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GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.

Professional Environmental Consultants

2605 Denali Street, Suite 203 • Anchorage, Alaska 99503-2749
Tel: (907) 277-2021 • Fax: (907) 274-8683 • E-mail: ge2t@alaska.net

RELEASE INVESTIGATION REPORT

FOR

Student Transportation

3580 Tudor Road, Anchorage, Alaska
ADEC UST Facility #3089

Prepared For

Julia Flodin
Project Manager
Anchorage School District
1301 Labar Street
Anchorage, Alaska 99507

GE²T Project No. 97007

May 5, 1998

000139

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May 5, 1998

Julia Flodin
Anchorage School District
1301 Labar Street
Anchorage, AK 99515

RE: Release Investigation
Student Transportation Facility
ADEC UST Facility #3089
GE^{2}T Project #97007F

Dear Ms. Flodin:

Attached is the Release Investigation Report for ASD's Student Transportation facility. Six borings were drilled and four of these were completed as monitoring wells. Results document that ground water has been impacted in the vicinity of former USTs #1 and #2 and in the vicinity of the former waste oil UST.

Soil contamination was found in the smear zone, from approximately 9 to 11 feet below grade in two of the three monitoring wells around former USTs #1 and #2. Contamination was not found in the silt layer immediately below the smear zone.

Only trace levels of soil contamination were found around the waste oil UST in soil borings B-1, 4 feet north, and B-2, 3 feet east of the original excavation. However, contaminated soil remains beneath the former UST. Also, the ground water in this location has high levels of DRO and RRO.

We are in the process of preparing plans for corrective action. If you have any comments or need additional information, please call me at 277-2021. Thank you for the opportunity to be of service.

Sincerely,

Janet Bartel

Janet Bartel, P.E.
Environmental Engineer

C: Lynne Bush, ADEC

97007/Bus Barn RI Cover Letter.jeb

TABLE OF CONTENTS

Appendices

1.0 INTRODUCTION

1.1 *Purpose and Scope*

This report documents a release investigation conducted at the Anchorage School District (ASD) Student Transportation facility as a follow-up to finding contaminated soil during removal of the former UST systems. The work was directed by Gilfilian Engineering & Environmental Testing, Inc. (GE^2T), on behalf of ASD. The subject site, ADEC UST facility identification #3089, is located at 3580 Tudor Road, Anchorage, Alaska.

Six borings were drilled and four of these were completed as monitoring wells for the purpose of helping to delineate the extent of petroleum hydrocarbon contamination in the soil and ground water. Soil contamination was encountered at four of the site's five USTs during their removal in December 1997. This release investigation was designed to address the contamination found in two separate areas: the area of USTs #1, #2 and #4, and the area around the waste oil UST, #5. UST #3 closure samples did not identify contamination and no further investigation is required for this tank.

1.2 *Project Organization*

- Property Owner – Anchorage School District. Julia Flodin was the Project Manager overseeing this project for the Anchorage School District.
- Third Party Environmental Assessor – Janet Bartel, an Engineer, with Gilfilian Engineering & Environmental Testing, Inc. conducted the field assessment.
- Contractor – Discovery Drilling, Inc., of Anchorage, Alaska, installed the monitoring wells with a CME-75 hollow stem auger.
- ADEC Certified Laboratory – Columbia Analytical Services located in Anchorage conducted laboratory analyses of soil and water samples.

2.0 BACKGROUND

2.1 *Site History*

The Student Transportation facility on Tudor Road is used for bus parking, maintenance and re-fueling. The five USTs at this facility were removed from the ground during December 1997. Results were submitted to ADEC in a report dated February 26, 1998. The capacity and product stored in these USTs are listed below and their locations are shown in Figure 2.

Tank Number	Tank Size (gallons)	Product Stored	Soil Contamination Found
1	15,000	Diesel & Gasoline	Yes
2	10,000	Diesel & Gasoline	Yes
3	4,000	Gasoline	No
4	12,000	Gasoline	Yes
5	1,000	Waste Oil	Yes

At the time the USTs were removed, no attempt was made to "chase" contamination. Only the soil that was necessary for UST removal was excavated. Soil that was discolored or registered above threshold levels on the PID was stockpiled on-site. In March 1998, the stockpiled soil was transported by B.C. Excavation, Inc. to Anchorage Soil Recycling for thermal treatment. The soil stockpile from the UST #1, #2 and #4 excavation contained 821.92 tons. The soil stockpile from the waste oil UST contained 105.52 tons.

2.2 *Subsurface Soil and Hydrogeology*

Subsurface soils were found to consist generally of silty sandy gravel from the surface to approximately 4 feet below grade and sandy gravel from approximately 4 to 11 feet below grade. Occasional cobbles were present in the sandy gravel. Below the sandy gravel, there is a stiff silt layer.

Ground water was encountered at approximately 11 feet below grade. In MW-1, MW-2 and MW-3, the ground water surface was near or just below the top of the silt. In B-1, B-2 and MW-4, the soil borings near the former waste oil UST, the ground water surface was above the silt layer, in sand or sandy gravel.

Ground water flow characteristics were determined by computing the best fit of measured water table elevations to a simple planar surface using a polynomial algorithm. Water table elevations were measured in the monitoring wells prior to purging and sampling. Based on this data, ground water was determined to flow N24°W at a gradient of 0.008 ft/ft (see Figure 4).

3.0 RELEASE INVESTIGATION

3.1 *Boring and Monitor Well Installation*

Six borings were drilled on April 2-3, 1998 using a truck-mounted CME-75 hollow stem auger drill rig. Four of these borings were completed as monitoring wells (see locations in Figure 2). The depths of the borings ranged from 12 to 14 feet. Soils were logged by GE²T personnel. Logs for the borings are included in Appendix B.

Soil samples were obtained with a 2½-inch diameter split spoon sampler. Samples were collected and screened for volatile organic compounds using a calibrated Photovac 2020 photoionization detector (PID). At least one soil sample from each boring was collected and analytically tested for one or more of the following:

- Gasoline Range Organics (GRO) analyzed by method AK 101;
- Benzene, toluene, ethylbenzene, and xylene (BTEX) analyzed by EPA method 8020;
- Diesel Range Organics (DRO) analyzed by method AK 102;
- Residual Range Organics (RRO) analyzed by method AK 103;
- Arsenic by EPA method 7060;
- Cadmium by EPA method 6010A;
- Chromium by EPA method 6010A; and
- Lead by EPA method 7421.

The monitoring wells were completed with 2-inch, schedule 40 PVC pipe. Slotted screen was set from approximately 6 to 13 feet below grade with 10-20 silica sand placed in the annulus. Solid PVC pipe was set above the slotted screen sections with a bentonite clay seal above the silica sand to prevent migration of surface water runoff into the wells. The wells were completed with locking caps and flush mounted covers.

After completion, the well locations and elevations were surveyed by GE²T personnel. Horizontal locations were obtained by swing tie measurements. Vertical elevations were obtained using a rod and level in a closed loop survey, to an accuracy of 0.01 feet. The monitoring well elevations were referenced to a temporary bench mark (TBM) located at the base of the window frame (east corner) on the south outside wall of the maintenance garage. The TBM was arbitrarily assigned an elevation of 100.00 feet.

GE²T collected water samples from the new monitoring wells on April 3, 1998. To avoid cross contamination, disposable, dedicated PVC bailers were used for purging and sampling. During purging, the first bail of water was examined for petroleum odor and sheen. A petroleum odor was noticed at MW-1 and MW-4. There was also a light sheen at MW-4. Water samples were delivered the same day to Columbia Analytical Services in Anchorage.

3.2 *Soil Results in Area Surrounding USTs #1, #2, and #4*

MW-1 and MW-3 contained contamination above ADEC Category A clean-up levels in the sandy gravel interval from 9 to 11 feet below grade. A sample collected in the underlying silt, at 11.5 feet in MW-3, contained only trace or non-detectable levels of the tested contaminants. Figure 3 shows a cross-section of the contaminated soil interval.

In MW-3, gray discoloration of the soil indicating the top of the contaminated zone was apparent as a distinct line at 8.75 feet. A sample collected at 8 feet showed only trace levels of contamination, well below Category A clean-up standards. A sample collected from the same sample spoon at 9 feet contained high concentrations of DRO, GRO and BTEX.

MW-2, located 25 feet westerly (cross-gradient) of the UST excavation contained no detectable contaminants. Laboratory results from MW-1, MW-2 and MW-3 are summarized below in Table 1 and complete reports are included in Appendix C.

Table 1
MW-1, MW-2 & MW-3 Analytical Soil Sample Results
(mg/kg)

Boring	Depth (feet)	DRO	GRO	Benzene	Toluene	Ethyl-benzene	Xylenes
MW-1	9	2,100	2,700	5.6	93	20	620
	10.5	28	100	11	9.5	1.9	19
MW-2	9	ND (10)	ND (5)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
	10	ND (10)	ND (5)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
MW-3	6	ND (10)	ND (5)	ND (0.05)	0.14	ND (0.05)	0.6
	8	15	5	ND (0.05)	0.34	0.13	0.98
	9	1,900	7,100	14	370	260	1,300
	11.5	ND (10)	ND (5)	ND (0.05)	ND (0.05)	ND (0.05)	0.11
Category A Clean-up Level		100	50	0.1	NA	NA	NA

NA = Not applicable
ND = Not Detected above the indicated practical quantification limit
Shaded areas indicate a concentration above Category A clean-up level

3.3 *Soil Results in Area Surrounding Waste Oil UST*

Analytical results from samples collected during the UST removal showed no problematic levels of contamination at the south end of the UST, but high concentrations of DRO and RRO at the north end. Therefore, the borings for this release investigation were placed around the north (fill) end of the former UST. A buried AWWU water line prevented placing any borings closer to the building.

B-1 and B-2 are located approximately 4 feet north and 3 feet east, respectively, from the original UST excavation. Soil samples collected from B-1 and B-2 contained only trace or non-detectable levels of the tested contaminants.

MW-4 was placed near the location of the former UST fill pipe. No soil sample was collected at the ground water interface from MW-4 since a sample at that location was collected during the UST removal and was previously determined to contain high levels of DRO and RRO. A sample was collected from 13.5 feet,

approximately 2 feet below the ground water interface and analytically tested. There was no detectable RRO and 36 mg/kg DRO. The sample at 13.5 feet was in a sand layer, approximately 2.5 feet below the bottom of the former tank.

Analytical results are shown below in Table 2 and included in Appendix C.

Table 2
MW-4, B-1 & B-2 Analytical Soil Sample Results
(mg/kg)

Boring	Depth (feet)	RRO	DRO	Arsenic	Cadmium	Chromium	Lead
MW-4	13.5	ND (100)	36	2	ND (1)	18	5
B-1	6.5	ND (100)	ND (10)	NT	NT	NT	NT
	9	ND (100)	ND (10)	7	ND (1)	15	6
	11	ND (100)	13	8	ND (1)	12	6
B-2	6.5	ND (100)	ND (10)	6	ND (1)	16	5
	9.5	ND (100)	ND (10)	NT	NT	NT	NT
	11	ND (100)	ND (10)	4	ND (1)	19	5
Category A Clean-up		2,000	100	NA	NA	NA	NA

NA = Not Available
ND = Not Detected above the indicated practical quantification limit
NT = Not tested for this analyte

3.4 *Ground Water Results*

BTEX constituents were detected significantly above drinking water standards in ground water collected from MW-1 and MW-3. These wells are clearly within the plume originating from fuel leaks at former USTs #1, #2 and #4. MW-2 contained low levels of hydrocarbon contaminants, indicating that its location is outside of the plume.

Industry literature has shown a relationship between the dissolved concentration of benzene plus toluene to ethylbenzene plus xylene (B+T/E+X) and the age of the gasoline (*Patterns of Chemical Changes During Environmental Alteration of Hydrocarbon Fuels*, 1996, by Isaac Kaplan et al.). The B+T/E+X ratio from MW-3 = 1.4, which is indicative of relatively new gasoline. The B+T/E+X ratio from MW-1 = 14.8, which is indicative of a downgradient well that is showing preferential removal and transport of benzene and toluene away from the source. These numbers indicate that the plume is originating from fuel spilled at USTs #1 and #2 rather than an old spill at UST #4.

MW-4, at the location of the waste oil UST, contains high levels of DRO and RRO. It also has a benzene concentration just above the drinking water standard of 5 µg/l. No benzene was found in the soil above instrument detection limits.

Analytical results from the water samples are included in Appendix D and summarized below in Table 3.

Table 3
Analytical Ground Water Sample Results
(µg/l)

Well	Benzene	Toluene	Ethyl-benzene	Xylenes	GRO	DRO	RRO
MW-1	43,000	9,900	170	3,400	140,000	3,310	NT
MW-2	ND (1)	2	ND (1)	3	74	315	NT
MW-3	940	32,000	3,800	19,000	130,000	6,200	NT
MW-4	9	2	ND (1)	3	96	26,000	35,000
MCL	5	1000	700	10,000	NA	NA	NA

NA = Not Available
ND = Not detected above the maximum contaminant level indicated in parentheses
NT = Not tested for this analyte
MCL = Maximum Contaminant Level based on Drinking Water standards; 18 AAC 80.070

4.0 DATA VALIDATION

Table 4 provides a comparison of control objectives with the results for this project.

