	09/28/00	KWM



CT&E Environmental Services Inc.
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**CTE Environmental Services
Alaska Division
Level I Data Report**

Project: 31-1-10928-132 Holder
Client: Shannon & Wilson-Fairbanks
CT&E Work Order: 1005139

Contents:

Chain of Custody/Sample Rec Form
Case Narrative
Final Report Pages
QC Summary Pages

Note:

Unless otherwise noted, all quality assurance/quality control criteria are in compliance with the proper regulatory authority and/or CTE's Quality Assurance Program Plan.



CT&E Environmental Services Inc.

Laboratory Division

Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.cteesi.com>

Julie Keener
Shannon & Wilson-Fairbanks
2055 Hill Rd
Fairbanks, AK 99709

Work Order:	1005139
	31-1-10928-132 Holder
Client:	Shannon & Wilson-Fairbanks
Report Date:	October 06, 2000

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

U	Indicates the analyte was analyzed for but not detected.
J	Indicates an estimated value that falls below PQL, but is greater than the MDL.
B	Indicates the analyte is found in the blank associated with the sample.
*	The analyte has exceeded allowable limits.
GT	Greater Than
D	Secondary Dilution
LT	Less Than
!	Surrogate out of range

SGS Member of the SGS Group (Societe Generale de Surveillance)

200 W. Potter Drive, Anchorage, AK 99518-1605 — Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road, Fairbanks, AK 99709-5471 — Tel: (907) 474-8656 Fax: (907) 474-9685



CT&E Ref.# 1005139001
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder
Client Sample ID 928-091300-013
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/06/2000 7:52
Collected Date/Time 09/13/2000 10:15
Received Date/Time 09/18/2000 9:10
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Chloroform	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Carbon tetrachloride	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Benzene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,2-Dichloroethane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,1-Dichloropropene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Trichloroethene	0.0429	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,2-Dichloropropane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Dibromomethane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Bromodichloromethane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
2-Chloroethyl Vinyl Ether	0.251 U	0.251	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,1,2-Trichloroethane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
cis-1,3-Dichloropropene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
4-Methyl-2-pentanone (MIBK)	0.251 U	0.251	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Toluene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
trans-1,3-Dichloropropene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Tetrachloroethene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,3-Dichloropropane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
2-Hexanone	0.251 U	0.251	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Dibromochloromethane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,1,1,2-Tetrachloroethane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,2-Dibromoethane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Chlorobenzene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Ethylbenzene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
P & M -Xylene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
o-Xylene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Styrene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Bromoform	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Isopropylbenzene (Cumene)	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Bromobenzene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,2,3-Trichloropropane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,1,2,2-Tetrachloroethane	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
n-Propylbenzene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
2-Chlorotoluene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
4-Chlorotoluene	0.0130 U	0.0130	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM



CT&E Ref.# 1005139002
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder
Client Sample ID 928-091300-014
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/06/2000 7:52
Collected Date/Time 09/13/2000 13:45
Received Date/Time 09/18/2000 9:10
Technical Director Stephen C. Ede

Released By

Sample Remarks:

DRO/RRO - Unknown hydrocarbon with several peaks.

8260 - The RPDs for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichloropropane, 1,2-Dichlorobenzene, 1,2-Dibromo-2-chloropropane, 1,2,4-Trichlorobenzene, Naphthalene, and 1,2,3-Trichlorobenzene do not meet QC goals in the LCS/LCSD.

