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RELEASE INVESTIGATION AND SITE RISK EVALUATION
TRAILSIDE GENERAL STORE
HOMER, ALASKA

1.0 INTRODUCTION

This report presents the results of Shannon & Wilson's release investigation and site risk evaluation efforts performed at the former Trailside General Store site located in Homer, Alaska. The purpose of the project was to evaluate the current concentration of contamination in the site's groundwater and to evaluate the potential for petroleum hydrocarbon vapors to migrate under the existing building, to enter the building. The release investigation and risk evaluation efforts included sampling the existing monitoring wells, evaluating the soil placed around the building for potential contamination, and collecting indoor air samples. In addition, a replacement groundwater monitoring well was installed near the location of former Monitoring Well MW-2.

Authorization for this work was received from the Alaska Department of Environmental Conservation (ADEC) on May 7, 2003, term contract number 09. The work was conducted in accordance with our May 23, 2003, Release Investigation and Site Risk Evaluation Work Plan that was approved on June 10, 2003, by Mr. Paul Horwath.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The former Trailside General Store is located at the southeast corner of the Sterling Highway and Bowers Street intersection. The site is situated in the southwest ¼ of Section 19, Township 6 South, Range 13 West, Alaska, according to the USGS Seldovia (C-5) NE Quadrangle. A vicinity map showing the site and surrounding area is included as Figure 1. A site map showing relevant site features is included as Figure 2.

2.2 Project Description

The project included collecting groundwater samples from the existing monitoring wells; evaluating the soil around the existing building for potential contamination; collecting indoor air samples; installing, developing, and sampling a replacement monitoring well; and preparing this summary report. Hughes Drilling of Soldotna, Alaska provided the labor and equipment for installing the replacement monitoring well. SGS Environmental Services (SGS) of Anchorage,

Alaska performed the groundwater laboratory sample analyses and Data Chem Laboratories of Salt Lake City, Utah analyzed the air samples. Hughes Drilling, SGS, and Data Chem were subcontracted to Shannon & Wilson.

3.0 BACKGROUND

The two available reports (Corrective Action Report, Trailside General Store, Homer, Alaska, prepared by American Environmental in December 2002 and Soil Excavation and Diversion Drain Installation, Trailside General Store, Homer, Alaska, prepared by Shannon & Wilson in March 2001) were reviewed to gain an understanding of site history. This summary background section is based on the information provided in these reports.

The Trailside General Store (TGS) operated a regulated underground storage tank (UST) system for approximately 15 years. The two 12,000-gallon gasoline USTs and associated dispensers were installed in 1984. In the spring of 1999, a gasoline release was observed between the UST systems and the TGS building. Reportedly, the TGS UST systems released approximately 3,700 gallons of gasoline to the environment. The two USTs and associated piping and dispensers were removed from the ground in May 1999. During the fuel system decommissioning process, approximately 125 cubic yards (cy) of petroleum hydrocarbon impacted soil were excavated and stockpiled on site. A release investigation was conducted by Alaska Lining and Retrofit (ALR) to assess the extent of contamination. The release investigation included installing and sampling 14 groundwater monitoring wells. Elevated petroleum hydrocarbon constituents were identified in five of the monitoring wells. Free phase product was also observed in at least two of the monitoring wells.

As a corrective action measure, approximately 5,000 cy of impacted soil were excavated and removed off-site. It was estimated that 750 cy of contaminated soil remained both to the north and west of the excavation, for a total of approximately 1,500 cy remaining at the site. The impacted soil excavation was not backfilled by the contractor. Four of the 14 monitoring wells were decommissioned or damaged during the excavation activities. Based on groundwater sampling results conducted in July 2000, up to 27 milligram per liter (mg/L) benzene, 52.3 mg/L toluene, 3.15 mg/L ethylbenzene, 23.08 mg/L xylenes, and 227 mg/L gasoline range organics (GRO) were reported in the samples collected from the 10 remaining on-site monitoring wells. Free phase product was observed in Monitoring Well MW-9, prior to purging.

In the fall of 2000, Shannon & Wilson was contracted by the ADEC to dewater the open excavation; remove the impacted soil left along the north and west sidewalls of original

excavation; install a diversion drain system to redirect shallow groundwater around the TGS building; and backfill, compact, and grade the excavation. Analytical soil samples from the excavation sidewalls were used to characterize the soil remaining in-place. Seven of the eight project samples collected from along the north and west property boundaries contained at least one target analyte exceeding the applicable cleanup criteria. The higher contaminant concentrations were detected in soil samples collected from the north sidewall of excavation, with levels of up to 125 milligram per kilogram (mg/Kg) benzene, 607 mg/Kg toluene, 104 mg/Kg ethylbenzene, 544 mg/Kg xylenes, and 3,970 mg/Kg GRO.

4.0 FIELD ACTIVITIES

Field activities for this project included collecting groundwater samples from the four existing wells; advancing five hand borings; installing and sampling a replacement monitoring well; collecting indoor air quality samples; collecting a grain size sample; and evaluating the soil near the building foundation for potential contamination. The purpose of this work was to characterize the subsurface soil and/or groundwater in the vicinity of the borings/wells and assesses the indoor air quality in various locations. Sample locations and descriptions are located in Table 1. The following sections provide an overview of the project and address each of the field activities.

4.1 Groundwater Sampling

On June 19, 2003, groundwater samples were collected from Monitoring Wells MW-1, MW-3, MW-4, MW-7, and a water sample was collected from the interceptor trench holding tank. Monitoring Wells MW-5, MW-6, MW-9, and MW-10 could not be located. Monitoring Well MW-11 was not located, although a 4-inch pipe with a cap was present in the area. Our representative was unable to remove the cap and concluded that this pipe was not a monitoring well. Groundwater sampling was initiated by using a water level indicator to measure the depth to the water table and total depths of each well. From these measurements, the well volume was calculated and at least three well volumes were purged. Prior to purging the monitoring wells, down-hole dissolved oxygen (DO) measurements were collected. Purging and sampling was accomplished using a new disposable bailer. Only personnel wearing new disposable gloves handled the bailer and line. The bailer was slowly lowered and retrieved to minimize sample disturbance. Samples were transferred to the GRO/BTEX sample jars and were filled until a positive meniscus was present in order to minimize headspace. Sample containers were then quickly sealed and labeled, and placed in chilled coolers for transport to the laboratory. Water

quality parameters of temperature, specific conductance, and pH were measured at the time of sample collection. A summary of the field measurements for each water sample is included in Table 2. The sampler's name, the date, and time of sample collection are listed on the chain-of-custody forms included in Appendix B.

4.2 Hand Borings

On June 19, 2003, four hand borings, designated Hand Borings HB-1 through HB-4, were advanced next to the building to evaluate the near surface soil for potential contamination. Approximate locations of the hand borings are shown on Figure 2. A 3-inch diameter hand auger was used to advance the borings. The borings were advanced to a depth of about 1 to 2.5 feet below ground surface (bgs). Hand Borings HB-1 and HB-2, installed east of the building, were advanced until groundwater was encountered, approximately 2.5 feet bgs. Hand Borings HB-3 and HB-4 were installed in the front of the building and were advanced to 1.5 feet and 1 foot bgs, respectively. Because gravel was encountered, Hand Borings HB-3 and HB-4 could not be advanced further. Headspace screening samples were collected at 0.5 or 1 foot intervals. The hand auger was decontaminated between the hand borings. Since the field screening results did not indicate potential contamination, the hand boring samples were not submitted for analytical testing. An additional boring, Hand Boring HB-5 was advanced on August 22, 2003. The purpose of this hand boring was to identify the type and depth of the building foundation. It was discovered that the footer wall extends to approximately 3.5 feet bgs and the footer is approximately 1-foot in height, for a total of 4.5 feet bgs. The footer wall appears to be masonry construction. Groundwater was encountered in this hand boring at approximately 3.5 bgs. Impacted soil was encountered when advancing Hand Boring HB-5, at approximately the groundwater interface. The soil at 3.5 feet bgs was black in color and had a strong hydrocarbon odor. Analytical samples were not collected at this time per a discussion with Mr. Horwath of the ADEC.