Table 4
Field Quality Control Summary

Quality Control Designation	Tolerance	Results for This Project
Holding times:		
BTEX/soil & liquid/to extract	ASAP	Criteria Met
BTEX/soil & liquid/to analyze	14 days	Criteria Met
GRO/soil & liquid /to extract	ASAP	Criteria Met
GRO/soil & liquid /to analyze	14 days	Criteria Met
DRO/soil/to extract	14 days	Criteria Met
DRO/liquid/to extract	7 days	Criteria Met
DRO/soil & liquid /to analyze	40 days	Criteria Met
Field duplicates – Precision:		
BTEX/soil	±40%	57%
GRO/soil	±50%	71%
DRO/soil	±50%	62-80%
RRO/soil	±50%	42%
Completeness:		
All samples	85%	100%

Recommended extraction and analytical holding times were met for all analytical samples. Two Quality Assurance/Quality Control (QA/QC) duplicate soil samples were collected. The QA/QC indicators show that precision in the duplicate sample sets is

above target tolerance levels. No anomalies were noted during sample collection that would effect sample integrity. As discussed in the laboratory's case narrative in Appendix C, surrogate recoveries for GRO and BTEX samples with high concentrations were outside normal CAS control limits because of matrix interference. No further corrective action was taken.

5.0 CONCLUSIONS AND RECOMMENDATIONS

A release investigation was conducted in order to help delineate the contaminant plume(s) originating from the former UST system. Six borings were drilled and four of these were completed as monitoring wells. In three of the borings, petroleum hydrocarbon contamination was encountered in soils in contact with water during seasonal water level fluctuations (the smear zone). Contamination was also found in the ground water.

The soil contamination appears to be limited to the sand and sandy gravel in the smear zone. Immediately below the smear zone is a stiff silt layer that did not show signs of contamination at any of the locations drilled. The presence of the silt layer precludes the possibility of effectively using air sparging to treat the ground water.

MW-2, located 25 feet west and cross-gradient from the UST #1, #2 and #4 excavation, did not contain any detectable soil contamination. MW-3, located 12 feet east and cross-gradient from the UST excavation, contained DRO, GRO and BTEX in the smear zone. The downgradient well, MW-1, also contained contamination in the smear zone soil and in the ground water. The horizontal extent of contamination in the downgradient direction was not determined.

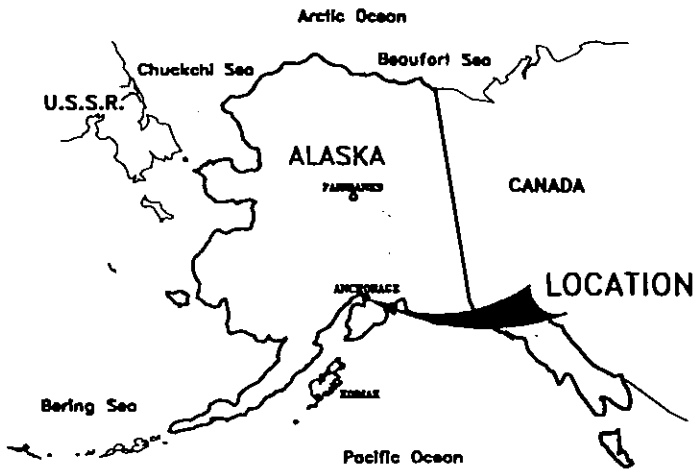
The soil borings installed 3 to 4 feet from the waste oil UST excavation contained only trace or non-detectable levels of contamination. These results indicate that the high levels of RRO and DRO found beneath the north end of the UST are limited in extent. The downgradient extent of ground water contamination originating from the waste oil UST was not determined.

Ground water measured April 3, 1998, was found at approximately 10 to 11 feet below grade. The flow direction was determined to be N24°W, with a gradient of 0.008 ft/ft (see Figure 4). The contaminated ground water plume extends to beneath the Student Transportation maintenance building.

This release investigation documented that ground water has been impacted in the vicinity of former gasoline and diesel USTs #1 and #2 and also in the vicinity of the former waste oil UST. Additionally, soil in the smear zone near and downgradient of the UST #1 and #2 excavation contains petroleum hydrocarbon contamination. A corrective action plan should be developed to the address remaining soil and ground water contamination.

APPENDIX A

Figures



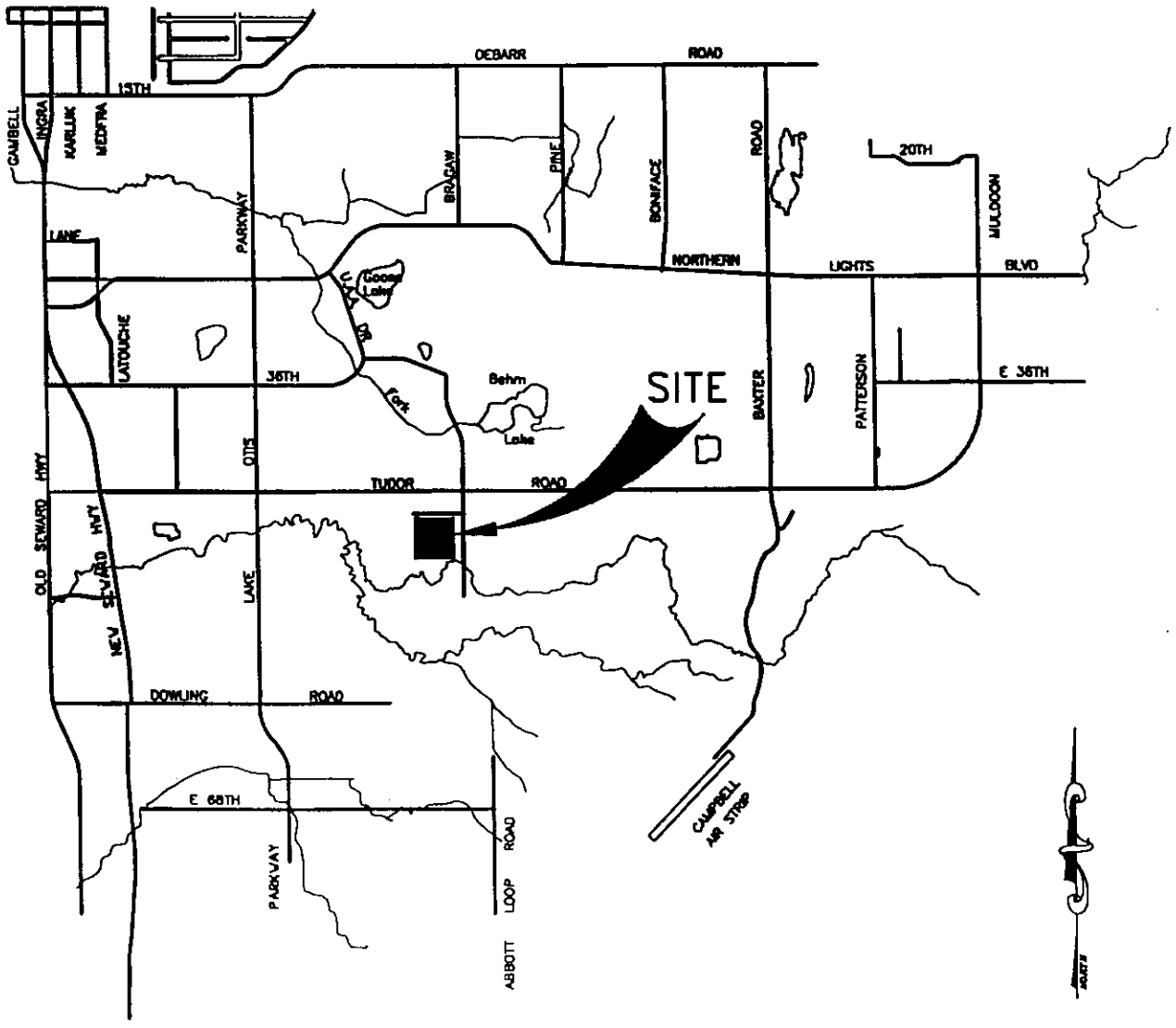


FIGURE 1. VICINITY MAP

GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.
2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE:	N.T.S.
DATE:	02/24/98
GEI PROJECT NO.	97007

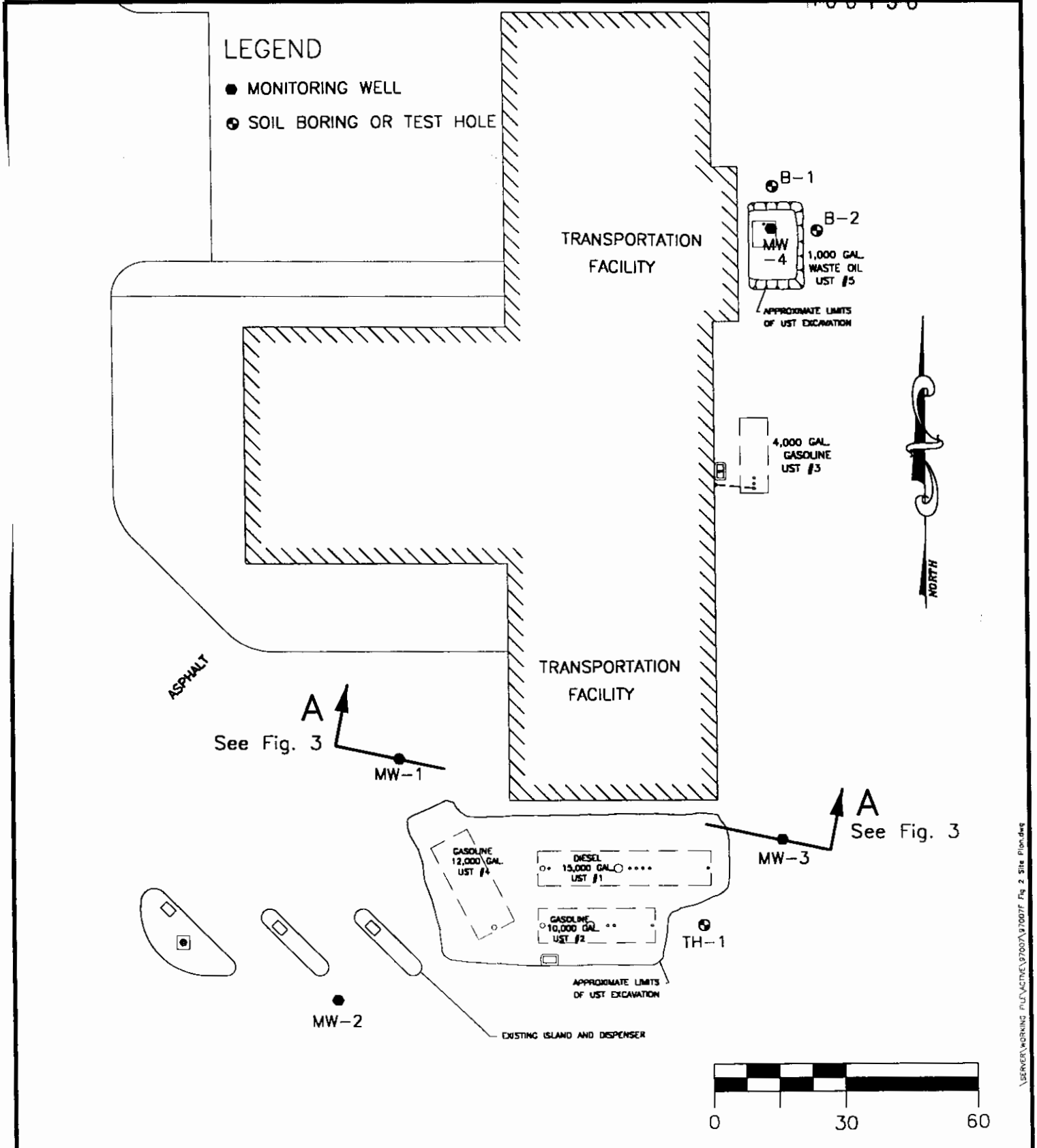
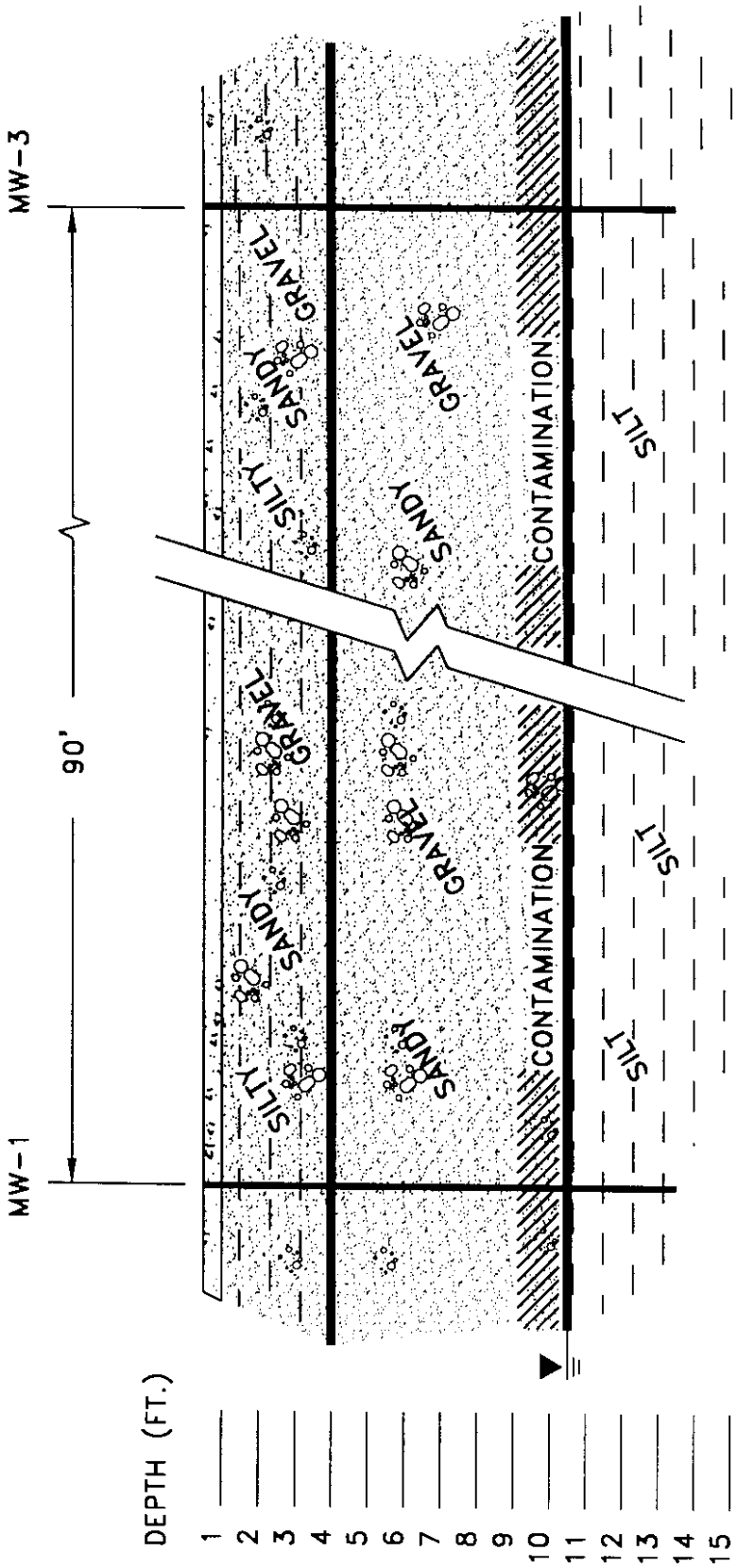