Corrected report for 8260

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	75.6		%	SM20 2540G			09/20/00	JCO
Semivolatile Organic Fuels Department								
Diesel Range Organics	17.1	12.3	mg/Kg	AK102/103		09/20/00	09/23/00	MCM
Residual Range Organics GC	60.8	20.2	mg/Kg	AK102/103		09/20/00	09/23/00	MCM
Surrogates								
5a Androstane <surr>	87.9		%	AK102/103	50-150	09/20/00	09/23/00	MCM
d-Triacontane <Surr>	116		%	AK102/103	50-150	09/20/00	09/23/00	MCM
Volatile Gas Chromatography/Mass Spectroscopy								
Dichlorodifluoromethane	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Chloromethane	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Vinyl chloride	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Bromomethane	0.549 U	0.549	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Chloroethane	0.549 U	0.549	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Trichlorofluoromethane	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,1-Dichloroethene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Carbon disulfide	0.549 U	0.549	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Methylene chloride	0.275 U	0.275	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
trans-1,2-Dichloroethene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
2-Butanone (MEK)	0.549 U	0.549	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
2,2-Dichloropropane	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,1-Dichloroethane	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,1,1-Trichloroethane	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
cis-1,2-Dichloroethene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM



CT&E Ref.# 1005139002
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder
Client Sample ID 928-091300-014
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/06/2000 7:52
Collected Date/Time 09/13/2000 13:45
Received Date/Time 09/18/2000 9:10
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
4-Chlorotoluene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,3,5-Trimethylbenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
tert-Butylbenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,2,4-Trimethylbenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
sec-Butylbenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,3-Dichlorobenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
4-Isopropyltoluene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,4-Dichlorobenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,2-Dichlorobenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
n-Butylbenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,2-Dibromo-3-chloropropane	0.549 U	0.549	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,2,4-Trichlorobenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Hexachlorobutadiene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Naphthalene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Methyl-t-butyl ether	0.0549 U	0.0549	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
1,2,3-Trichlorobenzene	0.0286 U	0.0286	mg/Kg	SW846-8260B		09/13/00	09/22/00	SPM
Surrogates								
Dibromofluoromethane <surr>	91.1		%	SW846-8260B	80-118	09/13/00	09/22/00	SPM
1,2-Dichloroethane-D4 <surr>	92.1		%	SW846-8260B	74-123	09/13/00	09/22/00	SPM
Toluene-d8 <surr>	92		%	SW846-8260B	79-130	09/13/00	09/22/00	SPM
4-Bromofluorobenzene <Surr>	102		%	SW846-8260B	71-141	09/13/00	09/22/00	SPM



Client PO#
Printed Date/Time 10/06/2000 8:56
Collected Date/Time 09/13/2000 13:50
Received Date/Time 09/18/2000 9:10
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Bromochloromethane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Chloroform	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Carbon tetrachloride	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Benzene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,1-Dichloropropene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,2-Dichloroethane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Trichloroethene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,2-Dichloropropane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Dibromomethane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Bromodichloromethane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,1,2-Trichloroethane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
2-Chloroethyl Vinyl Ether	0.355 U	0.355	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
cis-1,3-Dichloropropene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
4-Methyl-2-pentanone (MIBK)	0.355 U	0.355	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Toluene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
trans-1,3-Dichloropropene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Tetrachloroethene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,3-Dichloropropane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
2-Hexanone	0.355 U	0.355	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Dibromochloromethane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,1,1,2-Tetrachloroethane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,2-Dibromoethane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Chlorobenzene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Ethylbenzene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
P & M -Xylene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
o-Xylene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Styrene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Bromoform	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Isopropylbenzene (Cumene)	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Bromobenzene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,2,3-Trichloropropane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,1,2,2-Tetrachloroethane	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
n-Propylbenzene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
2-Chlorotoluene	0.0184 U	0.0184	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM



CT&E Ref.# 1005139004
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder
Client Sample ID 928-091300-TB
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/06/2000 7:52
Collected Date/Time 09/13/2000 0:00
Received Date/Time 09/18/2000 9:10
Technical Director Stephen C. Ede

Released By

Sample Remarks:

8260 - The RPDs for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichloropropane, 1,2-Dichlorobenzene, 1,2-Dibromo-2-chloropropane, 1,2,4-Trichlorobenzene, Naphthalene, and 1,2,3-Trichlorobenzene do not meet QC goals in the LCS/LCSD.