4.3 Monitoring Well Installation, Development, and Sampling

One monitoring well, designated Monitoring Well B12MW, was installed on the property as a replacement for Monitoring Well MW-2, which had been damaged during previous site activities. As shown in Figure 2, Monitoring Well B12MW was installed south of the former Monitoring Well MW-2. The replacement well was installed on October 7, 2003.

Hughes Drilling provided a truck-mounted CME-75 drill rig using a 4 1/2-inch inner diameter (I.D.) hollow stem auger, and three-inch outer diameter (O.D.) split-spoon samplers to install the well. Drilling equipment was steam cleaned off site prior to use to avoid potential cross-contamination of soil residue from previous drilling. A representative from Shannon & Wilson was present during field activities to identify the boring location, log the materials encountered during drilling, and sample and screen subsurface soils. Photographs 1 and 2 in Appendix A show the drill rig during well installation efforts. The materials encountered during drilling are depicted on the boring log in Figure 3.

The well boring was advanced to a depth of approximately 9.5 feet bgs. Groundwater was encountered during drilling at approximately 0.5-foot bgs. Drill cuttings from the well installation were placed in a labeled 55-gallon drum and stored on site. Once the boring was advanced to 9.5-feet bgs, as determined by the Shannon & Wilson representative, the well construction efforts began. The monitoring well construction details are shown in Figure 4.

Prior to collecting a groundwater sample, the monitoring well was developed using a decontaminated submersible pump with new tubing. The development of this well was accomplished on the same day (October 7, 2003) as installation, and not allowed to equilibrate for 24 hours, due to time constraints. The development of the well prior to 24-hours was approved by Mr. Horwath of the ADEC. Water samples were recovered during development and pH, temperature, and specific conductance measurements were obtained using a Hanna water quality instrument. Well development was considered complete when the well had repeatedly purged dry and the parameters appeared to stabilize. Approximately 18 gallons of purge water were generated during the development of this well. The water produced during development was placed in a 55-gallon drum and stored on site. Following development and well recovery, a groundwater sample was collected for analytical testing using the submersible pump.

4.4 Field Screening

Headspace soil samples were collected and screened following headspace sampling protocols during hand boring and well installation activities. Headspace samples were collected using a decontaminated stainless steel spoon to fill resealable plastic bags with soil from either the hand auger or the split spoon sampler. The headspace samples were then allowed to equilibrate to a common temperature prior to screening for volatile organic vapors released into the headspace by the soil sample. Screening of the soil samples was accomplished by inserting a sampling probe into the plastic bag and measuring the concentration of organic vapors using a

ThermoInstruments 580B photoionization detector (PID), which was calibrated with 100 ppm isobutylene standard gas prior to use. The maximum PID readings were then recorded for each sample. Field screening results are presented in Table 1.

4.5 Grain Size Analysis Sample

A sample, designated Sample G1S1, was collected from near the east side of the building for a grain size analysis. The sample was collected midway between Hand Borings HB-1 and HB-2 from a depth of approximately 1 foot. As shown on Figure 5, the soil in that area at approximately 1 to 2 feet bgs was classified as brown sandy silt with trace gravel.

4.6 Indoor Air Quality Sampling

The indoor air quality in the on-site building was evaluated using two different types of sampling procedures, charcoal tubes and vapor badge samples. Four charcoal tube and four vapor badge samples were collected from various locations inside the building. Approximate vapor sampling locations are shown on Figure 2. Prior to sampling, the building was walked and potential sources of contamination were evaluated. Two areas of concern were noted. The first was inside the old video store located in the northern wing of the building. This area contained paints and some cleaning supplies near the entrance. The second area was the electrical room underneath the stairs in approximately the middle of the building. This area also contained paints and cleaning supplies.

Samples were then collected from various locations within the building. The charcoal tube samples were collected using a personnel sampling pump and carbon tubes in accordance with Occupational Safety & Health Association (OSHA) Method 12. The pump was set to run at approximately 0.2 liters per minute. The samples were collected over a fifty minute time frame for a total volume of 10 liters of air being passed through the tube. Unlike the charcoal tube samples, the vapor badges are a passive sampling procedure. The badges were placed at various locations within the building likely not to be disturbed. The badges were placed in the evening and were left in place for at least 12 hours. The indoor air quality samples were placed in a cooler and shipped to Data Chem Laboratories using chain-of-custody procedures. The sampler's name, the date, and time of sample collection are listed on the chain-of-custody forms included in Appendix B.

4.7 Generated Materials

Generated materials from this project include soil from the hand borings, drill cuttings, and water purged from the monitoring wells. The soil from the hand borings were placed back in their respective borings from the approximate depth of removal. The soil for the grain size sample was shipped to the Shannon & Wilson office in Anchorage for analysis. Drill cuttings and purgewater from Boring B12MW were placed in separate labeled 55-gallon drums and stored on site. Purgewater from the groundwater sampling was placed in labeled 5-gallon buckets and stored on site. Based on results of the analytical samples and approval obtained from Mr. Paul Horwath, the purgewater will be poured into the on-site 1,000-gallon tank and drill cuttings will be spread onto the ground surface. Personal protective equipment and miscellaneous sampling supplies were discarded on site in the dumpster.

5.0 LABORATORY ANALYSES

Under the sample numbering scheme used for this project, typical analytical sample numbers are 32-1-16710-MW1 for groundwater samples, 32-1-16710-CT1 for charcoal tube samples, and 32-1-16710-VB1 for vapor badge samples. The '32-1-16710' indicates the Shannon & Wilson, Inc. project number. For brevity in the tables and text of this report, the '32-1-16710' prefix is omitted and samples are identified by their sample number.

Seven water samples, including a field duplicate, were analyzed for GRO by AK 101 and BTEX by EPA Method 8021B. The eight vapor samples collected from inside the building were analyzed for benzene by the National Institute for Occupational Safety and Health (NIOSH) Method 1501.

6.0 SUBSURFACE CONDITIONS

The following sections describe the subsurface conditions encountered during the boring and monitoring well installation and groundwater sampling activities.

6.1 Soil

Based on our observations from the current exploration effort, the subsurface materials at the site generally consist of brown to gray, sandy, silt to silty gravel. The soil encountered was typically very loose. A detailed log of the replacement well boring and the grain size analysis, which includes the soil classifications, are provided as Figures 3 and 5, respectively.

6.2 Groundwater

During the sampling event conducted in June 2003, groundwater levels were approximately 3.3 to 5.9 feet below the tops of the well casings. Groundwater was encountered during drilling activities in the Boring B12MW at approximately 0.5 foot bgs. The static groundwater level measured in Monitoring Well B12MW on October 7, 2003 was approximately 4.9 feet below the top of the well casing. It is noted that the well was developed within 2 hours of installation. The groundwater level in Monitoring Well MW-3 was checked prior to installation of Monitoring Well B12MW and was found to be within approximately 1 foot below the top of the well casing. The groundwater flow direction was not calculated for the sampling event, but based on previous site assessments the groundwater flow direction is typically towards the southeast.

7.0 DISCUSSION OF ANALYTICAL RESULTS

The analytical testing results of the water and vapor samples as well as the quality control samples are presented in the following sections. The reported contaminants in the water samples are compared to the cleanup levels listed in the January 30, 2003 Oil and Other Hazardous Substances Pollution Control Regulations of 18 AAC 75.345, Table C. The benzene concentrations in the vapor samples are compared to the NIOSH's time weighted average (TWA) recommended exposure limit (REL) in ambient air. Results of the analytical tests and the applicable cleanup levels are summarized in Table 3. The laboratory reports are included in Appendix B.