Fig. 2 SITE PLAN

GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.
2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE:	1"= 30'
DATE:	04/30/98
PROJECT NO.	97007F



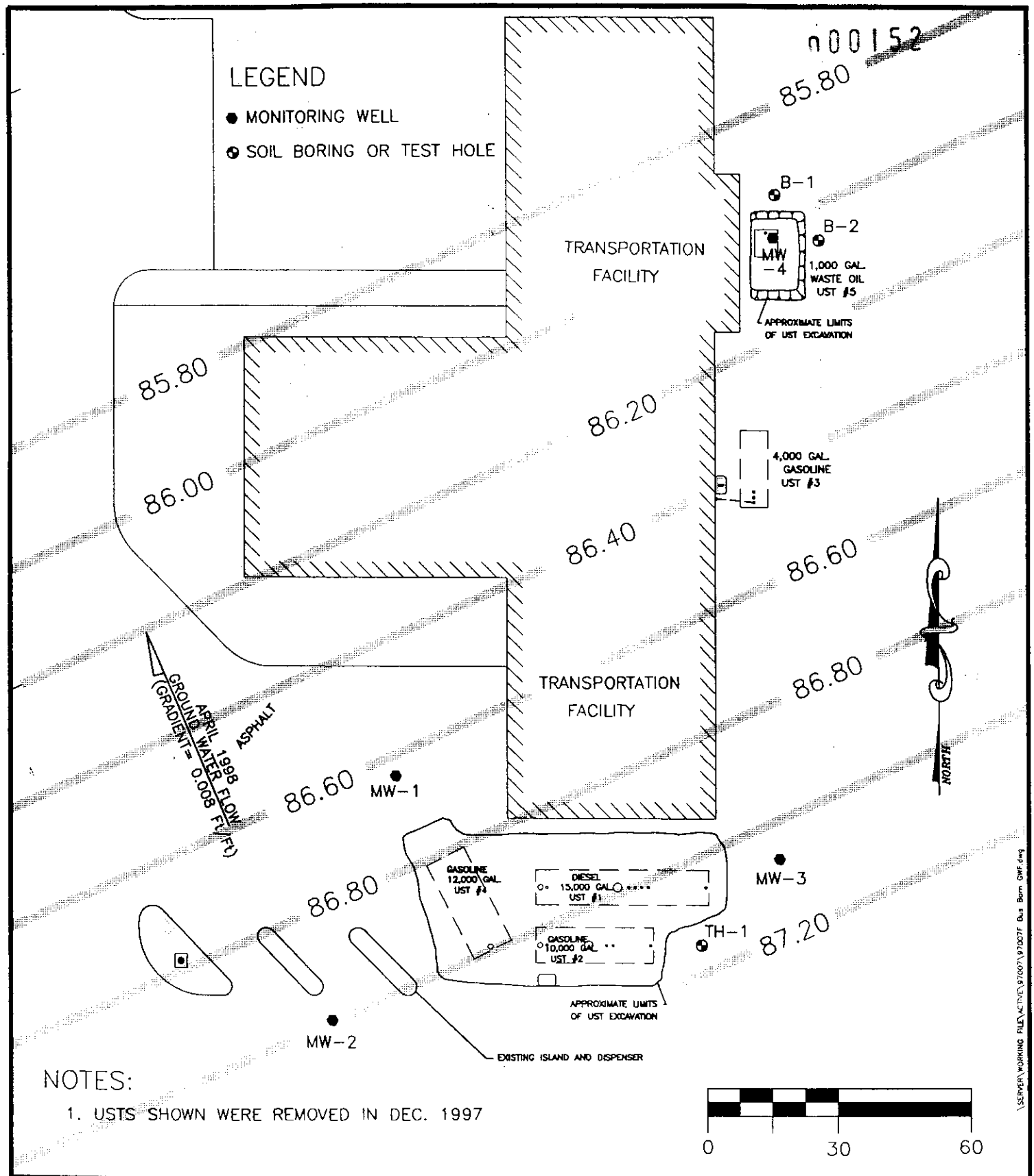
SECTION A-A

(SHR)\WORKING FILE\ACTIVE\97007\97007F Fig 2 Site Plan Sec AA .DWG

FIG. 3 – CROSS SECTION A-A

GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.
2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE:	1" = 6'
DATE:	04-23-98
PROJECT NO.	97007F



NOTES:

1. USTS SHOWN WERE REMOVED IN DEC. 1997

Fig. 4 GROUND WATER FLOW DIRECTION

GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.
2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE:	1"= 30'
DATE:	04/30/98
PROJECT NO.	97007F

Student Transportation
Depth to Ground Water

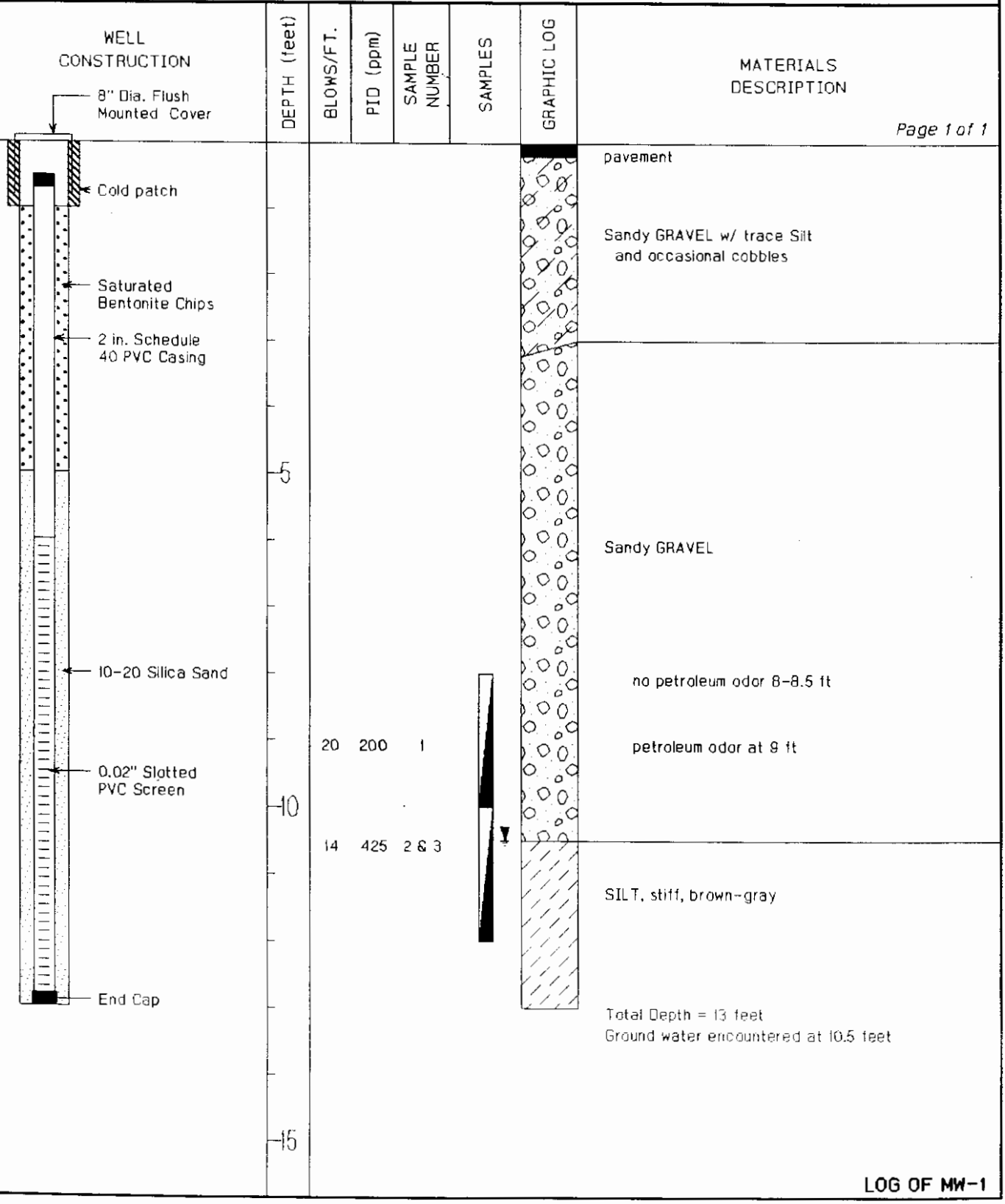
	Date	Well Elevation (feet)	Depth to Ground Water (feet)	Water Table Elevation (feet)
MW1	4/3/98	95.36	9.87	85.49
MW2	4/3/98	96.20	10.45	85.75
MW3	4/3/98	95.42	11.44	83.98
MW4	4/3/98	95.28	9.47	85.81

APPENDIX B

Soil Boring Logs

GILFILIAN ENGINEERING &
ENVIRONMENTAL TESTING, INC.

LOG OF MW-1

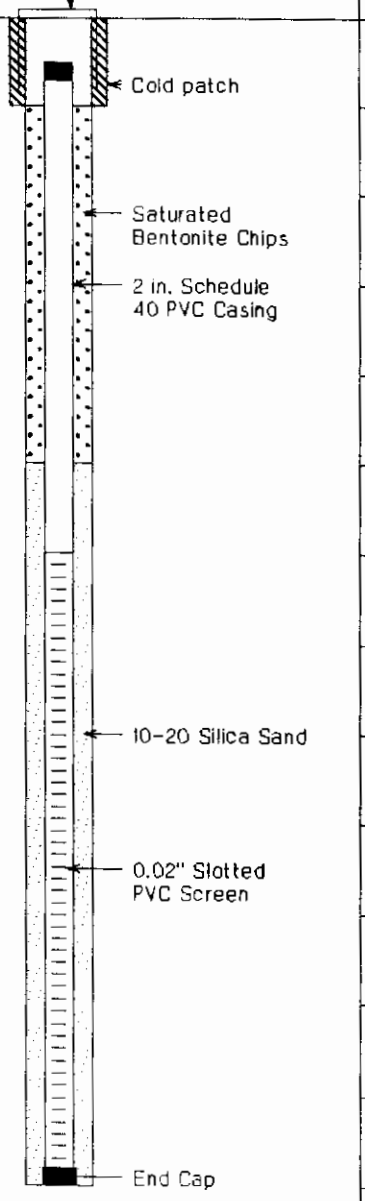


LOG OF MW-1

PROJECT	Student Transportation	DRILLING COMPANY	Discovery Drilling
LOCATION	Anchorage, Alaska	DATE DRILLED	April 2, 1998
JOB NUMBER	97007F	SURFACE ELEVATION	Unknown
ENGINEER	Janet Bartel	TOTAL DEPTH OF HOLE	13 Ft
DRILL RIG	CME-75 Hollow Stem Auger	DEPTH TO GROUNDWATER	10.5 Ft

GILFILIAN ENGINEERING &
ENVIRONMENTAL TESTING, INC.