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	100		%	SM20 2540G			09/20/00	JCO
Volatile Gas Chromatography/Mass Spectroscopy								
Dichlorodifluoromethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Chloromethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Vinyl chloride	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Bromomethane	0.260 U	0.260	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Chloroethane	0.260 U	0.260	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Trichlorofluoromethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,1-Dichloroethene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Carbon disulfide	0.260 U	0.260	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Methylene chloride	0.130 U	0.130	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
trans-1,2-Dichloroethene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
2-Butanone (MEK)	0.260 U	0.260	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
2,2-Dichloropropane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
cis-1,2-Dichloroethene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,1,1-Trichloroethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,1-Dichloroethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Bromochloromethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Chloroform	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Carbon tetrachloride	0.132	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Benzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,1-Dichloropropene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,2-Dichloroethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Trichloroethene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,2-Dichloropropane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Dibromomethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Bromodichloromethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,1,2-Trichloroethane	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM



CT&E Ref.# 1005139004
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder
Client Sample ID 928-091300-TB
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/06/2000 7:52
Collected Date/Time 09/13/2000 0:00
Received Date/Time 09/18/2000 9:10
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
1,2,4-Trichlorobenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Hexachlorobutadiene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Naphthalene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
1,2,3-Trichlorobenzene	0.0135 U	0.0135	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Methyl-t-butyl ether	0.0260 U	0.0260	mg/Kg	SW846-8260B		09/13/00	09/23/00	SPM
Surrogates								
Dibromofluoromethane <surr>	95.1		%	SW846-8260B	80-118	09/13/00	09/23/00	SPM
1,2-Dichloroethane-D4 <surr>	97.9		%	SW846-8260B	74-123	09/13/00	09/23/00	SPM
Toluene-d8 <surr>	94.8		%	SW846-8260B	79-130	09/13/00	09/23/00	SPM
4-Bromofluorobenzene <Surr>	97.9		%	SW846-8260B	71-141	09/13/00	09/23/00	SPM

**CTE Environmental Services
Alaska Division
Laboratory Data Report**

Project: 31-1-10928-132

Client: Shannon & Wilson-Fairbanks

CTE Work Order: 1005194

Contents:

Chain of Custody
Quality Control Summary Forms

Note:

Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the proper regulatory authority and/or CTE's Quality Assurance Program Plan.



CT&E Environmental Services Inc.

Laboratory Division

Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.ctesi.com>

Julie Keener
Shannon & Wilson-Fairbanks
2055 Hill Rd
Fairbanks, AK 99709

Work Order:	1005194 31-1-10928-132
Client:	Shannon & Wilson-Fairbanks
Report Date:	October 12, 2000

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

- U Indicates the analyte was analyzed for but not detected.
- J Indicates an estimated value that falls below PQL, but is greater than the MDL.
- B Indicates the analyte is found in the blank associated with the sample.
- * The analyte has exceeded allowable limits.
- GT Greater Than
- D Secondary Dilution
- LT Less Than
- ! Surrogate out of range

SGS Member of the SGS Group (Societe Generale de Surveillance)

200 W. Potter Drive, Anchorage, AK 99518-1605 — Tel: (907) 562-2343 Fax: (907) 561-5301
3180 Peger Road, Fairbanks, AK 99709-5471 — Tel: (907) 474-8656 Fax: (907) 474-9685



CT&E Ref.# 1005194001
 Client Name Shannon & Wilson-Fairbanks
 Project Name/# 31-1-10928-132
 Client Sample ID 928-092900-018
 Matrix Soil/Solid
 Ordered By