7.1 Water Samples

Except for benzene and xylene concentrations reported in sample MW-4 and the xylene concentration in the holding tank sample, target analyte concentrations in the seven water samples were less than the laboratory reporting limits. Sample MW-4 contained 0.0207 ppm benzene and 0.00647 ppm xylene. The xylene concentration reported in the holding tank sample was 0.00202 ppm. Of the reported constituents, the benzene concentration in Sample MW-4 is the only analyte to exceed the applicable cleanup level.

7.2 Indoor Air Quality Samples

The eight air quality samples were analyzed for benzene. The charcoal tube samples collected did not contain detectable benzene. Vapor Badge samples VB2 and VB4 contained 0.013 ppm and 0.018 ppm benzene, respectively. Vapor Badge VB2 was collected from inside the old video store on the northern end of the building and Vapor Badge VB4 was collected from upstairs in the middle of the hallway. Based on the analytical sample results, the indoor air quality does not exceed the NIOSH 0.1 ppm benzene TWA REL in ambient air. It is unclear whether the detected benzene levels were from the paint and cleaning containers stored in the building or the petroleum hydrocarbon contamination documented in the site's subsurface soil and groundwater.

7.3 Quality Control Samples

Quality control for this project consisted of laboratory analysis of duplicate water samples collected in the field, analysis of trip blanks, and internal laboratory procedures to verify the precision and accuracy of the sampling and analysis process. The project laboratory follows on-going quality assurance/quality control procedures in order to meet applicable ADEC data quality objectives (DQO). If a DQO was not met, the project laboratory provides a brief narrative concerning the problem in their laboratory reports (See Appendix B).

Two water trip blank samples accompanied the water sample bottles from the laboratory to the site during water sampling activities and back again to SGS. The trip blanks did not contain detectable concentrations of GRO or BTEX.

One field duplicate groundwater sample set was collected as part of the quality control program for this project and were analyzed for GRO and BTEX. The field duplicate sample was submitted to the laboratory to provide the data necessary to assess sampling and analytical precision. The results of the project sample would typically be compared to the duplicate sample results using the summary statistic of relative percent difference (RPD), but no hydrocarbon concentrations were detected in either sample; therefore RPD determinations could not be performed.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The recent site evaluation efforts included sampling the existing monitoring wells, evaluating the soil placed around the building for potential contamination, and collecting indoor air samples. Also, one replacement groundwater monitoring well was installed near the location of former Monitoring Well MW-2. Groundwater sampling results indicate that impacted groundwater still remains at the site.

Although no analytical soil samples were analyzed during this project, apparently impacted soil was encountered on the west side of the building in Hand Boring HB-5. Based on field screening results, Hand Borings HB-1 and HB-2 and Monitoring Well MW-4 did not appear to contain impacted soil.

Two of the eight indoor air quality samples contained detectable benzene concentrations. To reiterate, it is unclear if the detected benzene levels were from the paint and cleaning containers or the petroleum hydrocarbon contamination documented in the site's subsurface soil and groundwater. Both of the indoor air concentrations were less than the NIOSH REL.

Based on previous site assessment photographs, it is recommended that the pipe near the location of Monitoring Well MW-11 be further investigated, repaired, and sampled, if it is Monitoring Well MW-11. Also, we further recommend that groundwater samples be collected from the monitoring wells annually to establish trends in potential hydrocarbon concentrations. We also recommend a confirmation indoor air quality sampling event to confirm the initial results.

9.0 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our clients and their representatives in the study of this site. The findings we have presented within this report are based on limited research and on the sampling and analysis that we conducted at this site. They should not be construed as a definite conclusion regarding the soils, groundwater, and vapors at this site. It is possible that our subsurface tests may have missed higher levels of petroleum hydrocarbon constituents. As a result, the sampling and analysis performed can only provide you with our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur with time, because of natural forces or human

activity. 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.

Shannon & Wilson has prepared the attachments in Appendix C "Important Information About Your Geotechnical/Environmental Report" to assist you and others in understanding the use and limitations of our reports. You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore, has not, and will not, disclose the results of this study, except with your permission or as required by law.

We appreciate this opportunity to be of service. Please call the undersigned at (907) 561-2120 with questions or comments concerning the contents of this report.

Sincerely,

SHANNON & WILSON, INC.

Prepared By:

MSA for

Darsen Gaughan
Environmental Engineer

Reviewed By:

H. Turker

Haydar Turker
Senior Engineer

srb:sjg

TABLE 1 - SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2)	Depth (feet)	Headspace (ppm) ^	Sample Classification** (reference Figures 2 and 3)
Soil Samples					
HB1S1	6/19/2003	Hand Boring HB1, Sample S1	0.5	0.0	Brown, slightly silty SAND; moist
HB1S2	6/19/2003	Hand Boring HB1, Sample S2	1	0.0	Brown, slightly silty SAND; moist
HB1S3	6/19/2003	Hand Boring HB1, Sample S3	1.5	0.0	Brown, slightly silty SAND; moist
HB1S4	6/19/2003	Hand Boring HB1, Sample S4	2	0.0	Brown, silty SAND; wet
HB2S1	6/19/2003	Hand Boring HB2, Sample S1	0.5	0.0	Brown, slightly silty SAND; moist
HB2S2	6/19/2003	Hand Boring HB2, Sample S2	1	0.0	Brown, slightly silty SAND; moist
HB2S3	6/19/2003	Hand Boring HB2, Sample S3	1.5	0.0	Brown, slightly silty SAND; moist
HB2S4	6/19/2003	Hand Boring HB2, Sample S4	2	0.0	Brown, silty SAND; moist
HB3S1	6/19/2003	Hand Boring HB3, Sample S1	1	0.0	Brown, slightly silty, sandy GRAVEL; moist
HB3S2	6/19/2003	Hand Boring HB3, Sample S2	1.5	0.0	Brown, slightly silty, sandy GRAVEL; moist
HB4S1	6/19/2003	Hand Boring HB4, Sample S1	1	0.0	Brown, slightly silty, gravelly SAND; moist
G1S1	6/19/2003	Grain Size Sample 1	1-1.5	0.0	Brown, slightly silty, gravelly SAND; moist
HB5S1	8/22/2003	Hand Boring HB5, Sample S1	1	-	Brown, sandy SILT; moist
HB5S2	8/22/2003	Hand Boring HB5, Sample S2	2	-	Brown, sandy SILT; moist; slight hydrocarbon odor
HB5S3	8/22/2003	Hand Boring HB5, Sample S3	3.5	-	Brown, sandy SILT; moist; hydrocarbon odor
B12S1	10/7/103	Boring B12, Sample S1	0-2	0.0	Very loose, brown, sandy SILT; moist to wet
B12S2	10/7/2003	Boring B12, Sample S2	2-4	0.0	Very loose, brown to gray, sandy SILT with gravel; wet
Groundwater Samples					
* MW1	6/19/2003	Monitoring Well 1	3.34	-	Groundwater; light gray color
* MW3	6/19/2003	Monitoring Well 3	5.85	-	Groundwater; rust colored
* MW4	6/19/2003	Monitoring Well 4	4.09	-	Groundwater; light gray color; sulfur odor
* MW7	6/19/2003	Monitoring Well 7	5.66	-	Groundwater; clear; sulfur odor
* Tank	6/19/2003	Interceptor Trench Tank	-	-	Groundwater; clear
* MW12	10/7/2003	Monitoring Well MW12	4.96	-	Groundwater; clear

KEY	DESCRIPTION
*	Sample analyzed by the project laboratory (See Table 3)
^	Field screening instrument was a ThermoInstruments 580B photoionization detector (PID)
**	Sample classification applies to the portion of the specified sample interval from which the sample was collected
-	Measurement not recorded or not applicable
ppm	parts per million