LOG OF MW-2



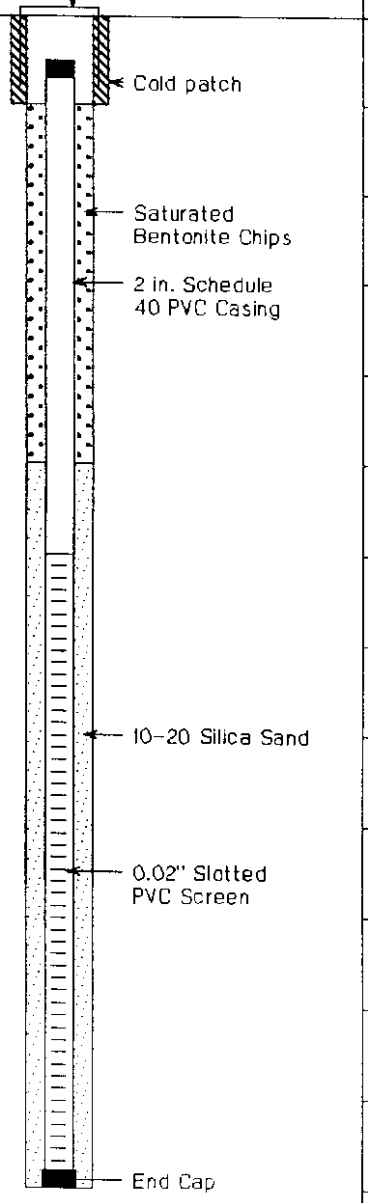
DEPTH (feet)	BLOWS/FT.	PID (ppm)	SAMPLE NUMBER	SAMPLES	GRAPHIC LOG	MATERIALS DESCRIPTION
						pavement
						Silty Sandy GRAVEL
5						Sandy GRAVEL dry
	15	0	4			
10	18	95	5			SILT
						Total Depth = 13 feet Ground water encountered at 9.5 feet
15						

LOG OF MW-2

PROJECT	Student Transportation	DRILLING COMPANY	Discovery Drilling
LOCATION	Anchorage, Alaska	DATE DRILLED	April 2, 1998
JOB NUMBER	97007F	SURFACE ELEVATION	Unknown
ENGINEER	Janet Bartel	TOTAL DEPTH OF HOLE	13 Ft
DRILL RIG	CME-75 Hollow Stem Auger	DEPTH TO GROUNDWATER	10 Ft

GILFILIAN ENGINEERING &
ENVIRONMENTAL TESTING, INC.

LOG OF MW-3



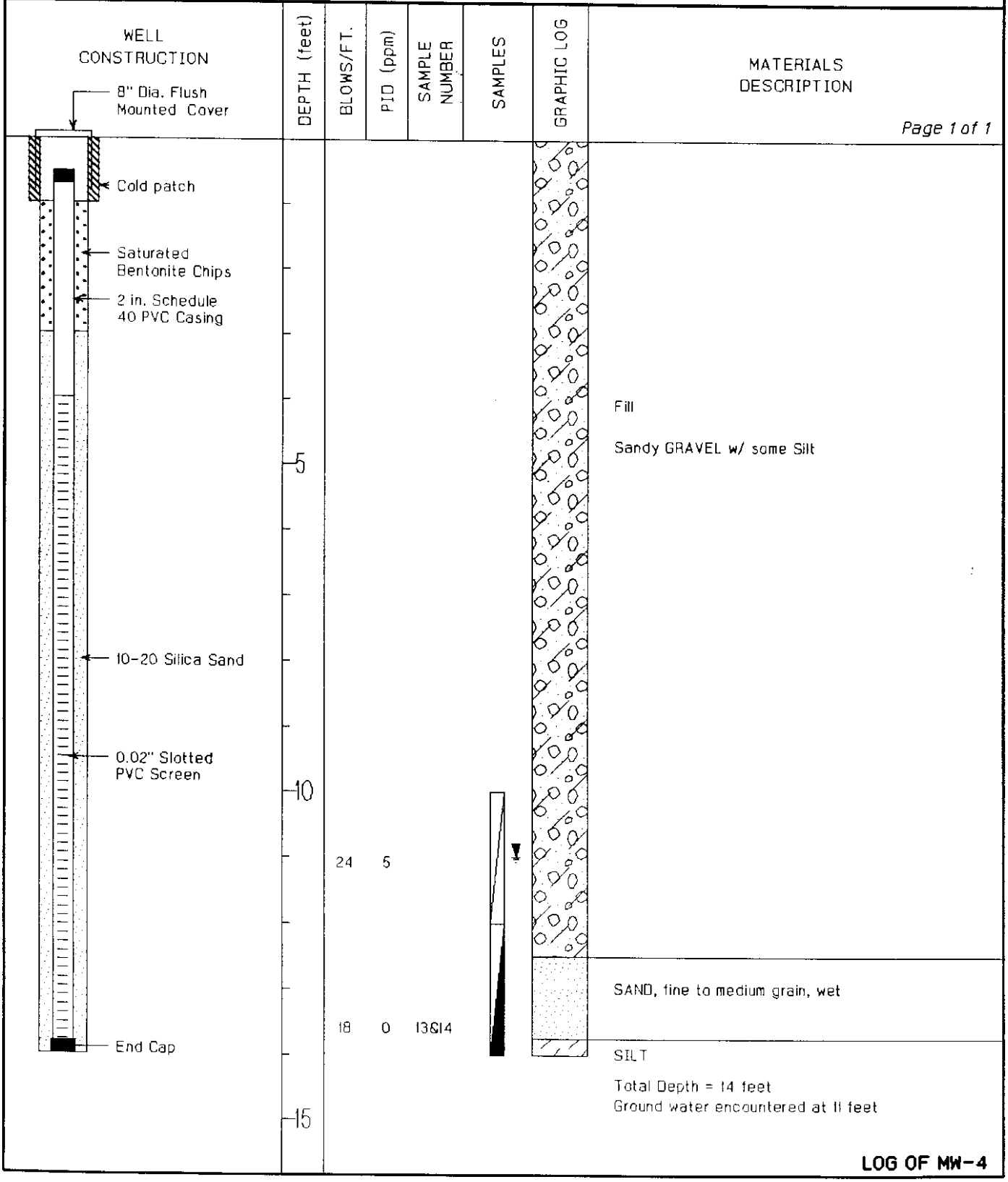
DEPTH (feet)	BLOWS/FT.	PID (ppm)	SAMPLE NUMBER	SAMPLES	GRAPHIC LOG	MATERIALS DESCRIPTION
						pavement
						Silty Sandy GRAVEL w/ cobbles
5	75	10	6			Sandy GRAVEL w/ cobbles dry, loose
		8	8			distinct line in soil at 8.75' marking start of contamination
	55	200	7			
10	13	50	9			SILT, stiff, gray
						Total Depth = 13 feet Ground water encountered at 11 feet
15						

LOG OF MW-3

PROJECT Student Transportation	DRILLING COMPANY Discovery Drilling
LOCATION Anchorage, Alaska	DATE DRILLED April 3, 1998
JOB NUMBER 97007F	SURFACE ELEVATION Unknown
ENGINEER Janet Bartel	TOTAL DEPTH OF HOLE 13 Ft
DRILL RIG CME-75 Hollow Stem Auger	DEPTH TO GROUNDWATER 11 Ft

GILFILIAN ENGINEERING &
ENVIRONMENTAL TESTING, INC.

LOG OF MW-4



LOG OF MW-4

PROJECT	Student Transportation	DRILLING COMPANY	Discovery Drilling
LOCATION	Anchorage, Alaska	DATE DRILLED	April 3, 1998
JOB NUMBER	97007F	SURFACE ELEVATION	Unknown
ENGINEER	Janet Bartel	TOTAL DEPTH OF HOLE	14 Ft
DRILL RIG	CME-75 Hollow Stem Auger	DEPTH TO GROUNDWATER	11 Ft

GILFILIAN ENGINEERING &
ENVIRONMENTAL TESTING, INC.

LOG OF B-1

WELL CONSTRUCTION	DEPTH (feet)	BLOWS/FT.	PID (ppm)	SAMPLE NUMBER	SAMPLES	GRAPHIC LOG	MATERIALS DESCRIPTION
							Page 1 of 1
							pavement
							Silty Sandy GRAVEL
	5						Sandy GRAVEL
		20	0	10			
							Sandy GRAVEL w/ trace Silt
		22	0	11			
	10						
		14	0	12			
							coarse SAND, wet
							Total Depth = 12 feet Ground water encountered at 11 feet
	15						

LOG OF B-1

PROJECT	Student Transportation	DRILLING COMPANY	Discovery Drilling
LOCATION	Anchorage, Alaska	DATE DRILLED	April 3, 1998
JOB NUMBER	97007F	SURFACE ELEVATION	Unknown
ENGINEER	Janet Bartel	TOTAL DEPTH OF HOLE	12 Ft
DRILL RIG	CME-75 Hollow Stem Auger	DEPTH TO GROUNDWATER	11 Ft

GILFILIAN ENGINEERING &
ENVIRONMENTAL TESTING, INC.

LOG OF B-2

WELL CONSTRUCTION	DEPTH (feet)	BLOWS/FT.	PID (ppm)	SAMPLE NUMBER	SAMPLES	GRAPHIC LOG	MATERIALS DESCRIPTION
							Page 1 of 1
							pavement
							Sandy GRAVEL
	5	29	98	15			
							SAND, fine to medium grain
							SAND layered w/ SILT, moist
		18	5	16			
	10						SAND, coarse grain, wet
		15	48	17			
							SAND, fine grain, wet
							Total Depth = 12 feet Ground water encountered at 10 feet
	15						

LOG OF B-2

PROJECT Student Transportation	DRILLING COMPANY Discovery Drilling
LOCATION Anchorage, Alaska	DATE DRILLED April 3, 1998
JOB NUMBER 97007F	SURFACE ELEVATION Unknown
ENGINEER Janet Bartel	TOTAL DEPTH OF HOLE 12 Ft
DRILL RIG CME-75 Hollow Stem Auger	DEPTH TO GROUNDWATER 10 Ft

APPENDIX C

Analytical Soil Results

Student Transportation
Analytical Soil Results
for
Soil Borings in the Vicinity of Former Gasoline & Diesel USTs #1, #2 and #4

Units: mg/kg
Sample collection date: April 2-3, 1998

Sample #	Boring	Depth (feet bgs)	DRO	GRO	Benzene	Toluene	Ethyl-benzene	Xylenes	PID
1	MW-1	9	2,100	2,700	5.6	93	20	620	200
2	MW-1	10.5	28	100	11	9.5	1.9	19	425
3	Duplicate of #2		12	210	11	16	3.4	44	425
4	MW-2	9	ND (10)	ND (5)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	0
5	MW-2	10	ND (10)	ND (5)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	95
6	MW-3	6	ND (10)	ND (5)	ND (0.05)	0.14	ND (0.05)	0.6	10
7	MW-3	9	1,900	7,100	14	370	260	1,300	200
8	MW-3	8	15	5	ND (0.05)	0.34	0.13	0.98	8
9	MW-3	11.5	ND (10)	ND (5)	ND (0.05)	ND (0.05)	ND (0.05)	0.11	50
Trip blank			NT	ND (5)	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	-
Category A Maximum Contaminant Level			100	50	0.1	NA	NA	NA	-

NA = Not Available
ND = Not detected above the maximum contaminant level indicated in parentheses
NT = Not tested for this analyte

Student Transportation
Analytical Soil Results
for
Soil Borings in the Vicinity of the Former Waste Oil UST

Units: mg/kg
Sample collection date: April 3, 1998

Sample #	Boring	Depth (feet bgs)	RRO	DRO	Arsenic	Cadmium	Chromium	Lead	PID
10	B-1	6.5	ND (100)	ND (10)	NT	NT	NT	NT	0
11	B-1	9	ND (100)	ND (10)	7	ND (1)	15	6	0
12	B-1	11	ND (100)	13	8	ND (1)	12	6	0
13	MW-1	13.5	ND (100)	36	2	ND (1)	18	5	0
14	Duplicate of #13		160	68	2	ND (1)	16	5	0
15	B-2	6.5	ND (100)	ND (10)	6	ND (1)	16	5	0
16	B-2	9.5	ND (100)	ND (10)	NT	NT	NT	NT	0
17	B-2	11	ND (100)	ND (10)	4	ND (1)	19	5	0
Category A Maximum Contaminant Level			2,000	100	NA	NA	NA	NA	-

NA = Not Available
ND = Not detected above the maximum contaminant level indicated in parentheses
NT = Not tested for this analyte

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Gilfilian Engineering & Environmental Testing Inc.	**Service Request No.:**	A9800141
Project:	Student Transportation	**Date Received:**	4/3/98
Sample Matrix:	Soil, water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for sample(s) designated for Tier I data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses.