Client PO#
 Printed Date/Time 10/12/2000 11:47
 Collected Date/Time 09/29/2000 16:30
 Received Date/Time 10/02/2000 16:45
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Carbon tetrachloride	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Benzene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,1-Dichloropropene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,2-Dichloroethane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Trichloroethene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,2-Dichloropropane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Dibromomethane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Bromodichloromethane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,1,2-Trichloroethane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
2-Chloroethyl Vinyl Ether	0.294 U	0.294	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
cis-1,3-Dichloropropene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
4-Methyl-2-pentanone (MIBK)	0.294 U	0.294	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Toluene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
trans-1,3-Dichloropropene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Tetrachloroethene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,3-Dichloropropane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
2-Hexanone	0.294 U	0.294	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Dibromochloromethane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,1,1,2-Tetrachloroethane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,2-Dibromoethane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Chlorobenzene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Ethylbenzene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
P & M -Xylene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
o-Xylene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Styrene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Bromoform	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Isopropylbenzene (Cumene)	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
Bromobenzene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,2,3-Trichloropropane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,1,2,2-Tetrachloroethane	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
n-Propylbenzene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
2-Chlorotoluene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
4-Chlorotoluene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM
1,3,5-Trimethylbenzene	0.0153 U	0.0153	mg/Kg	SW846-8260B		09/29/00	10/06/00	SPM



**CTE Environmental Services
Alaska Division
Level I Data Report**

Project: 31-1-10928-132 Holder 6 Mile
Client: Shannon & Wilson-Fairbanks
CT&E Work Order: 1006037

Contents:

Chain of Custody/Sample Rec Form
Case Narrative
Final Report Pages
QC Summary Pages

Note:

Unless otherwise noted, all quality assurance/quality control criteria are in compliance with the proper regulatory authority and/or CTE's Quality Assurance Program Plan.

1006037



Shannon & Wilson, Inc.

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8888

2065 Hill Road
Fairbanks, AK 99707
(907) 478-0800

Chain of Custody Record

Analysis Parameters/Sample Container Description
(Include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp	Grab	Total Number of Containers	Remarks/Matrix
928-101300-019	①	1025	10/30	✓	✓	2	2 Soil
928-101300-020	②	1120		✓	✓	2	
928-101300-021	③	1325		✓	✓	2	
928-101300-022	④	1420		✓	✓	2	
928-101300-023	⑤	1440		✓	✓	2	
928-101300-024	⑥	1445		✓	✓	2	
928-101300-025	⑦	1600		✓	✓	2	
928-101300-TB	⑧	—		✓	✓	1	TRIP BLANK

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Project Number: 31-1028-132	Total Number of Containers: 15	Signature: <i>Julio Keener</i>	Signature: _____	Signature: _____
Project Name: HOLDERS (HILE)	COC Seals/Intact? Y/N: <input checked="" type="checkbox"/>	Printed Name: JULIO KEENER	Printed Name: _____	Printed Name: _____
Contact: JULIO KEENER	Received Good Condition? Y/N: <input checked="" type="checkbox"/>	Date: 10/30	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method: HAND	Company: SHANNON & WILSON	Company: _____	Company: _____
Sampler: J. KEENER	(attach shipping bill, if any)	Received By: 1.	Received By: 2.	Received By: 3.
Instructions		Signature: <i>Shannon & Wilson</i>	Signature: <i>Shannon & Wilson</i>	Signature: _____
Requested Turn Around Time: STANDARD		Time: 10/30	Time: _____	Time: _____
Special Instructions:		Printed Name: <i>Shannon & Wilson</i>	Printed Name: <i>Shannon & Wilson</i>	Printed Name: _____
Distribution: White - shipment - returned to Shannon & Wilson w/ Laboratory report Yellow - shipment - for consignee files Pink - Shannon & Wilson - Job File		Company: SHANNON & WILSON	Company: SHANNON & WILSON	Company: _____



CT&E Environmental Services Inc.