TABLE 1 - SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2)	Depth (feet)	Headspace (ppm) ^	Sample Classification** (reference Figures 2 and 3)
Indoor Air Quality Samples					
* VB1	8/23/2003	Vapor Badge Sample 1	-	-	Vapor Badge
* VB2	8/23/2003	Vapor Badge Sample 2	-	-	Vapor Badge
* VB3	8/23/2003	Vapor Badge Sample 3	-	-	Vapor Badge
* VB4	8/23/2003	Vapor Badge Sample 4	-	-	Vapor Badge
* CT1	8/22/2003	Charcoal Tube Sample 1	-	-	Charcoal Tube
* CT2	8/22/2003	Charcoal Tube Sample 2	-	-	Charcoal Tube
* CT3	8/22/2003	Charcoal Tube Sample 3	-	-	Charcoal Tube
* CT4	8/22/2003	Charcoal Tube Sample 4	-	-	Charcoal Tube
Quality Control Samples					
* Trip Blank	6/19/2003	Water Trip Blank	-	-	Organic-free water blank prepared in the laboratory
* TBW	10/7/2003	Water Trip Blank	-	-	Organic-free water blank prepared in the laboratory

KEY	DESCRIPTION
*	Sample analyzed by the project laboratory (See Table 3)
^	Field screening instrument was a ThermoInstruments 580B photoionization detector (PID)
**	Sample classification applies to the portion of the specified sample interval from which the sample was collected
-	Measurement not recorded or not applicable
ppm	parts per million

TABLE 2 - WELL DEVELOPMENT & SAMPLING LOG

WATER LEVEL MEASUREMENT DATA

Well Number	MW1	MW3	MW4	MW7	Tank	MW12
Date Water Level Measured	6/19/2003	6/19/2003	6/19/2003	6/19/2003	6/19/2003	6/20/2003
Time Water Level Measured	14:55	14:50	14:40	14:45	-	16:05
Surveyed MP Elevation (ft)	-	-	-	-	-	-
Measured Depth to Water (ft below MP)	3.34	5.85	4.09	5.66	-	4.96
Water Level Elevation (ft)	-	-	-	-	-	-

DEVELOPMENT/PURGING DATA

Well Number	MW1	MW3	MW4	MW7	Tank	MW12
Date Sampled	6/19/2003	6/19/2003	6/19/2003	6/19/2003	6/19/2003	6/20/2003
Time Sampled	17:30	16:15	15:25	15:45	17:00	18:30
Measured Depth to Water (ft below MP)	3.34	5.85	4.09	5.66	-	4.96
Total Depth of Well (ft below MP)	12.18	12.04	12.15	12.12	-	8.78
Water Column in Well (ft)	8.84	6.19	8.06	6.46	-	3.82
Gallons per Foot	0.16	0.16	0.16	0.16	-	0.16
Water Column Volume (gallons)	1.41	0.99	1.29	1.03	-	0.61
Total Volume Pumped/Bailed (gallons)	4.3	3.0	4.0	3.3	-	18
Purging/Sampling Method	PVC Bailer	PVC Bailer	PVC Bailer	PVC Bailer	PVC Bailer	Sub. Pump
Diameter of Well Casing	2-inch	2-inch	2-inch	2-inch	-	2-inch
Remarks						

WATER QUALITY DATA

WELL NUMBER	MW1	MW3	MW4	MW7	Tank	MW12
Temperature (°C)	9.7	12.0	11.5	11.1	12.4	11.5
Specific Conductance (µmho/cm)	97	88	715	121	272	708
pH (Standard Units)	8.14	8.15	8.41	8.46	8.24	6.92
Dissolved Oxygen (mg/L)	3.68	1.63	2.54	1.46	1.75	-

Note: Water quality parameters were measured with a HANNA and YSI water quality instruments

KEY	DESCRIPTION
°C	Degrees Celsius
ft	Feet
µmho/cm	Micromhos per Centimeter
MP	Measuring Point
Mg/L	Milligrams per Liter
-	Parameter not measured

TABLE 3 - SUMMARY OF ANALYTICAL RESULTS

WATER SAMPLES

			Sample ID Number^ and Water Depth in Feet (See Table 1, Figure 2, and Appendix A)								
			Monitoring Wells							Quality Control	
Parameter Tested	Method*	Cleanup Level (ppm)**	MW1 3.34	MW3 5.85	MW4 4.09	MW7 5.66	MW17 Duplicate	MW12 4.96	Tank -	Trip Blank	TBW
Gasoline Range Organics (GRO) - ppm	AK 101	1.3	<0.0900	<0.0900	<0.0900	<0.0900	<0.0900	<0.0900	<0.0900	<0.0900	<0.0900
Aromatic Volatile Organics (BTEX)											
Benzene - ppm	EPA 8021B	0.005	<0.000500	<0.000500	**0.0207**	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500
Toluene - ppm	EPA 8021B	1.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
Ethylbenzene - ppm	EPA 8021B	0.7	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200
Xylenes - ppm	EPA 8021B	10.0	<0.00200	<0.00200	0.00647	<0.00200	<0.00200	<0.00200	0.00202	<0.00200	<0.00200

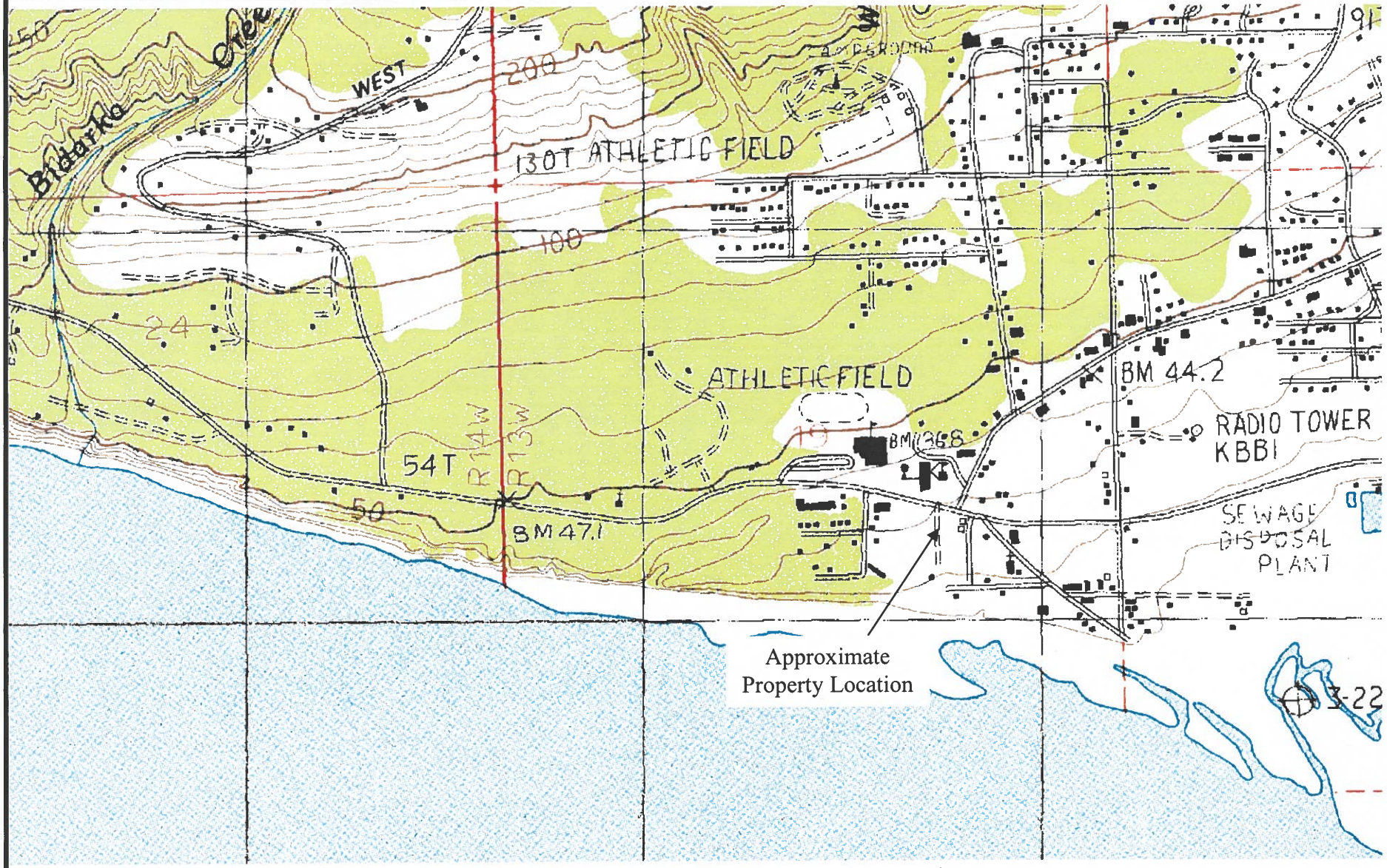
KEY	DESCRIPTION
*	See Appendix A for compounds tested, methods, and laboratory reporting limits
**	Groundwater cleanup levels are listed in Table C, 18 AAC 75.345
^	Sample ID No. preceded by "32-1-16710-" on the chain of custody form
<0.0900	Analyte not detected; laboratory reporting limit of 0.0900 ppm
ND	Individual analytes not detected
-	Not applicable or sample not tested for this analyte
ppm	Parts per million
0.0207	Reported concentration exceeds the regulated cleanup level