All EPA recommended holding times have been met for analyses in this sample delivery group.

The following difficulties were experienced during analysis of this batch:

The surrogate recoveries for GRO/AK101 in samples 1,2,3 and 7 were outside normal CAS control limits because of matrix interference. The chromatogram showed components that prevented accurate quantitation of the surrogate. No further corrective action was taken.

The surrogate recoveries for BTEX EPA 8020 in samples 1, 3 and 7 were outside normal CAS control limits because of matrix interference. The chromatogram showed components that prevented accurate quantitation of the surrogate. No further corrective action was taken.

Approved by Ami Spilman **Date** 4/22/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/2/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Gasoline Range Organics (GRO)

Prep Method:	AK101PR	Units:	mg/Kg (ppm)
Analysis Method:	AK101.0	Basis:	Dry
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
1	A9800141-001	500	0.3	100	NA	4/8/98	2700	C
2	A9800141-002	25	0.3	5	NA	4/9/98	100	C
3	A9800141-003	50	0.3	10	NA	4/9/98	210	C
4	A9800141-004	5	0.3	1	NA	4/7/98	ND	
5	A9800141-005	5	0.3	1	NA	4/7/98	ND	
6	A9800141-006	5	0.3	1	NA	4/7/98	ND	
7	A9800141-007	1000	0.3	200	NA	4/8/98	7100	C
8	A9800141-008	5	0.3	1	NA	4/7/98	5	
9	A9800141-009	5	0.3	1	NA	4/7/98	ND	
Trip Blank	A9800141-018	5	0.3	1	NA	4/7/98	ND	
Method Blank	A980407-SB1	5	0.3	1	NA	4/7/98	ND	

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 04/22/98

1A/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/2/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	1	Units:	mg/Kg (ppm)
Lab Code:	A9800141-001	Basis:	Dry
Test Notes:	C		

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.5	0.01	10	NA	4/7/98	5.6	
Toluene	AK101PR	8020A	5	0.01	100	NA	4/8/98	93	
Ethylbenzene	AK101PR	8020A	0.5	0.01	10	NA	4/7/98	20	
Xylenes, Total	AK101PR	8020A	5	0.03	100	NA	4/8/98	620	

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/2/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	2	Units:	mg/Kg (ppm)
Lab Code:	A9800141-002	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.25	0.01	5	NA	4/9/98	11	C
Toluene	AK101PR	8020A	0.25	0.01	5	NA	4/9/98	9.5	C
Ethylbenzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	1.9	
Xylenes, Total	AK101PR	8020A	0.25	0.03	5	NA	4/9/98	19	C

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 4/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/2/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	3	Units:	mg/Kg (ppm)
Lab Code:	A9800141-003	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.5	0.01	10	NA	4/9/98	11	C
Toluene	AK101PR	8020A	0.5	0.01	10	NA	4/9/98	16	C
Ethylbenzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	3.4	
Xylenes, Total	AK101PR	8020A	0.5	0.03	10	NA	4/9/98	44	C

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/2/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	4	Units:	mg/Kg (ppm)
Lab Code:	A9800141-004	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Toluene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Ethylbenzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Xylenes, Total	AK101PR	8020A	0.05	0.03	1	NA	4/7/98	ND	

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/2/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	5	Units:	mg/Kg (ppm)
Lab Code:	A9800141-005	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Toluene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Ethylbenzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Xylenes, Total	AK101PR	8020A	0.05	0.03	1	NA	4/7/98	ND	

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	6	Units:	mg/Kg (ppm)
Lab Code:	A9800141-006	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Toluene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	0.14	
Ethylbenzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Xylenes, Total	AK101PR	8020A	0.05	0.03	1	NA	4/7/98	0.60	

Approved By: _____ Date: 04/22/98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	7	Units:	mg/Kg (ppm)
Lab Code:	A9800141-007	Basis:	Dry
Test Notes:	C		

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.5	0.01	10	NA	4/7/98	14	
Toluene	AK101PR	8020A	10	0.01	200	NA	4/8/98	370	
Ethylbenzene	AK101PR	8020A	10	0.01	200	NA	4/8/98	260	
Xylenes, Total	AK101PR	8020A	10	0.03	200	NA	4/8/98	1300	

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	8	Units:	mg/Kg (ppm)
Lab Code:	A9800141-008	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Toluene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	0.34	
Ethylbenzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	0.13	
Xylenes, Total	AK101PR	8020A	0.05	0.03	1	NA	4/7/98	0.98	

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	9	Units:	mg/Kg (ppm)
Lab Code:	A9800141-009	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Toluene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Ethylbenzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Xylenes, Total	AK101PR	8020A	0.05	0.03	1	NA	4/7/98	0.11	

Approved By: _____ Date: 4/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Aromatic Volatile Organics

Sample Name:	Trip Blank	Units:	ug/Kg (ppb)
Lab Code:	A9800141-018	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Toluene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Ethylbenzene	AK101PR	8020A	0.05	0.01	1	NA	4/7/98	ND	
Xylenes, Total	AK101PR	8020A	0.05	0.03	1	NA	4/7/98	ND	

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Aromatic Volatile Organics

Sample Name:	Method Blank	Units:	mg/Kg (ppm)
Lab Code:	A980407-SB1	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	0.05	0.01	1	NA	4/7/98	ND	
Toluene	EPA 5030A	8020A	0.05	0.01	1	NA	4/7/98	ND	
Ethylbenzene	EPA 5030A	8020A	0.05	0.01	1	NA	4/7/98	ND	
Xylenes, Total	EPA 5030A	8020A	0.05	0.03	1	NA	4/7/98	ND	

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Gilfilian Engineering & Environmental Testing, Inc.
Project: Student Transportation/97007F
Sample Matrix: Soil

Service Request: A9800141
Date Collected: 4/2/98
Date Received: 4/3/98

Diesel Range Organics (DRO)

Prep Method: EPA 3540
Analysis Method: AK102.0
Test Notes:

Units: mg/Kg
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
1	A9800141-001	100	5	10	4/7/98	4/10/98	2100	C,N
2	A9800141-002	10	5	1	4/7/98	4/9/98	28	N
3	A9800141-003	10	5	1	4/7/98	4/9/98	12	N
4	A9800141-004	10	5	1	4/7/98	4/9/98	ND	
5	A9800141-005	10	5	1	4/7/98	4/9/98	ND	
6	A9800141-006	10	5	1	4/7/98	4/9/98	ND	
7	A9800141-007	100	5	10	4/7/98	4/10/98	1900	C,N
8	A9800141-008	10	5	1	4/7/98	4/10/98	15	
9	A9800141-009	10	5	1	4/7/98	4/10/98	ND	
10	A9800141-010	10	5	1	4/7/98	4/10/98	ND	
11	A9800141-011	10	5	1	4/7/98	4/10/98	ND	
12	A9800141-012	10	5	1	4/7/98	4/10/98	13	
13	A9800141-013	10	5	1	4/7/98	4/10/98	36	
14	A9800141-014	10	5	1	4/7/98	4/10/98	68	
15	A9800141-015	10	5	1	4/7/98	4/10/98	ND	
16	A9800141-016	10	5	1	4/7/98	4/10/98	ND	
17	A9800141-017	10	5	1	4/7/98	4/10/98	ND	
Method Blank	A980407-SB1	10	5	1	4/7/98	4/9/98	ND	

C The MRL is elevated because the sample required diluting.

N Quantitated as diesel. The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint.

Approved By: _____ Date: 4/21/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Residual Range Organics (RRO)

Prep Method:	EPA 3540	Units:	mg/Kg
Analysis Method:	AK103.0	Basis:	Dry
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
10	A9800141-010	100	50	1	4/7/98	4/10/98	ND	
11	A9800141-011	100	50	1	4/7/98	4/10/98	ND	
12	A9800141-012	100	50	1	4/7/98	4/10/98	ND	
13	A9800141-013	100	50	1	4/7/98	4/10/98	ND	
14	A9800141-014	100	50	1	4/7/98	4/10/98	160	
15	A9800141-015	100	50	1	4/7/98	4/10/98	ND	
16	A9800141-016	100	50	1	4/7/98	4/10/98	ND	
17	A9800141-017	100	50	1	4/7/98	4/10/98	ND	
Method Blank	A980407-SB1	100	50	1	4/7/98	4/9/98	ND	

Approved By: K Date: 4/n/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/ 97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Total Metals

Sample Name:	11	Units:	mg/Kg (ppm)
Lab Code:	A9800141-011	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic	EPA 3050A	7060	1	0.2	1	4/8/98	4/8/98	7	
Cadmium	EPA 3050A	6010A	1	0.4	1	4/8/98	4/8/98	ND	
Chromium	EPA 3050A	6010A	2	0.6	1	4/8/98	4/8/98	15	
Lead	EPA 3050A	7421	1	0.2	1	4/8/98	4/8/98	6	

Approved By: KDT Date: 4.10.98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/ 97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Total Metals

Sample Name:	12	Units:	mg/Kg (ppm)
Lab Code:	A9800141-012	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic	EPA 3050A	7060	1	0.2	1	4/8/98	4/8/98	8	
Cadmium	EPA 3050A	6010A	1	0.4	1	4/8/98	4/8/98	ND	
Chromium	EPA 3050A	6010A	2	0.6	1	4/8/98	4/8/98	12	
Lead	EPA 3050A	7421	1	0.2	1	4/8/98	4/8/98	6	

Approved By: KOT Date: 4.10.98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/ 97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Total Metals

Sample Name:	13	Units:	mg/Kg (ppm)
Lab Code:	A9800141-013	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic	EPA 3050A	7060	1	0.2	1	4/8/98	4/8/98	2	
Cadmium	EPA 3050A	6010A	1	0.4	1	4/8/98	4/8/98	ND	
Chromium	EPA 3050A	6010A	2	0.6	1	4/8/98	4/8/98	18	
Lead	EPA 3050A	7421	1	0.2	1	4/8/98	4/8/98	5	

Approved By: KDT Date: 4.10.98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/ 97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Total Metals

Sample Name:	14	Units:	mg/Kg (ppm)
Lab Code:	A9800141-014	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic	EPA 3050A	7060	1	0.2	1	4/8/98	4/8/98	2	
Cadmium	EPA 3050A	6010A	1	0.4	1	4/8/98	4/8/98	ND	
Chromium	EPA 3050A	6010A	2	0.6	1	4/8/98	4/8/98	16	
Lead	EPA 3050A	7421	1	0.2	1	4/8/98	4/8/98	5	

Approved By: KOT Date: 4·10·98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/ 97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Total Metals

Sample Name:	15	Units:	mg/Kg (ppm)
Lab Code:	A9800141-015	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic	EPA 3050A	7060	1	0.2	1	4/8/98	4/8/98	6	
Cadmium	EPA 3050A	6010A	1	0.4	1	4/8/98	4/8/98	ND	
Chromium	EPA 3050A	6010A	2	0.6	1	4/8/98	4/8/98	16	
Lead	EPA 3050A	7421	1	0.2	1	4/8/98	4/8/98	5	

Approved By: KDT Date: 4·10·98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/ 97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Total Metals

Sample Name:	17	Units:	mg/Kg (ppm)
Lab Code:	A9800141-017	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic	EPA 3050A	7060	1	0.2	1	4/8/98	4/8/98	4	
Cadmium	EPA 3050A	6010A	1	0.4	1	4/8/98	4/8/98	ND	
Chromium	EPA 3050A	6010A	2	0.6	1	4/8/98	4/8/98	19	
Lead	EPA 3050A	7421	1	0.2	1	4/8/98	4/8/98	5	

Approved By: KOT Date: 4·10·98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/ 97007F	**Date Collected:**	4/3/98
Sample Matrix:	Soil	**Date Received:**	4/3/98

Total Metals

Sample Name:	Method Blank	Units:	mg/Kg (ppm)
Lab Code:	A980408-SB1	Basis:	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic	EPA 3050A	7060	1	0.2	1	4/8/98	4/8/98	ND	
Cadmium	EPA 3050A	6010A	1	0.4	1	4/8/98	4/8/98	ND	
Chromium	EPA 3050A	6010A	2	0.6	1	4/8/98	4/8/98	ND	
Lead	EPA 3050A	7421	1	0.2	1	4/8/98	4/8/98	ND	