Laboratory Division

Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.cteesi.com>

Julie Keener
Shannon & Wilson-Fairbanks
2055 Hill Rd
Fairbanks, AK 99709

Work Order:	1006037
	31-1-10928-132 Holder 6 Mile
Client:	Shannon & Wilson-Fairbanks
Report Date:	October 24, 2000

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

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- J Indicates an estimated value that falls below PQL, but is greater than the MDL.
- B Indicates the analyte is found in the blank associated with the sample.
- * The analyte has exceeded allowable limits.
- GT Greater Than
- D Secondary Dilution
- LT Less Than
- ! Surrogate out of range



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3180 Peger Road, Fairbanks, AK 99709-5471 — Tel: (907) 474-8656 Fax: (907) 474-9685



CT&E Ref.# 1006037001
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-019
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 10:25
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
cis-1,3-Dichloropropene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
4-Methyl-2-pentanone (MIBK)	0.244 U	0.244	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Toluene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
trans-1,3-Dichloropropene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Tetrachloroethene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,3-Dichloropropane	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
2-Hexanone	0.244 U	0.244	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Dibromochloromethane	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,2-Dibromoethane	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,1,1,2-Tetrachloroethane	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Chlorobenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Ethylbenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
P & M -Xylene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
o-Xylene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Styrene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Bromoform	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Isopropylbenzene (Cumene)	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Bromobenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,2,3-Trichloropropane	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
n-Propylbenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,1,2,2-Tetrachloroethane	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
2-Chlorotoluene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
4-Chlorotoluene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,3,5-Trimethylbenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
tert-Butylbenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,2,4-Trimethylbenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
sec-Butylbenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,3-Dichlorobenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
4-Isopropyltoluene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,4-Dichlorobenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,2-Dichlorobenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
n-Butylbenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,2-Dibromo-3-chloropropane	0.244 U	0.244	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,2,4-Trichlorobenzene	0.0127 U	0.0127	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM



CT&E Ref.# 1006037002
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-020
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 11:20
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede
Released By *Stephen C. Ede*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	89.6		%	SM20 2540G			10/17/00	JCO
Volatile Gas Chromatography/Mass Spectroscopy								
Dichlorodifluoromethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chloromethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Vinyl chloride	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromomethane	0.264 U	0.264	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chloroethane	0.264 U	0.264	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Trichlorofluoromethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloroethene	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Carbon disulfide	0.264 U	0.264	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Methylene chloride	0.132 U	0.132	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
trans-1,2-Dichloroethene	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Butanone (MEK)	0.264 U	0.264	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2,2-Dichloropropane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloroethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,1-Trichloroethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
cis-1,2-Dichloroethene	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromochloromethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chloroform	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Carbon tetrachloride	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Benzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloroethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloropropene	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Trichloroethene	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloropropane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Dibromomethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromodichloromethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,2-Trichloroethane	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Chloroethyl Vinyl Ether	0.264 U	0.264	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM



CT&E Ref.# 1006037002
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-020
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 11:20
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Hexachlorobutadiene	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Naphthalene	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Methyl-t-butyl ether	0.0264 U	0.0264	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,3-Trichlorobenzene	0.0137 U	0.0137	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Surrogates								
Dibromofluoromethane <surr>	99.6		%	SW846-8260B	80-118	10/13/00	10/19/00	SPM
1,2-Dichloroethane-D4 <surr>	96.6		%	SW846-8260B	74-123	10/13/00	10/19/00	SPM
Toluene-d8 <surr>	103		%	SW846-8260B	79-130	10/13/00	10/19/00	SPM
4-Bromofluorobenzene <Surr>	92.3		%	SW846-8260B	71-141	10/13/00	10/19/00	SPM