TABLE 3 - SUMMARY OF ANALYTICAL RESULTS

INDOOR AIR QUALITY SAMPLES

		Analytical Sample Number^ and Collection Date*							
		Air Samples							
Parameter Tested	**Method***	VB1 8/22/02	VB2 8/22/03	VB3 8/22/02	VB4 8/22/02	CT1 8/22/03	CT2 8/22/03	CT3 8/22/03	CT4 8/22/03
Benzene - mg/sample	NMAM 1501	<0.0010	0.0011	<0.0010	0.0014	<0.0010	<0.0010	<0.0010	<0.0010
Benzene - ppm	NMAM 1501	<0.012	0.013	<0.012	0.018	<0.031	<0.031	<0.031	<0.031

KEY	DESCRIPTION
*	See Appendix A for compounds tested, methods, and laboratory reporting limits
^	Sample ID No. preceded by "32-1-16710-" on the chain of custody form
<0.001	Analyte not detected; laboratory reporting limit of 0.001 ppm
ppm	Parts per million
mg/sample	Milligrams per sample



0 0.5 1.0

Approximate Scale in Miles

Elevation in Meters
Contour Interval 5 Meters
Taken From
Seldovia (C-5) NE Quadrangle
U.S. Geological Survey

N

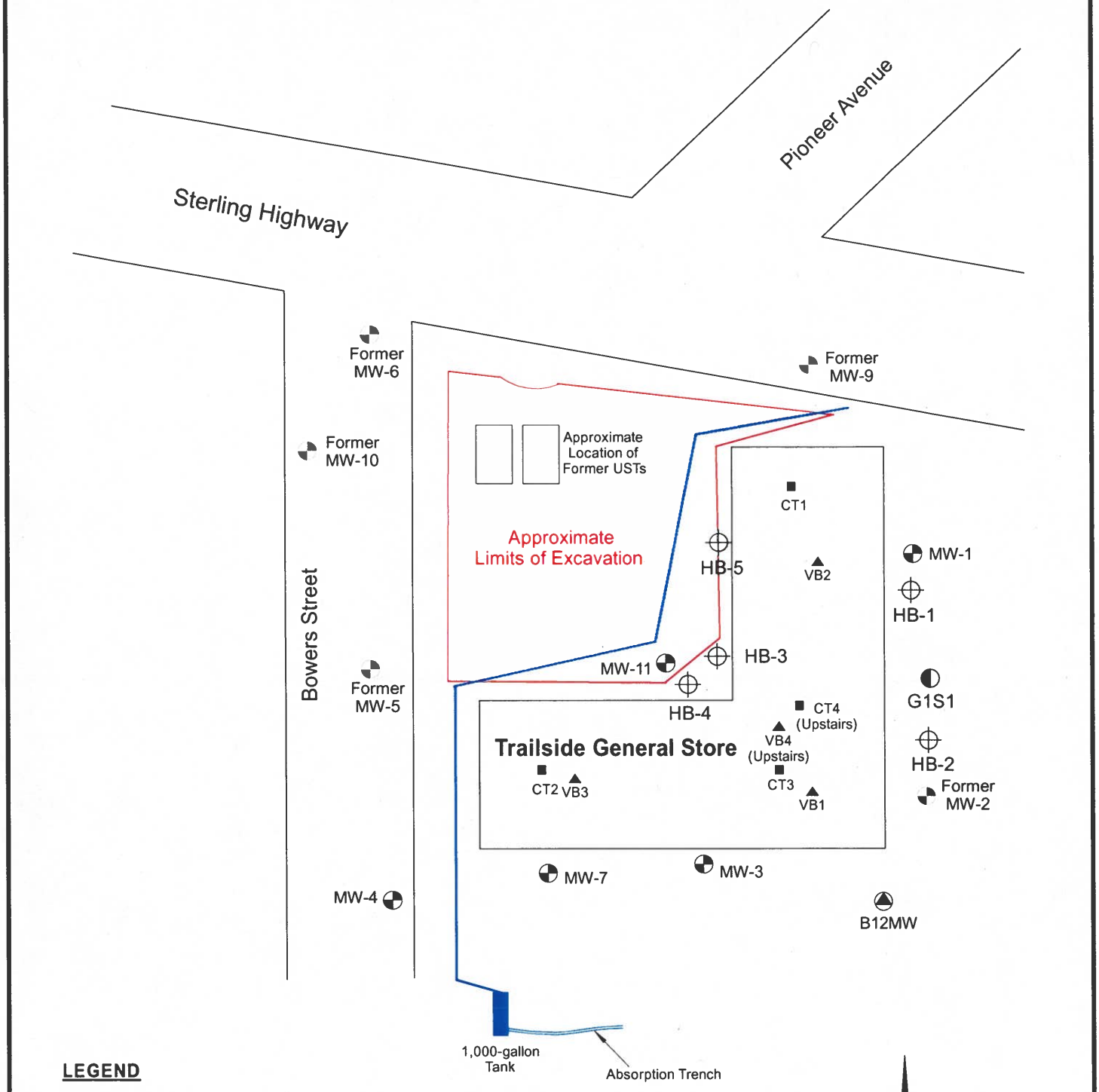
Trailside General Store
Homer, Alaska

VICINITY MAP

January 2004 32-1-16710

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 1



LEGEND

- CT1 — Approximate location of Charcoal Tube Sample 1
- VB1 — Approximate Location of Vapor Badge Sample 1
- MW-1 — Approximate location and number of Monitoring Well MW-1
- Former MW-2 — Approximate location and number of Former Monitoring Well MW-2
- G1S1 — Approximate Location of Grain Size Sample 1
- HB-4 — Approximate Location of Hand Boring HB-4
- B12MW — Approximate Location of new Monitoring Well B12MW Installed 10/7/03
- Perforated diversion drain pipe
- Solid diversion drain pipe