Approved By: KDT Date: 4·10·98

1S44/042895
001411CP.DG1 - mb1 4/9/98

AT 8000.11

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

Analytical Services Inc. 4710 Business Park Blvd., SUITE 24 • Anchorage, AK 99503 • (907) 563-0846 • FAX (907) 563-2973

DATE _____ PAGE _____ OF _____

PROJECT NAME Student Transportation 97007F

PROJECT MGR. Janet Bartel / Julia Flodin

COMPANY/ADDRESS GE²T ASD

2605 Denali St

Anchorage PHONE 277-2021

FAX 274-8683

SAMPLERS SIGNATURE Janet Bartel

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUESTED: AK101: GRO BTEX ✓	DRO/8100M ☐ DRO/AK102 ✓	RRO/8100M ☐ RRO/AK103 ☐	TCLP Metals ☐	Semi Pest/ VOA ☐ VOA ☐ Herb ☐	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3, (circle)	NH_3-N, COD, Total-P, TKN, TOC Cyanide (circle)	Metals (total or dissolved) List Below	REMARKS
1	4/2/98	15:30		soil	2	✓	✓							
2	"	15:45				✓	✓							
3	"	15:55				✓	✓							
4	"	16:50				✓	✓							
5	"	17:00				✓	✓							
6	4/3/98	9:30				✓	✓							
7	"	9:40				✓	✓							
8	"	9:45				✓	✓							
9	"	9:55				✓	✓							

RELINQUISHED BY:
Signature: Janet Bartel/GMD
Printed Name: Janet Bartel GDubois
Firm: GE²T
Date/Time: 15:45 4/3/98

RECEIVED BY:
Signature: Sherry Long
Printed Name: Sherry Long
Firm: CAS/AK
Date/Time: 15:45 4/3/98

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

TURNAROUND REQUIREMENTS
___ 1 day ___ 2 day ___ 5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date _____

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP.MAS. MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report
___ ADEC Deliverables
___ ACOE Deliverables

INVOICE INFORMATION:
P.O.# _____
Bill To _____

SAMPLE RECEIPT:
Temp: 3.2 °C
Airbill #: _____
Shipping VIA: _____
Shipping to: _____
Condition: _____
COC Seals: _____
Lab No: _____

SPECIAL INSTRUCTIONS/COMMENTS:

Anchorage School District Project

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-5

Analytical Services inc. 4600 Business Park Blvd., SUITE 32 • Anchorage, AK 99503 • (907) 563-0846 • FAX (907) 563-2973

11180U171

CHAIN OF CUSTODY/LABORATORY ANALYSIS REPORT FORM

DATE _____ PAGE _____ OF _____

000044

PROJECT NAME Student Transportation # 97007F

PROJECT MGR. Janet Bartel / Julia Flodin

COMPANY/ADDRESS GE²T ASD

2605 Denali St

Anchorage PHONE 277-2021

FAX _____

SAMPLERS SIGNATURE Janet Bartel

L81000

	SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 ☐ 602/8020 ☐	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA 418.1	TPH/Gas/BTEX 5030/8015/8020 Gas ☐ BTEX ☐	TPH/8015 Modified Hydrocarbon Scan	DRO/8100M ☐ RRO/8100M ☐	TCLP Metals ☐ VOA ☐ Semi Pest/ VOA ☐ Herb ☐	Metals (total or dissolved) List Below	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, TOC Cyanide (circle)	DRO (AK102) / RRO (AK103)	Metals - As, Cd, Cr, Pb	AK 101 GRO/BTEX	REMARKS
10	10	4/3/98	10:50		soil	1													✓				
11	11		11:00			1													✓	✓			
12	12		11:10			1													✓	✓			
13	13		11:40			1													✓	✓			
14	14		11:50			1													✓	✓			
15	15		12:30			1													✓	✓			
16	16		12:40			1													✓				
17	17		12:50			1													✓	✓			
18	trip blank	4/3/98			soil	1															✓		
																				Pull out of AK102 Jan			

RELINQUISHED BY:

Signature Janet Bartel GM Publication

Printed Name Janet Bartel

Firm GE²T

Date/Time 4/3/98 15:45

RECEIVED BY:

Signature Sherry Long

Printed Name Sherry Long

Firm CAS/AK

Date/Time 4/3/98 15:45

RELINQUISHED BY:

Signature

Printed Name

Firm

Date/Time

RECEIVED BY:

Signature

Printed Name

Firm

Date/Time

TURNAROUND REQUIREMENTS

___ 24 hr ___ 48 hr. ___ 3-5 day

___ Standard (10-15 working days)

___ Provide Verbal Preliminary *Results*

___ Provide FAX preliminary Results

Requested Report Date _____

REPORT REQUIREMENTS

___ I. Routine Report

___ II. Report (includes DUP.MAS. MSD, as required, may be charged as samples)

___ III. Data Validation Report (includes All Raw Data)

___ IV. CLP Deliverable Report

___ ADEC Deliverables

___ ACOE Deliverables

INVOICE INFORMATION:

P.O.# _____

Bill To _____

SAMPLE RECEIPT:

Temp: 3.2°C

Airbill #: _____

Shipping VIA: _____

Shipping to: _____

Condition: _____

COC Seals: _____

Lab No: _____

SPECIAL INSTRUCTIONS/COMMENTS:

Anchorage School District Program

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-5

APPENDIX D

Analytical Water Results

Student Transportation
Analytical Ground Water Results

Units: µg/l
Sample collection date: April 3, 1998

Well	Benzene	Toluene	Ethyl-benzene	Xylenes	GRO	DRO	RRO
MW-1	43,000	9,900	170	3,400	140,000	3,310	NT
MW-2	ND (1)	2	ND (1)	3	74	315	NT
MW-3	940	32,000	3,800	19,000	130,000	6,200	NT
MW-4	9	2	ND (1)	3	96	26,000	35,000
MCL	5	1,000	700	10,000	NA	NA	NA

NA = Not Available
ND = Not detected above the maximum contaminant level indicated in parentheses
NT = Not tested for this analyte
MCL = Maximum Contaminant Level based on Drinking Water standards; 18 AAC 80.070

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Water	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	MW-1	Units:	ug/L (ppb)
Lab Code:	A9800141-019	Basis:	NA
Test Notes:	C		

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	200	0.2	200	NA	4/15/98	43000	
Toluene	EPA 5030A	8020A	200	0.2	200	NA	4/15/98	9900	
Ethylbenzene	EPA 5030A	8020A	50	0.2	50	NA	4/9/98	170	
Xylenes, Total	EPA 5030A	8020A	50	0.2	50	NA	4/9/98	3400	

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Water	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	MW-2	Units:	ug/L (ppb)
Lab Code:	A9800141-020	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	ND	
Toluene	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	2	
Ethylbenzene	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	ND	
Xylenes, Total	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	3	

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Water	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	MW-3	Units:	ug/L (ppb)
Lab Code:	A9800141-021	Basis:	NA
Test Notes:	C		

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	100	0.2	100	NA	4/9/98	940	
Toluene	EPA 5030A	8020A	200	0.2	200	NA	4/10/98	32000	
Ethylbenzene	EPA 5030A	8020A	100	0.2	100	NA	4/9/98	3800	
Xylenes, Total	EPA 5030A	8020A	100	0.2	100	NA	4/9/98	19000	

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 04/22/98

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Water	**Date Received:**	4/3/98

Aromatic Volatile Organics

Sample Name:	MW-4	Units:	ug/L (ppb)
Lab Code:	A9800141-022	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	9	
Toluene	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	2	
Ethylbenzene	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	ND	
Xylenes, Total	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	3	

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Aromatic Volatile Organics

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	A980409-WB1	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	ND	
Toluene	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	ND	
Ethylbenzene	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	ND	
Xylenes, Total	EPA 5030A	8020A	1	0.2	1	NA	4/9/98	ND	

Approved By: _____ Date: 04/22/98

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Water	**Date Received:**	4/3/98

Gasoline Range Organics (GRO)

Prep Method:	EPA 5030A	Units:	ug/L (ppb)
Analysis Method:	AK101	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
MW-1	A9800141-019	5000	5	100	NA	4/10/98	140000	C
MW-2	A9800141-020	50	5	1	NA	4/9/98	74	
MW-3	A9800141-021	5000	5	100	NA	4/9/98	130000	C
MW-4	A9800141-022	50	5	1	NA	4/9/98	96	
Method Blank	A980409-WB1	50	5	1	NA	4/9/98	ND	

C The MRL is elevated because the sample required diluting.

Approved By: _____ Date: 04/22/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Gilfilian Engineering & Environmental Testing, Inc.	**Service Request:**	A9800141
Project:	Student Transportation/97007F	**Date Collected:**	4/3/98
Sample Matrix:	Water	**Date Received:**	4/3/98

Diesel Range Organics (DRO)

Prep Method:	EPA 3510	Units:	ug/L (ppb)
Analysis Method:	AK102.0	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
MW-1	A9800141-019	100	50	1	4/6/98	4/8/98	3310	N
MW-2	A9800141-020	100	50	1	4/6/98	4/8/98	315	N
MW-3	A9800141-021	100	50	1	4/6/98	4/8/98	6200	N
MW-4	A9800141-022	500	50	5	4/6/98	4/8/98	26000	C,O
Method Blank	A980406-WB1	100	50	1	4/6/98	4/7/98	ND	

C	The MRL is elevated because the sample required diluting.
N	Quantitated as diesel. The sample contained components that eluted in the diesel range, but the chromatogram did not match the typical diesel fingerprint.
O	Quantitated as diesel. The sample contained a oil component that partially eluted in the diesel range.

Approved By: _____ Date: 4/13/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Gilfilian Engineering & Environmental Testing, Inc.
Project: Student Transportation/97007F
Sample Matrix: Water

Service Request: A9800141
Date Collected: 4/3/98
Date Received: 4/3/98

Residual Range Organics (RRO)

Prep Method: EPA 3510
Analysis Method: AK103.0
Test Notes:

Units: ug/L (ppb)
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
MW-4	A9800141-022	5000	500	5	4/6/98	4/8/98	35000	C
Method Blank	A980406-WB1	1000	500	1	4/6/98	4/7/98	ND	

C The MRL is elevated because the sample required diluting.

Approved By: Amy Gray Date: 04-09-98

1A/020597p

00141PHC.WD2 - Sample 4/8/98

...ATORY ANALYSIS REPORT FOR[M]

...Business Park Blvd., SUITE 32 • Anchorage, AK 99503 • (907) 563-0846 • FAX (907) 563-2973

DATE ______ PAGE ______ OF ______

80 1000 000045

PROJECT NAME Student Transportation

PROJECT MGR. Janet Bartel / Julia Plodin

COMPANY/ADDRESS GE²T

PHONE 277-2021

FAX

SAMPLERS SIGNATURE Janet Bartel

ANALYSIS REQUESTED

	SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX	NUMBER OF CONTAINERS	Base/Neu/Acid Organics GC/MS 625/8270	Volatile Organics GC/MS 624/8240	Halogenated or Aromatic Volatiles 601/8010 □ 602/8020 □	Pesticides/PCBs 608/8080	Total Petroleum Hydrocarbons EPA 418.1	TPH/Gas/BTEX 5030/8015/8020 Gas □ BTEX □	TPH/8015 Modified Hydrocarbon Scan	DRO/8100M □ RRO/8100M □	TCLP Metals □ VOA □ Semi VOA □ Pest/Herb □	Metals (total or dissolved) List Below	pH, Cond, Cl, SO_4, PO_4, F, Br NO_2, NO_3 (circle)	NH_3-N, COD, Total-P, TKN, TOC Cyanide (circle)	GRO/BTEX (AK 101)	DRO (AK 102)	DRO/RRO (AK 102/103)			REMARKS
19	MW-1	4/3/98	1415		water	3													✓	✓				
20	MW-2	↓	1410		↓	3													✓	✓				
21	MW-3	↓	1425		↓	3													✓	✓				
22	MW-4	↓	1410		↓	3													✓		✓			

RELINQUISHED BY: Janet Bartel
Signature
Janet Bartel
Printed Name
GE²T
Firm
4/3/98 15:45
Date/Time

RECEIVED BY: Sherry Long
Signature
Sherry Long
Printed Name
CAS/AK
Firm
4/3/98 15:45
Date/Time

TURNAROUND REQUIREMENTS
___ 24 hr ___ 48 hr. ___ 3-5 day
___ Standard (10-15 working days)
___ Provide Verbal Preliminary Results
___ Provide FAX preliminary Results
Requested Report Date ______

REPORT REQUIREMENTS
___ I. Routine Report
___ II. Report (includes DUP, MAS, MSD, as required, may be charged as samples)
___ III. Data Validation Report (includes All Raw Data)
___ IV. CLP Deliverable Report
___ ADEC Deliverables
___ ACOE Deliverables

INVOICE INFORMATION:
P.O.# ______
Bill To ______

SAMPLE RECEIPT:
Temp: 3.2°C
Airbill #: ______
Shipping VIA: ______
Shipping to: ______
Condition: ______
COC Seals: ______
Lab No: ______

RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

RECEIVED BY:
Signature
Printed Name
Firm
Date/Time

SPECIAL INSTRUCTIONS/COMMENTS:
Anchorage School District Program

DISTRIBUTION: WHITE - return to originator; YELLOW - lab; PINK - retained by originator

400-5

STATE OF ALASKA

000199

TONY KNOWLES, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

Division of Spill Prevention & Response
Storage Tank Program
555 Cordova Street
Anchorage, Alaska 99501

Telephone: (907) 269-7504
Fax: (907) 269-7507

July 3 1, 1998

Mrs. Julia Redington
Project Manager
Anchorage School District
1301 Labar Street
Anchorage, Alaska 99507

Subject: **Review of Release Investigation Report for Student Transportation**
3580 Tudor Road, Anchorage
File #L68.27 Reckey #98 210005701 Facility ID #3089

Dear Mrs. Redington; Julia

On May 11, 1998, the Department of Environmental Conservation (Department) received your report of findings from the Student Transportation center release investigations. The Department agrees with the conclusions of your consultant, Janet Bartel of GEETI, that corrective action is necessary due to the elevated levels of hydrocarbons in the soil and groundwater.