CT&E Ref.# 1006037003
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-021
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 13:25
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
cis-1,3-Dichloropropene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Methyl-2-pentanone (MIBK)	0.433 U	0.433	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Toluene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
trans-1,3-Dichloropropene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Tetrachloroethene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3-Dichloropropane	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Hexanone	0.433 U	0.433	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Dibromochloromethane	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,1,2-Tetrachloroethane	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dibromoethane	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chlorobenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Ethylbenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
P & M -Xylene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
o-Xylene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Styrene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromoform	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Isopropylbenzene (Cumene)	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromobenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,3-Trichloropropane	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,2,2-Tetrachloroethane	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
n-Propylbenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Chlorotoluene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Chlorotoluene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3,5-Trimethylbenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
tert-Butylbenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,4-Trimethylbenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
sec-Butylbenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3-Dichlorobenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Isopropyltoluene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,4-Dichlorobenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichlorobenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
n-Butylbenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dibromo-3-chloropropane	0.433 U	0.433	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,4-Trichlorobenzene	0.0225 U	0.0225	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM



CT&E Ref.# 1006037004
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-022
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 14:20
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	97.2		%	SM20 2540G			10/17/00	JCO
Volatile Gas Chromatography/Mass Spectroscopy								
Dichlorodifluoromethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chloromethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Vinyl chloride	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromomethane	0.227 U	0.227	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chloroethane	0.227 U	0.227	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Trichlorofluoromethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloroethene	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Carbon disulfide	0.227 U	0.227	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Methylene chloride	0.114 U	0.114	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
trans-1,2-Dichloroethene	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Butanone (MEK)	0.227 U	0.227	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2,2-Dichloropropane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,1-Trichloroethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
cis-1,2-Dichloroethene	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloroethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromochloromethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chloroform	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Carbon tetrachloride	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Benzene	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloropropene	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloroethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Trichloroethene	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloropropane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Dibromomethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromodichloromethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Chloroethyl Vinyl Ether	0.227 U	0.227	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,2-Trichloroethane	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM



CT&E Ref.# 1006037004
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-022
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 14:20
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Hexachlorobutadiene	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Naphthalene	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Methyl-t-butyl ether	0.0227 U	0.0227	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,3-Trichlorobenzene	0.0118 U	0.0118	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Surrogates								
Dibromofluoromethane <surr>	98.8		%	SW846-8260B	80-118	10/13/00	10/19/00	SPM
1,2-Dichloroethane-D4 <surr>	97.7		%	SW846-8260B	74-123	10/13/00	10/19/00	SPM
Toluene-d8 <surr>	102		%	SW846-8260B	79-130	10/13/00	10/19/00	SPM
4-Bromofluorobenzene <Surr>	93.5		%	SW846-8260B	71-141	10/13/00	10/19/00	SPM



CT&E Ref.# 1006037005
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-023
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 14:40
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
cis-1,3-Dichloropropene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Methyl-2-pentanone (MIBK)	0.346 U	0.346	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Toluene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
trans-1,3-Dichloropropene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Tetrachloroethene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3-Dichloropropane	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Hexanone	0.346 U	0.346	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Dibromochloromethane	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,1,2-Tetrachloroethane	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dibromoethane	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chlorobenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Ethylbenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
P & M -Xylene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
o-Xylene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Styrene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromoform	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Isopropylbenzene (Cumene)	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromobenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,3-Trichloropropane	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
n-Propylbenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,2,2-Tetrachloroethane	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Chlorotoluene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Chlorotoluene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3,5-Trimethylbenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
tert-Butylbenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,4-Trimethylbenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
sec-Butylbenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3-Dichlorobenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Isopropyltoluene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,4-Dichlorobenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichlorobenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
n-Butylbenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dibromo-3-chloropropane	0.346 U	0.346	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,4-Trichlorobenzene	0.0180 U	0.0180	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM



CT&E Ref.# 1006037006
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-024
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 14:45
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	97.7		%	SM20 2540G			10/17/00	JCO
Volatile Gas Chromatography/Mass Spectroscopy								
Dichlorodifluoromethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chloromethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Vinyl chloride	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromomethane	0.202 U	0.202	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chloroethane	0.202 U	0.202	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Trichlorofluoromethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloroethene	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Carbon disulfide	0.202 U	0.202	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Methylene chloride	0.101 U	0.101	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
trans-1,2-Dichloroethene	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Butanone (MEK)	0.202 U	0.202	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2,2-Dichloropropane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,1-Trichloroethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloroethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
cis-1,2-Dichloroethene	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromochloromethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chloroform	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Carbon tetrachloride	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Benzene	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloropropene	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloroethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Trichloroethene	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloropropane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Dibromomethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromodichloromethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,2-Trichloroethane	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Chloroethyl Vinyl Ether	0.202 U	0.202	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM



CT&E Ref.# 1006037006
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-024
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 14:45
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Hexachlorobutadiene	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Naphthalene	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,3-Trichlorobenzene	0.0105 U	0.0105	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Methyl-t-butyl ether	0.0202 U	0.0202	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Surrogates								
Dibromofluoromethane <surr>	99.2		%	SW846-8260B	80-118	10/13/00	10/19/00	SPM
1,2-Dichloroethane-D4 <surr>	98.9		%	SW846-8260B	74-123	10/13/00	10/19/00	SPM
Toluene-d8 <surr>	101		%	SW846-8260B	79-130	10/13/00	10/19/00	SPM
4-Bromofluorobenzene <Surr>	93.1		%	SW846-8260B	71-141	10/13/00	10/19/00	SPM



CT&E Ref.# 1006037007
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-025
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 16:00
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Carbon tetrachloride	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Benzene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloropropene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloroethane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Trichloroethene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloropropane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Dibromomethane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromodichloromethane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,2-Trichloroethane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Chloroethyl Vinyl Ether	0.258 U	0.258	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
cis-1,3-Dichloropropene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Methyl-2-pentanone (MIBK)	0.258 U	0.258	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Toluene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
trans-1,3-Dichloropropene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Tetrachloroethene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3-Dichloropropane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Hexanone	0.258 U	0.258	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Dibromochloromethane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,1,2-Tetrachloroethane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dibromoethane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chlorobenzene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Ethylbenzene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
P & M -Xylene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
o-Xylene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Styrene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromoform	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Isopropylbenzene (Cumene)	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromobenzene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,3-Trichloropropane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,2,2-Tetrachloroethane	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
n-Propylbenzene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Chlorotoluene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Chlorotoluene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3,5-Trimethylbenzene	0.0134 U	0.0134	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM



CT&E Ref.# 1006037008
 Client Name Shannon & Wilson-Fairbanks
 Project Name/# 31-1-10928-132 Holder 6 Mile
 Client Sample ID 928-101300-TB
 Matrix Soil/Solid
 Ordered By

Client PO#
 Printed Date/Time 10/24/2000 14:28
 Collected Date/Time 10/13/2000 0:00
 Received Date/Time 10/13/2000 16:50
 Technical Director Stephen C. Ede

Released By

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	100		%	SM20 2540G			10/17/00	JCO
Volatile Gas Chromatography/Mass Spectroscopy								
Dichlorodifluoromethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Chloromethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Vinyl chloride	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Bromomethane	0.286 U	0.286	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Chloroethane	0.286 U	0.286	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Trichlorofluoromethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,1-Dichloroethene	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Carbon disulfide	0.286 U	0.286	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Methylene chloride	0.143 U	0.143	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
trans-1,2-Dichloroethene	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
2-Butanone (MEK)	0.286 U	0.286	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
2,2-Dichloropropane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
cis-1,2-Dichloroethene	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,1,1-Trichloroethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,1-Dichloroethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Bromochloromethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Chloroform	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Carbon tetrachloride	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Benzene	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,2-Dichloroethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,1-Dichloropropene	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Trichloroethene	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,2-Dichloropropane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Dibromomethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Bromodichloromethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
2-Chloroethyl Vinyl Ether	0.286 U	0.286	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,1,2-Trichloroethane	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM



CT&E Ref.# 1006037008
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-TB
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 0:00
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Hexachlorobutadiene	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Naphthalene	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
1,2,3-Trichlorobenzene	0.0148 U	0.0148	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Methyl-t-butyl ether	0.0286 U	0.0286	mg/Kg	SW846-8260B		10/13/00	10/18/00	SPM
Surrogates								
Dibromofluoromethane <surr>	103		%	SW846-8260B	80-118	10/13/00	10/18/00	SPM
1,2-Dichloroethane-D4 <surr>	101		%	SW846-8260B	74-123	10/13/00	10/18/00	SPM
Toluene-d8 <surr>	104		%	SW846-8260B	79-130	10/13/00	10/18/00	SPM
4-Bromofluorobenzene <Surr>	97.2		%	SW846-8260B	71-141	10/13/00	10/18/00	SPM



CT&E Environmental Services Inc.

Laboratory Division

Laboratory Analysis Report

CT&E Ref.# 1006037009
Client Name Shannon & Wilson-Fairbanks
Project Name/# 31-1-10928-132 Holder 6 Mile
Client Sample ID 928-101300-026
Matrix Soil/Solid
Ordered By

Client PO#
Printed Date/Time 10/24/2000 14:28
Collected Date/Time 10/13/2000 16:15
Received Date/Time 10/13/2000 16:50
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy								
Carbon tetrachloride	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Benzene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloroethane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1-Dichloropropene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Trichloroethene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dichloropropane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Dibromomethane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromodichloromethane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,2-Trichloroethane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Chloroethyl Vinyl Ether	0.276 U	0.276	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
cis-1,3-Dichloropropene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Methyl-2-pentanone (MIBK)	0.276 U	0.276	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Toluene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
trans-1,3-Dichloropropene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Tetrachloroethene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3-Dichloropropane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Hexanone	0.276 U	0.276	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Dibromochloromethane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2-Dibromoethane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,1,2-Tetrachloroethane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Chlorobenzene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Ethylbenzene	0.0168	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
P & M -Xylene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
o-Xylene	0.0193	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Styrene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromoform	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Isopropylbenzene (Cumene)	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
Bromobenzene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,2,3-Trichloropropane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,1,2,2-Tetrachloroethane	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
n-Propylbenzene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
2-Chlorotoluene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
4-Chlorotoluene	0.0144 U	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM
1,3,5-Trimethylbenzene	0.0563	0.0144	mg/Kg	SW846-8260B		10/13/00	10/19/00	SPM

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APPENDIX B PHOTOGRAPHS

Photo	Source Area	Photo Description
1	Holder Property Source Area H-1	TP-15
2		Crushed drum from TP-15
3		Green metal "door panel" (military?), burlap, drum/bucket top from TP-15
4	Holder Property Source Area H-2	3 drums uncovered by property owner at north service pole
5		TP-17, dark grey native silt visible at base of test pit
6		TP-18
7		TP-19
8	Holder Property South Service Pole	TP-20 at south service pole
9		TP-20, roots and organic matter visible
10	Walsky Property Source Area W-1	TP-3, gravel fill, black organics, dark grey silt, gravel at water table
11		TP-5, stained/cemented gravel (upper left) and "utilidor" cables in pea gravel
12		Groundwater and cables in TP-5
13		Organic mat (typical) found in about half of the test pits at W-1 (photo shows stockpiled/disturbed soils)
14		3x3' piece of metal being uncovered in TP-8, GPR interpreted to be drum
15	Walsky Property Source Area W-2	Several of the 4-inch plastic riser pipes in array at W-2
16		TP-4, 2-inch steel pipe with cap (earlier thought to be a UST fill pipe) which is inside a 4-inch plastic pipe
17	Walsky Property Source Area W-3	TP-11, pieces of asphalt near surface
18		TP-12, sample collected in discolored soil
19	Walsky Property Source Area W-4	TP-10, layers of stained soil and asphalt near surface
20		TP-14, debris removed from excavation, including two crushed drums, lumber, and dozer tracks
21		TP-14, void in buried debris where water sample 928-091200-011 collected
22		Debris excavated from TP-14