N

0 50 100

APPROXIMATE SCALE IN FEET

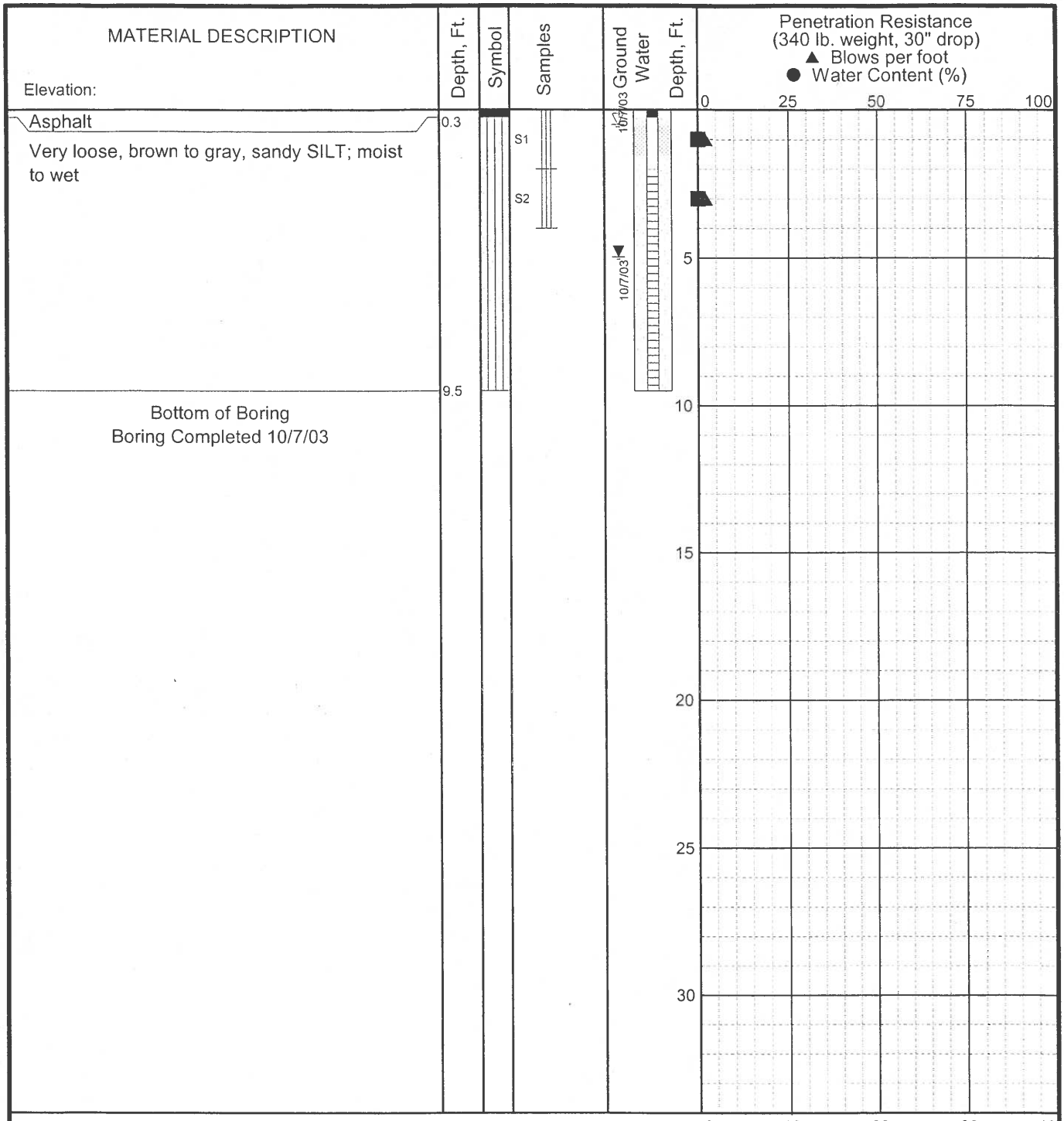
Trailside General Store
Homer, Alaska

SITE PLAN

January 2004 32-1-16710

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 2



LEGEND

* Sample Not Recovered

Ground Water Level At Time Of Drilling

Solid Casing and Annular Seal

Well Casing and Filter Sand

Cuttings Backfill

▼ Static Water Level

■ PID Reading (ppm)

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Trailside General Store
Homer, Alaska

LOG OF BORING B12MW

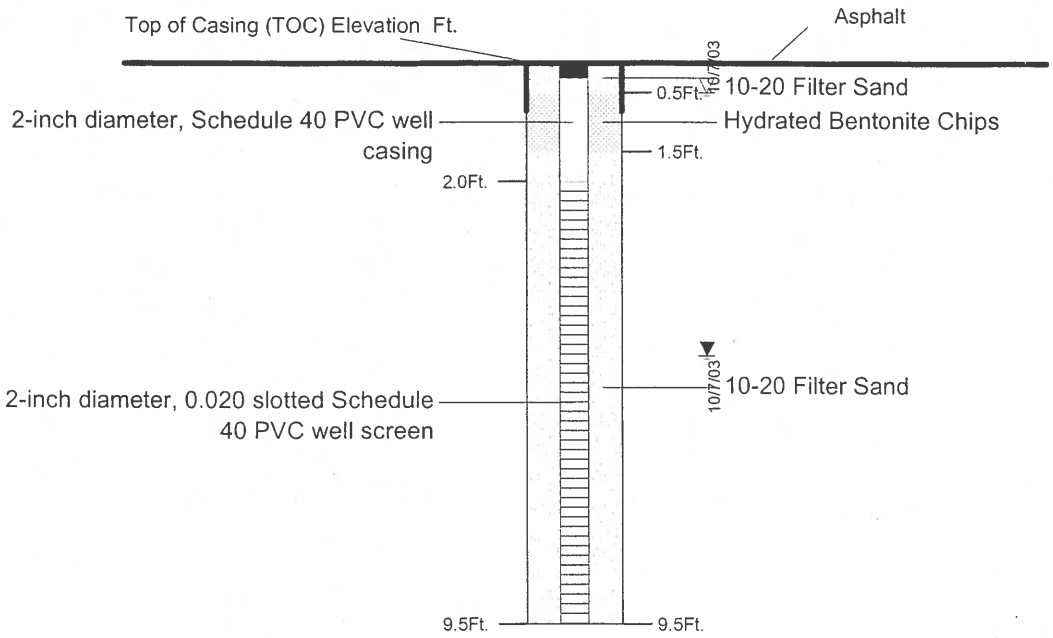
January 2004 32-1-16710

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. 3

GEOTECHNICAL LOG 16710.GPJ S&W GEO1.GDT 1/6/04

Casing Description | **Backfill Description**



LEGEND

▽ Ground Water Level ATD

▼ Static Ground Water Level

NOTE: All joints use threaded connections.