Please prepare a corrective action plan for this site and submit it to the Department for review and approval prior to implementation. If you have any questions or comments, please do not hesitate to contact me.

Respectfully yours,

Lynne R. Bush
Project Manager
Storage Tank Program

LRB/lrb/stdntcap

cc: Janet Bartel, GEETI

000200
98.27

Gilfilian Engineering & Environmental Testing, Inc.

2605 Denali St., Suite 203
Anchorage, Alaska 99503-2749
(907) 277-2021
Fax: (907) 274-8683

FAX TRANSMITTAL COVER SHEET

Date: August 10,1998

To: Lynne Bush. Project Manager Storage Tank Program

Fax: (907) 269-7507 ***Phone:*** (907) 269-7526

Re: Student Transportation Work Plan

Sender: C. Peter Curtis

YOU SHOULD RECEIVE 8 PAGE(S), INCLUDING THIS COVER SHEET. IF YOU DO NOT RECEIVE ALL THE PAGES, OR IF YOU RECEIVED THIS FAX IN ERROR, PLEASE CALL (907) 277-2021.

Message:

Attached is the request for approval to continue our investigation of the existing fuel dispensing system at the ASD Student Transportation facilities. Include is a request to direct haul all contaminated soil from this site. This is the week that is schedule to begin this work as shown on the attached Notification of Closure and I will be involved in a pre-construction meeting early this PM. I would like to have some type of written or verbal understanding from ADEC soon.

Original document to follow: ☐ Mail ☐ Hand delivery ☐ Other

X No document to follow.

☐ CONFIDENTIAL

000201

COPY

GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.

Professional Environmental Consultants

2605 Denali Street, Suite 203 • Anchorage, Alaska 99503-2749
Tel: (907) 277-2021 • Fax: (907) 274-8683 • E-mail: ge2t@alaska.net

July 28, 1998

Lynne Bush
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, Alaska 99501

RE: Workplan for UST Piping Removal and Contaminated Soil Excavation
Anchorage School District Student Transportation
3580 Tudor Road
ADEC facility #3089
GE^{2}T Project #97007

Dear Ms. Bush:

On behalf of the Anchorage School District (ASD), Gilfilian Engineering & Environmental Testing, Inc. (GE^{2}T) is requesting the Department's approval to conduct the following work at the ASD Student Transportation Facility:

- Remove all piping and dispensers associated with the former USTs (Closure Notice attached);
- Excavate gasoline and diesel contaminated soil from beneath former USTs #1, #2 and #4;
- Excavate waste oil contaminated soil from beneath former UST #5;
- Haul excavated, contaminated soil to Alaska Soil Recycling for thermal treatment.

Background

The Student Transportation Facility's five USTs were removed from the ground in December 1997. Soil contamination was found and left in place beneath four of them, USTs #1, #2, #4 and #5 (see attached maps for soil sample locations and results). The ADEC matrix score indicates that Category A cleanup levels need to be met for Method 1 site cleanup. A UST site assessment report, dated February 26, 1998, was previously submitted to ADEC.

Six soil borings were drilled April 2-3, 1998, as part of a follow-up release investigation. Four of these were completed as monitoring wells. Soil contamination was found in the smear zone surrounding USTs #1, #2 and #4. Ground water was encountered at approximately 11 feet below grade and was determined to flow in a northwesterly direction. The ground water has been impacted by leaks from the USTs.

Workplan

All piping, dispensers and the associated, interior waste oil sump are tentatively scheduled to be removed starting August 12, 1998. Contractor bids are currently being solicited for the work outlined above. Bids are due July 30, 1998. We will notify ADEC of the contractor to be used and any changes in the start date prior to initiating site work.

At the time that equipment is on site for removal of the piping and dispensers, contaminated soil left in place beneath the USTs will be excavated. The goal is to remove all contaminated soil to the extent practical, without encroaching into the supporting soils of the adjacent building foundation.

GE^2T is requesting the Department's approval to excavate and directly haul contaminated soil from this site to Alaska Soil Recycling (ASR). We estimate that a total of 650 cubic yards of contaminated soil may be excavated, separated and transported for treatment under this workplan. ADEC will be notified of the actual tonnage hauled for treatment to the ASR facility in a follow-up report. Direct hauling of the contaminated soil will lessen the chance of contaminated soil or vapor emissions coming into contact with the public.

During excavation, soils will be screened on site using a calibrated PID. When field screening indicates that contamination has been completely removed, confirmation soil samples will be collected and submitted for analytical testing for the following parameters:

Soil in the vicinity of gasoline and diesel USTs #1, #2 and #4:

- Diesel Range Organics (DRO) by method AK 102;
- Gasoline Range Organics (GRO) by method AK 101;
- Benzene, Toluene, Ethylbenzene & Xylene (BTEX) by EPA method 8020;

Soil in the vicinity of waste oil UST #5:

- Diesel Range Organics (DRO) by method AK 102;
- Gasoline Range Organics (GRO) by method AK 101;
- Benzene, Toluene, Ethylbenzene & Xylene (BTEX) by EPA method 8020;
- Residual Range Organics (RRO) by method AK 103;
- Arsenic, Cadmium, Chromium and Lead.

No halogenated volatile organics or PCBs were detected in samples previously collected beneath UST #5.

One sample will be collected beneath each dispenser. In each pit area, at least two samples will be collected from the base of the excavation or from the sides at the ground water interface. If an individual pit area exceeds 250 ft^2, one additional sample will be collected for each additional 250 ft^2 of pit area. One duplicate sample for every 10 soil samples will also be collected for laboratory analyses. Sample collection procedures will follow the September 22, 1995 UST Procedures Manual.

Summary

Your review of this workplan is appreciated. If you have any questions or need additional information, please feel free to contact me at 277-2021.

Sincerely,

Janet Bartel

Janet Bartel P.E.
Environmental Engineer

c: Julia Redington, Anchorage School District

Attachments: ADEC Closure Notice
Site Map
UST #1, #2 and #4 Previous Sample Locations and Results
UST #5 Previous Sample Locations and Results

000204

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NOTIFICATION OF CLOSURE UNDERGROUND STORAGE TANKS

STORAGE TANK PROGRAM

Notice of Closure is required for any tank and/or piping removed, closed in-ground, or changed in service. See 18 AAC 78.085 (a). "Change in service" means to change the use of a UST from containing a regulated substance to a non-regulated substance (such as heating oil).

Facility - Location (Do not use P.O. Box)

Name: Student Transportation
Address: 3580 E. Tudor Road
City: Anchorage
State/Zip: Alaska

Tank Owner

Name: Anchorage School District
Address: 1301 Labar Street
City: Anchorage
State/Zip: Alaska 99515

Facility ID Number: 3089

Scheduled Date for Closure: August 12, 1998

***(Minimum 3-day notice will be submitted by GE²T when Contractor sets closure date.)**

This form MUST be completed and sent to ADEC at the address listed below at least 15 and no more than 60 days prior to closure.

Alaska Statute 46.03.375 requires those who supervise an UST closure be certified by the State of Alaska for Decommissioning.

A UST with a confirmed release must be permanently removed from the ground. In-place closure or change in service is not allowed.

A Site Assessment or Release Investigation in accordance with 18 AAC 78.090 must be performed at time of closure by an impartial third party using "Qualified" persons under a Standard Sampling Procedures Manual (SSPM).

Person to Perform Closure: Contractor to be determined — UST Worker License #: _____

Person and Company to Perform Site Assessment or Release Investigation: Steve Rebillard, GE²T

Is the Person "Qualified" and on file with ADEC? Yes

Method of Closure:
- Removal: X
- In-ground: _____ (If so, See Discussion on Reverse Side)
- Change in Service: _____ (If so, what is new fuel usage? _____)

Is there a leak/spill at this site? Yes (if so, please notify the closest ADEC office)

Have you contacted the local fire department of your intent to close the tank(s)? Contractor will contact

Where are the tank, piping, equipment, and sludge to be disposed? Contractor is responsible for proper disposal of these items.

Closure for (please check): [ ] **Tanks and Piping** [ ] **Tanks only** [X] **Piping Only**

Tank Number	Tank Age	Tank Size	Last Product Stored	Date Last Used
1	Unknown	15,000	Diesel (formerly gasoline)	10/13/97
2	Unknown	10,000	Gasoline	10/13/97
3	Unknown	4,000	Gasoline	12/22/97
5	Unknown	1,000	Waste Oil	10/10/97

Closure Notice Submitted By: [ ] **Owner** [ ] **Operator** [X] **Other** Owner's Consultant

J. Steve Rebillard — Environmental Geologist
(Please print name) *(Title)*

J. Steve Rebillard — July 28, 1998
(Signature) *(Date)*

Return Completed Form to: ADEC, Storage Tank Program
555 Cordova Street
Anchorage, AK 99501
FAX # (907) 269-7507

18-0504 (Rev. 11/95)

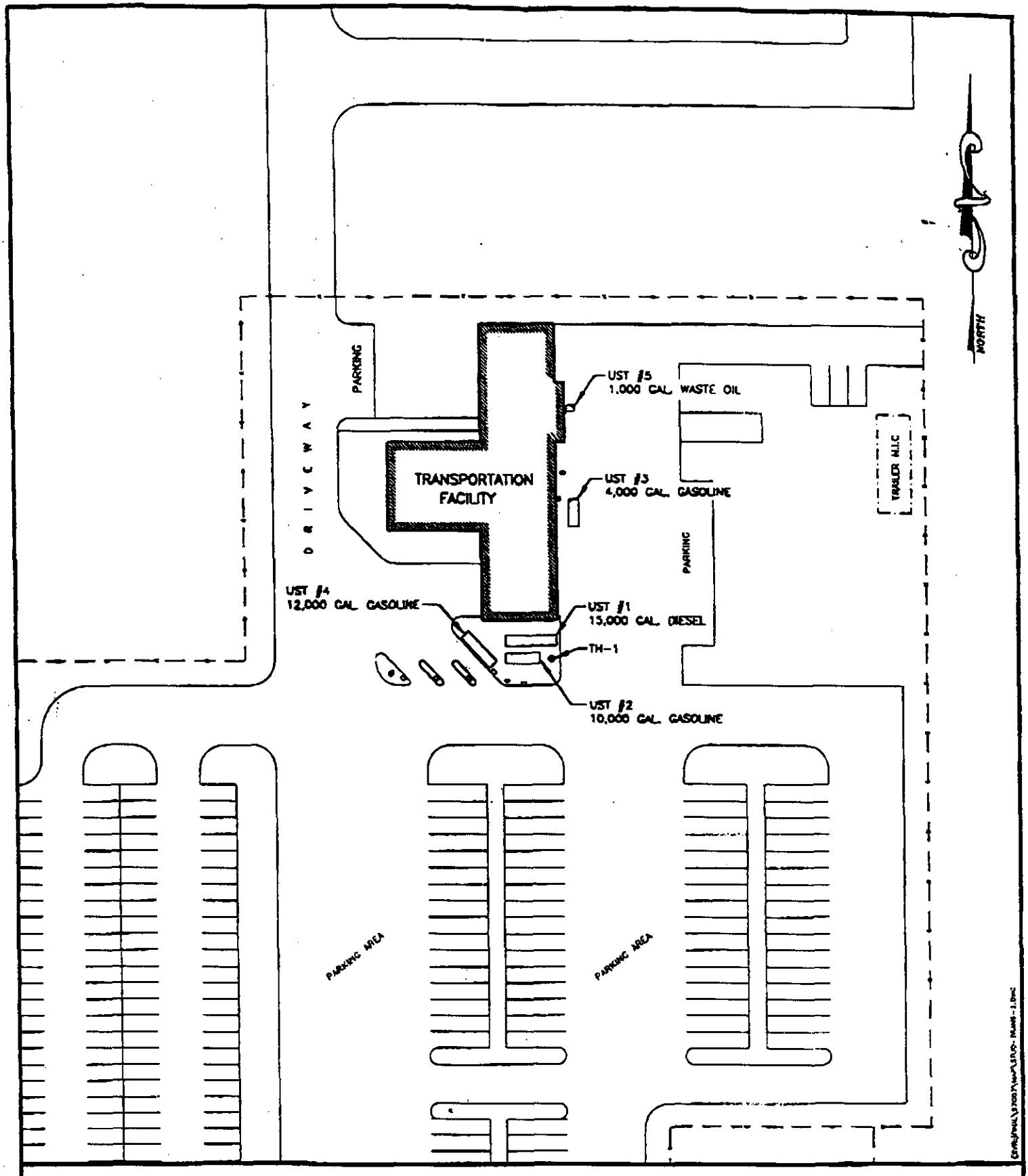
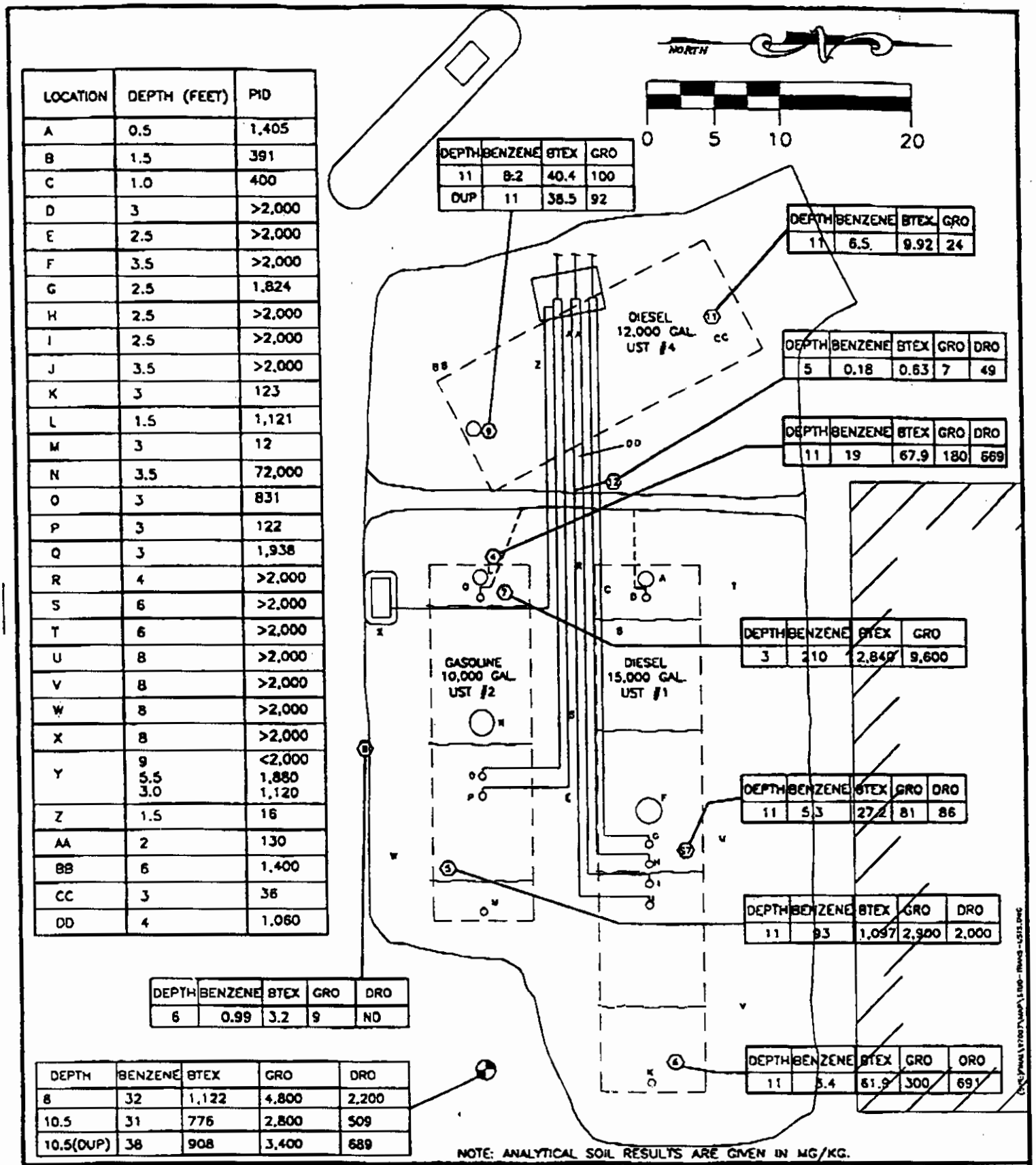


FIGURE 1 SITE MAP

GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.
2505 Denali St. Suite 203 Anchorage Alaska 99503-2749

SCALE: 1"= 80'
DATE: 02/24/98

LOCATION	DEPTH (FEET)	PID
A	0.5	1,405
B	1.5	391
C	1.0	400
D	3	>2,000
E	2.5	>2,000
F	3.5	>2,000
G	2.5	1,824
H	2.5	>2,000
I	2.5	>2,000
J	3.5	>2,000
K	3	123
L	1.5	1,121
M	3	12
N	3.5	72,000
O	3	831
P	3	122
Q	3	1,938
R	4	>2,000
S	6	>2,000
T	6	>2,000
U	8	>2,000
V	8	>2,000
W	8	>2,000
X	8	>2,000
Y	9 5.5 3.0	<2,000 1,880 1,120
Z	1.5	16
AA	2	130
BB	6	1,400
CC	3	36
DD	4	1,060



DEPTH	BENZENE	BTEX	GRO
11	8.2	40.4	100
DUP	11	38.5	92

DEPTH	BENZENE	BTEX	GRO
11	6.5	9.92	24

DEPTH	BENZENE	BTEX	GRO	DRO
5	0.18	0.63	7	49

DEPTH	BENZENE	BTEX	GRO	DRO
11	19	67.9	180	569

DEPTH	BENZENE	BTEX	GRO
3	210	2,840	9,600

DEPTH	BENZENE	BTEX	GRO	DRO
11	5.3	27.2	81	86

DEPTH	BENZENE	BTEX	GRO	DRO
11	93	1,097	2,900	2,000

DEPTH	BENZENE	BTEX	GRO	DRO
11	5.4	61.9	300	691

DEPTH	BENZENE	BTEX	GRO	DRO
6	0.99	3.2	9	ND

DEPTH	BENZENE	BTEX	GRO	DRO
8	32	1,122	4,800	2,200
10.5	31	776	2,800	509
10.5(DUP)	38	908	3,400	689

NOTE: ANALYTICAL SOIL RESULTS ARE GIVEN IN MG/KG.

FIGURE II UST # 1, 2, and 4 SAMPLE LOCATIONS

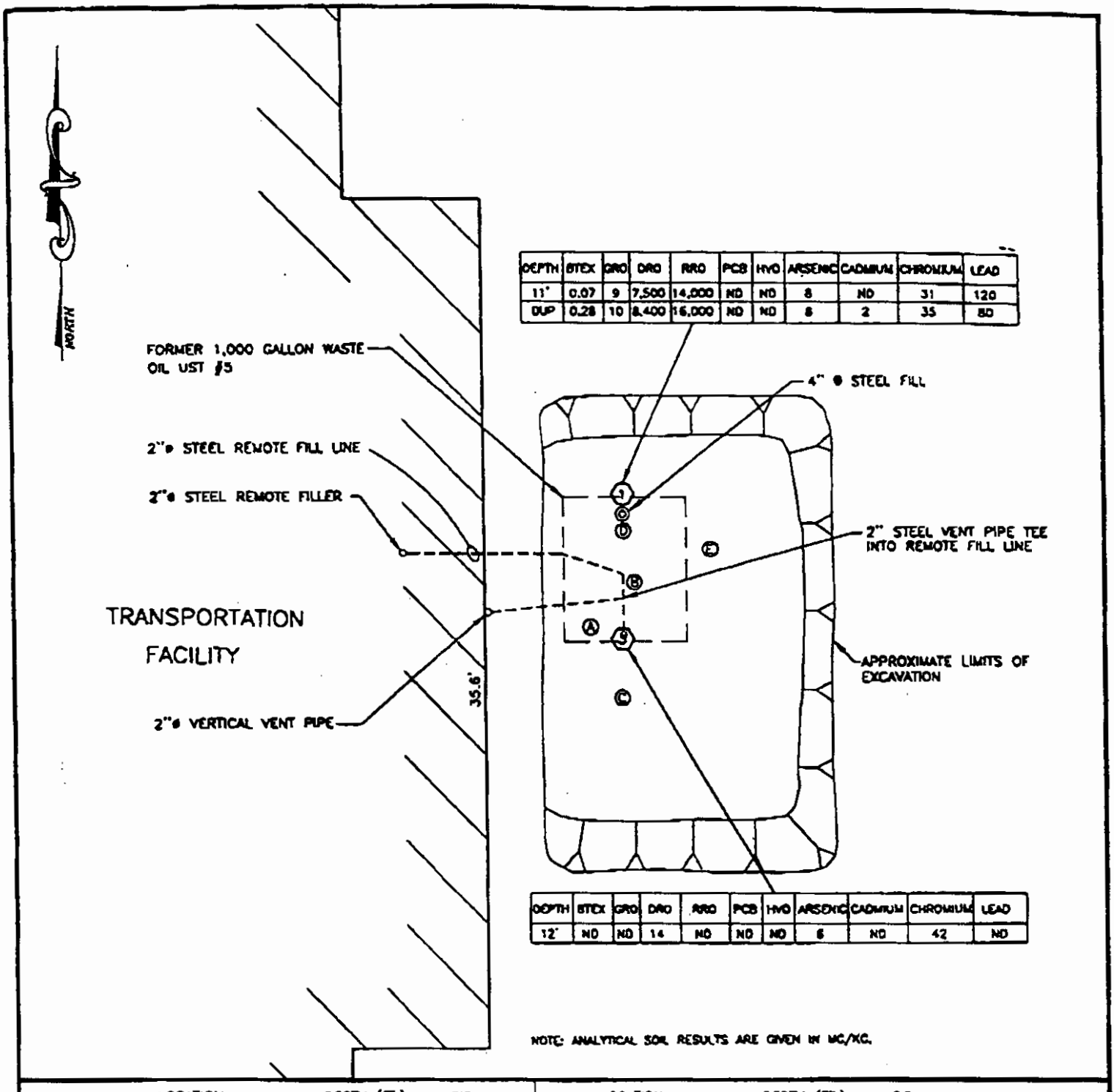
GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.
2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE: 1"= 10'

DATE: 02/27/98

PROJECT NO. 97007A

000207



DEPTH	BTEX	GRO	DRO	RRO	PCB	HVO	ARSENIC	CADMIUM	CHROMIUM	LEAD
11'	0.07	9	7,500	14,000	ND	ND	8	ND	31	120
DUP	0.28	10	8,400	16,000	ND	ND	8	2	35	80

DEPTH	BTEX	GRO	DRO	RRO	PCB	HVO	ARSENIC	CADMIUM	CHROMIUM	LEAD
12'	ND	ND	14	ND	ND	ND	6	ND	42	ND

NOTE: ANALYTICAL SOIL RESULTS ARE GIVEN IN MG/KG.

LOCATION	DEPTH (FT.)	PID
A	4'	0
B	4'	0
C	5.5'	0
D	5'	0
E	6.5'	0
F	8'	0

LOCATION	DEPTH (FT.)	PID
1	11'	0
3	12'	0

FIGURE III. UST #5 SITE PLAN AND SAMPLE LOCATIONS

GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.
2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE: 1"= 6'

DATE: 02/26/98

PROJECT NO 97007A

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

000208

DEPT. OF ENVIRONMENTAL CONSERVATION
Division of Spill Prevention & Response
Storage Tank Program
555 Cordova Street
Anchorage, Alaska 99501

Telephone: (907) 269-7504
Fax: (907) 269-7507

August 17, 1998

Mrs. Julia Redington
Project Manager
Anchorage School District
1301 Labar Street
Anchorage, Alaska 99507

Subject: **Approval of July 28, 1998 Corrective Action Plan**
Student transportation Center 3580 Tudor Road Anchorage
File #L68.27 Reckey #98 21 00 057 01 Facility ID #3089

Dear Mrs. Redington;

The Department of Environmental Conservation (Department) has received and reviewed the above-mentioned report. It is approved as written, with the exception that Alaska Methods AK101, AK102, and AK103 for GRO, DRO, RRO and BTEX should be used throughout the sampling and analysis portion of this project.

The request to transport soils to Alaska Soil Recycling is also approved.

If you have any questions or comments, please contact me.

Respectfully yours,

Lynne R. Bush
Project Manager
Storage Tank Program

LRB/ph/home/ustfap/#L68.27

cc: Peter Curtis, GE2TI