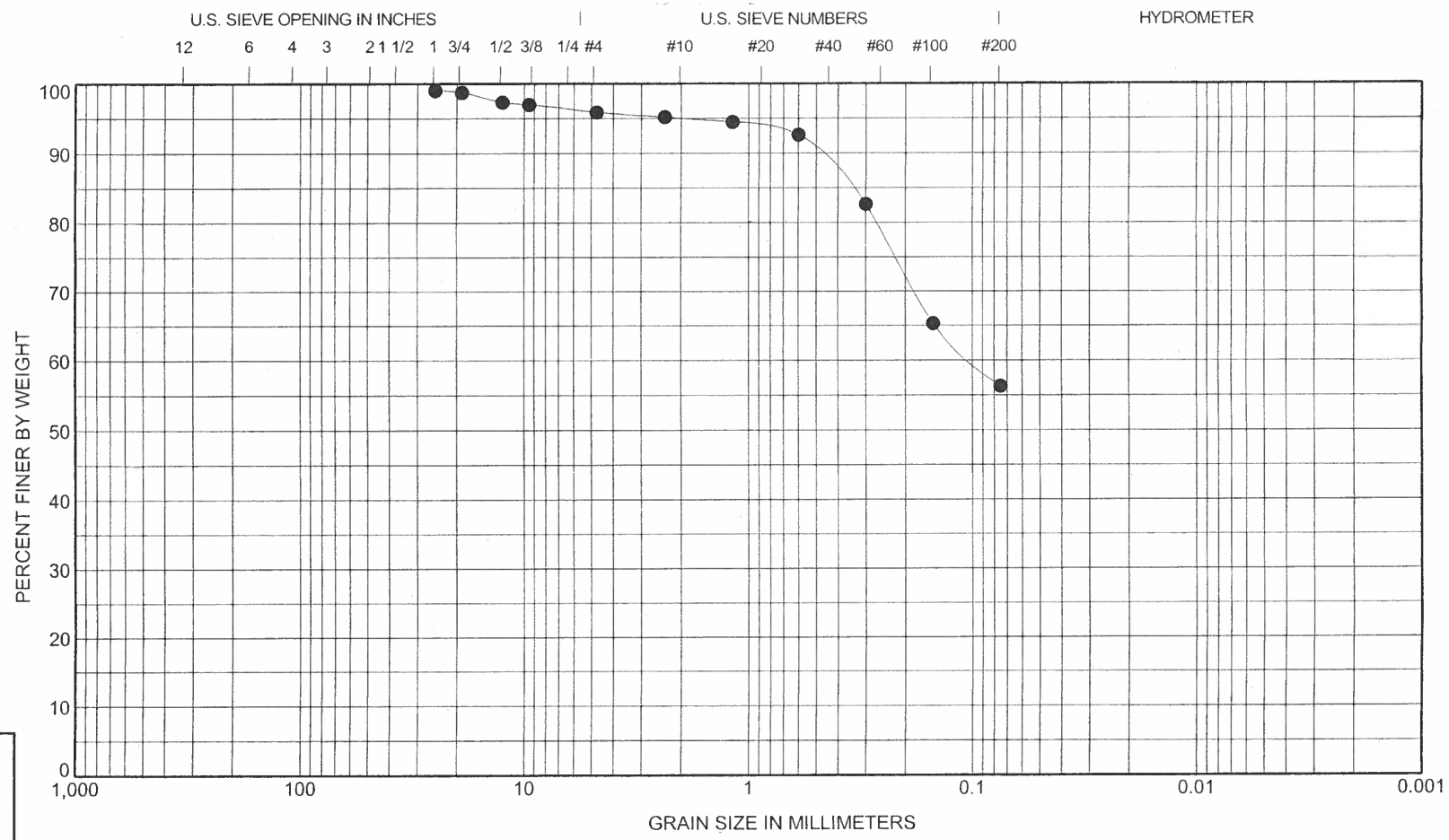
Trailside General Store
Homer, Alaska

MONITORING WELL B12MW CONSTRUCTION DETAIL

January 2004 | 32-1-16710

SHANNON & WILSON, INC. Geotechnical and Environmental Consultants

Fig. 4



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample	Depth, Ft	Classification	LL	PL	PI	Cc	Cu
● G1 S1	2.0 -	**Brown, sandy SILT with gravel; moist**					

Sample	Depth, Ft	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● G1 S1	2.0 -	**25**	**0.1**			**3**	**40**	**56**	

GRAIN SIZE CLASSIFICATION

Trailside General Store
Homer, Alaska

January 2004

32-1-16710

Fig. 5

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APPENDIX A

FIELD PHOTOGRAPHS

Photo 1: A view of the drill rig during Monitoring Well B12MW installation; looking southwest (October 2003).

Photo 2: A view of the drill rig during Monitoring Well B12MW installation; looking northeast (October 2003).

Trailside General Store Homer, Alaska	
PHOTOGRAPHS 1 AND 2	
January 2004	32-1-16710
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	**Fig. A-1**

APPENDIX B

RESULTS OF ANALYTICAL TESTING BY SGS ENVIRONMENTAL SERVICES OF ANCHORAGE, ALASKA AND DATA CHEM LABORATORIES OF SALT LAKE CITY, UTAH

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

Darsen Gaughan
Shannon & Wilson Inc.
5430 Fairbanks St Ste 3
Anchorage, AK 99518

Work Order:	1033631
	32-1-16710 Trailside General
Client:	Shannon & Wilson Inc.
Report Date:	June 26, 2003

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 SGS. 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 SGS Project Manager at (907) 562-2343.

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

PQL	Practical Quantitation Limit (reporting limit).
U	Indicates the analyte was analyzed for but not detected.
F	Indicates an estimated value that falls below PQL, but is greater than the MDL.
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

SGS Ref.#	1033631001
Client Name	Shannon & Wilson Inc.
Project Name/#	32-1-16710 Trailside General
Client Sample ID	32-1-16710-MW1
Matrix	Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time	06/26/2003 16:14
Collected Date/Time	06/19/2003 17:30
Received Date/Time	06/20/2003 10:50
Technical Director	**Stephen C. Ede**

Released By Shawn Patton

Sample Remarks:

GRO/BTEX - MS do not meet QC goals for p&m-xylene.

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Benzene		0.000500 U	0.000500	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Toluene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Ethylbenzene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
P & M -Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
o-Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Surrogates										
1,4-Difluorobenzene <surr>		92.4		%	AK101 8021B	A	73-124	06/23/03	06/23/03	ECG
4-Bromofluorobenzene <surr>		107		%	AK101 8021B	A	50-150	06/23/03	06/23/03	ECG

SGS

SGS Ref.#	1033631002
Client Name	Shannon & Wilson Inc.
Project Name/#	32-1-16710 Trailside General
Client Sample ID	32-1-16710-MW3
Matrix	Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time	06/26/2003 16:14
Collected Date/Time	06/19/2003 16:15
Received Date/Time	06/20/2003 10:50
Technical Director	**Stephen C. Ede**

Released By Shawna Patton

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Benzene		0.000500 U	0.000500	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Toluene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Ethylbenzene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
P & M -Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
o-Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Surrogates										
1,4-Difluorobenzene <surr>		92.7		%	AK101 8021B	A	73-124	06/23/03	06/23/03	ECG
4-Bromofluorobenzene <surr>		106		%	AK101 8021B	A	50-150	06/23/03	06/23/03	ECG

SGS

SGS Ref.#	1033631003
Client Name	Shannon & Wilson Inc.
Project Name/#	32-1-16710 Trailside General
Client Sample ID	32-1-16710-MW4
Matrix	Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time	06/26/2003 16:14
Collected Date/Time	06/19/2003 15:25
Received Date/Time	06/20/2003 10:50
Technical Director	**Stephen C. Ede**

Released By Shannon Parker

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Benzene		0.0207	0.000500	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Toluene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Ethylbenzene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
P & M -Xylene		0.00647	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
o-Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Surrogates										
1,4-Difluorobenzene <surr>		96.1		%	AK101 8021B	A	73-124	06/23/03	06/23/03	ECG
4-Bromofluorobenzene <surr>		106		%	AK101 8021B	A	50-150	06/23/03	06/23/03	ECG

SGS

SGS Ref.#	1033631004
Client Name	Shannon & Wilson Inc.
Project Name/#	32-1-16710 Trailside General
Client Sample ID	32-1-16710-MW7
Matrix	Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time	06/26/2003 16:14
Collected Date/Time	06/19/2003 15:45
Received Date/Time	06/20/2003 10:50
Technical Director	**Stephen C. Ede**

Released By Shawn Poston

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Benzene		0.000500 U	0.000500	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Toluene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Ethylbenzene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
P & M -Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
o-Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Surrogates										
1,4-Difluorobenzene <surr>		92.5		%	AK101 8021B	A	73-124	06/23/03	06/23/03	ECG
4-Bromofluorobenzene <surr>		105		%	AK101 8021B	A	50-150	06/23/03	06/23/03	ECG

SGS

SGS Ref.#	1033631006
Client Name	Shannon & Wilson Inc.
Project Name/#	32-1-16710 Trailside General
Client Sample ID	32-1-16710-MW17
Matrix	Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time	06/26/2003 16:14
Collected Date/Time	06/19/2003 16:00
Received Date/Time	06/20/2003 10:50
Technical Director	**Stephen C. Ede**

Released By Shawn Paxton

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Benzene		0.000500 U	0.000500	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Toluene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Ethylbenzene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
P & M -Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
o-Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Surrogates										
1,4-Difluorobenzene <surr>		93.3		%	AK101 8021B	A	73-124	06/23/03	06/23/03	ECG
4-Bromofluorobenzene <surr>		107		%	AK101 8021B	A	50-150	06/23/03	06/23/03	ECG

SGS

SGS Ref.#	1036540003
Client Name	Shannon & Wilson Inc.
Project Name/#	32-1-16710 Trailside General
Client Sample ID	32-1-16710-MW12
Matrix	Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time	10/21/2003 11:29
Collected Date/Time	10/07/2003 18:30
Received Date/Time	10/09/2003 12:45
Technical Director	**Stephen C. Ede**

Released By Shawn Paxton

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 8021B	A		10/16/03	10/16/03	MCM
Benzene		0.000500 U	0.000500	mg/L	AK101 8021B	A		10/16/03	10/16/03	MCM
Toluene		0.00200 U	0.00200	mg/L	AK101 8021B	A		10/16/03	10/16/03	MCM
Ethylbenzene		0.00200 U	0.00200	mg/L	AK101 8021B	A		10/16/03	10/16/03	MCM
P & M -Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		10/16/03	10/16/03	MCM
o-Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		10/16/03	10/16/03	MCM
Surrogates										
1,4-Difluorobenzene <surr>		96.1		%	AK101 8021B	A	73-124	10/16/03	10/16/03	MCM
4-Bromofluorobenzene <surr>		86.5		%	AK101 8021B	A	50-150	10/16/03	10/16/03	MCM

SGS

SGS Ref.#	1033631005
Client Name	Shannon & Wilson Inc.
Project Name/#	32-1-16710 Trailside General
Client Sample ID	32-1-16710-Tank
Matrix	Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time	06/26/2003 16:14
Collected Date/Time	06/19/2003 17:00
Received Date/Time	06/20/2003 10:50
Technical Director	**Stephen C. Ede**

Released By Shawn Patton

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 8021B	A		06/23/03	06/26/03	ECG
Benzene		0.000500 U	0.000500	mg/L	AK101 8021B	A		06/23/03	06/26/03	ECG
Toluene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/26/03	ECG
Ethylbenzene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/26/03	ECG
P & M -Xylene		0.00202	0.00200	mg/L	AK101 8021B	A		06/23/03	06/26/03	ECG
o-Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/26/03	ECG
Surrogates										
1,4-Difluorobenzene <surr>		95.4		%	AK101 8021B	A	73-124	06/23/03	06/26/03	ECG
4-Bromofluorobenzene <surr>		100		%	AK101 8021B	A	50-150	06/23/03	06/26/03	ECG

SGS

SGS Ref.#	1036540004
Client Name	Shannon & Wilson Inc.
Project Name/#	32-1-16710 Trailside General
Client Sample ID	Trip Blank Water
Matrix	Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time	10/21/2003 11:29
Collected Date/Time	10/07/2003 18:30
Received Date/Time	10/09/2003 12:45
Technical Director	**Stephen C. Ede**

Released By Shawn Preston

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 8021B	B		10/16/03	10/19/03	MML
Benzene		0.000500 U	0.000500	mg/L	AK101 8021B	B		10/16/03	10/19/03	MML
Toluene		0.00200 U	0.00200	mg/L	AK101 8021B	B		10/16/03	10/19/03	MML
Ethylbenzene		0.00200 U	0.00200	mg/L	AK101 8021B	B		10/16/03	10/19/03	MML
P & M -Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	B		10/16/03	10/19/03	MML
o-Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	B		10/16/03	10/19/03	MML
Surrogates										
1,4-Difluorobenzene <surr>		83.2		%	AK101 8021B	B	73-124	10/16/03	10/19/03	MML
4-Bromofluorobenzene <surr>		94.4		%	AK101 8021B	B	50-150	10/16/03	10/19/03	MML

SGS

SGS Ref.#	1033631007
Client Name	Shannon & Wilson Inc.
Project Name/#	32-1-16710 Trailside General
Client Sample ID	Trip Blank
Matrix	Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time	06/26/2003 16:14
Collected Date/Time	06/19/2003 0:00
Received Date/Time	06/20/2003 10:50
Technical Director	**Stephen C. Ede**

Released By Steven Parker

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Benzene		0.000500 U	0.000500	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Toluene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Ethylbenzene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
P & M -Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
o-Xylene		0.00200 U	0.00200	mg/L	AK101 8021B	A		06/23/03	06/23/03	ECG
Surrogates										
1,4-Difluorobenzene <surr>		92.6		%	AK101 8021B	A	73-124	06/23/03	06/23/03	ECG
4-Bromofluorobenzene <surr>		105		%	AK101 8021B	A	50-150	06/23/03	06/23/03	ECG

1033631

CHAIN-OF-CUSTODY RECORD

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 392-0050

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

2055 Hill Road
Fairbanks, AK 99709
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

Laboratory CTE/SGS
Attn: Shona

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO AK101	BTEX EPA 8021B					Total Number of Containers	Remarks/Matrix
39-1-16710-MW1	(1) A-C	1730	~~6-20~~ 6-19		X	X	X					3	Water
" - MW3	(2) A-C	1615	" 6-19		X	X	X					3	"
" - MW4	(3) A-C	1525	"		X	X	X					3	"
" - MW7	(4) A-C	1545	"		X	X	X					3	"
" - Tank	(5) A-C	1700	"		X	X	X					3	"
" - MW17	(6) A-C	1600	"		X	X	X					3	"
Trip Blank	(7) A-C	—	—			X	X						

Project Information		Sample Receipt	
Project Number:	39-1-16710	Total Number of Containers	
Project Name:	Trailside General	COC Seals/Intact? Y/N/NA	
Contact:	Darren Gaughan	Received Good Cond./Cold	C=3.7
Ongoing Project?	Yes ☐ No ☒	Delivery Method:	TB-1.3
Sampler:	DRL	(attach shipping bill, if any)	

Instructions	
Requested Turnaround Time:	Standard
Special Instructions:	

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Time: 1645	Signature: Time:	Signature: Time:
Printed Name: Darren Gaughan Date: 6-20	Printed Name: Date:	Printed Name: Date:
Company: STW	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 1050
Printed Name: Date:	Printed Name: Date:	Printed Name: James Johnson Date: 6-20-03
Company:	Company:	Company: SGS/CTE

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

F-19-91/UR

No. _____

1036540

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

TE

Attn: Stone

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

2055 Hill Road
Fairbanks, AK 99709
(907) 479-0600

2255 S.W. Canyon Road
Portland, OR 97201-2498
(503) 223-6147

2043 Westport Center Drive
St. Louis, MO 63146-3564
(314) 392-0050

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

1200 17th Street, Suite 1024
Denver, Co 80202
(303) 825-3800

303 Wellsian Way
Richland, WA 99352
(509) 946-6309

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

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO AK101	BTEX EPA 8021B					Total Number of Containers	Remarks/Matrix
32-1-1610-B12 S1	① A+B	1320	10-7		X	X	X						Soil HOLD
" -B12S2	② A+B	1330	10-7		X	X	X						Soil HOLD
" -MW12	③ A+B	1830	10-7		X	X	X						Water
TBS		—	—			X	X						Soil
TBW	④ A-C	—	—			X	X						Water

Project Information	Sample Receipt
Project Number: 32-1-1610	Total Number of Containers
Project Name: Trailside Ground	COC Seals/Intact? Y/N/NA
Contact: Darsen Gaughan	Received Good Cond./Cold 2.4
Ongoing Project? Yes ☐ No ☒	Delivery Method:
Sampler: DRG	(attach shipping bill, if any)

Instructions
Requested Turnaround Time: Standard
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Darsen Gaughan Time:	Signature: Time:	Signature: Time:
Printed Name: Darsen Gaughan Date:	Printed Name: Date:	Printed Name: Date:
Company: S&W	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 1245
Printed Name: Date:	Printed Name: Date:	Printed Name: Date: 10-9-03
Company:	Company:	Company: SGS

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

F-19-91/UR

No. 026536

APPENDIX C

"IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT"

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 32-1-16710

Date: January 2004
To: ADEC
Re: Trailside General Store
Homer, Alaska

Important Information About Your Geotechnical/Environmental Proposal

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors, which were considered in the development of the report, have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

1/2002