



# 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

**COPY**

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AUG 19 1997

Received  
Environmental Conservation  
Oil Spill Response — FAP

## UST CLOSURE SITE ASSESSMENT REPORT

For

### TESORO NORTHSTORE # 11

317 Muldoon Road, Anchorage, Alaska  
ADEC UST Facility I.D. #1502

Prepared For

Ken Gaylord  
Regional Supervisor  
Environmental Affairs & Engineering  
Tesoro Alaska Petroleum Company  
999 Third Avenue, Suite 4000  
Seattle, Washington 98104

GE<sup>2</sup>T Project No. 95008-E

August 11, 1997



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0013

August 11, 1997

Ken Gaylord  
Regional Supervisor  
Environmental Affairs & Engineering  
Tesoro Alaska Petroleum Company  
999 Third Avenue, Suite 4000  
Seattle, Washington 98104

RE: Site Assessment of UST System Removal  
**Tesoro Northstore #11**  
317 Muldoon Road, Anchorage, Alaska  
ADEC UST Facility ID #1502  
GE<sup>2</sup>T Project No. 95008-E

Dear Mr. Gaylord:

Attached is the report on the findings of the Environmental Site Assessment completed by Gilfilian Engineering & Environmental Testing, Inc. (GE<sup>2</sup>T) during the removal of the Underground Storage Tank (UST) system at the above referenced site. The report describes the field activities, soil sample results and corrective actions completed during the site assessment.

Per your approval, a copy of this report is being sent to Lynne Balogh, Environmental Specialist, of the Alaska Department of Environmental Conservation (ADEC) Anchorage District Office for review under 18 AAC 78.090. If you have any questions or need additional information on this matter, please feel free to contact us at your convenience.

Sincerely,

Christopher Hawe  
Senior GeoEnvironmental Engineer

Attachment: Site Assessment Report

c: Lynne Balogh, ADEC ADO

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## 1.0 INTRODUCTION

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### 1.1 Purpose and Scope

Gilfilian Engineering & Environmental Testing, Inc. (GE<sup>2</sup>T) on behalf of Ken Gaylord of Tesoro Northstore Company completed the underground storage tank (UST) closure site assessment for the Tesoro Northstore #11 gasoline station. The purpose of the closure assessment was to investigate for fuel contamination during the removal of the UST's, product dispenser piping and dispenser islands.

The scope of work for the site assessment consisted of field screening soil as it was excavated with a calibrated portable photoionization detector (PID). The obviously contaminated soil was segregated from potentially clean soil. The contaminated soil was transported off site to Anchorage Soil Recycling in Anchorage for remediation and disposal. The potentially clean soil was stockpiled, screened and sampled before being used as backfill at the site. Soil samples were collected from excavated areas for laboratory testing of gasoline range organics (GRO), diesel range organics (DRO), BTEX and lead.

The site assessment was completed in accordance with the Environmental Protection Agency (EPA) UST regulations (40 CFR Part 280) and the State of Alaska Department of Environmental Conservation (ADEC) UST regulations (18 AAC 78). The field procedures and methods used during this site assessment were conducted in accordance with the ADEC UST Procedures Manual (September 22, 1995).

### 1.2 Project Organization

The former owner and operator of the closed UST system was Tesoro Northstore. Tesoro Northstore still leases the subject property. Ken Gaylord represents Tesoro Northstore (Tesoro) for all environmental concerns.

Christopher Hawe, Senior GeoEnvironmental Engineer with GE<sup>2</sup>T, conducted the majority of the site assessment. Steve Rebillard, Senior Environmental Geologists, with GE<sup>2</sup>T assisted Mr. Hawe during the last phase of the UST closure by supervising the installation of soil vapor extraction piping. B.C. Excavating of Anchorage was the ADEC certified UST closure contractor for the project. Analytica Alaska, Inc. (Analytica) completed all soil and water sample analytical testing.

### 1.3 Agency Notifications

An ADEC Notification of Taken Out-Of-Use form for the UST system at the site was submitted to ADEC on March 31, 1997, by GE<sup>2</sup>T. A waiver for the 15-day notification period for closing an UST system was approved by ADEC on

April 9, 1997. Approval for direct hauling of contaminated soil from the site was given by ADEC on April 11, 1997. An ADEC Oil and Hazardous Materials Incident Report Form was submitted to ADEC on April 25, 1997. A waiver from the requirements to use Alaska analytical methods AK101, AK102 and AK103 was issued by the ADEC on April 25, 1997. All ADEC forms and correspondence relating to the above notifications are included in Appendix A. A completed ADEC Storage Tank Program Site Assessment Summary Form is included in Appendix B. 0016

## 2.0 BACKGROUND

The project site is located northeast of the intersection of Muldoon Road and East Third Avenue in Anchorage, Alaska. The nearby properties north, south and west of the subject site are all developed commercial properties. East of the site are residential properties (see Figure I, Site Vicinity Map).

According to the ADEC UST registration database, the 6,000 gallon UST removed from the site as part of this closure was installed in January 1974 and the two 12,000 gallon UST's removed were installed in January 1976. Tesoro operated the gasoline station on the property until December 1996.

The station was temporarily closed in January 1997 by removing all fuel from the UST's, removing the fuel dispensers and demolishing the station attendant building on site. Photographs of the site before the temporary closure activities were completed are included in Appendix C (Photos #1 and #2). Photographs of the site shortly after the temporary closure activities were completed, but before the site assessment activities began are included in Appendix C (Photo's #3 and #4).

Except for the northeast corner of the property, the site was all paved at the time of the closure site assessment work. Figure II shows the UST system layout and other site structures present when the site was operating prior to January 1997. The project site was served by municipal water and sewer systems.

## 3.0 SITE ASSESSMENT

A summary of events that occurred as part of this closure is outlined in a table of completed events in Appendix D. This table identifies the timeline of significant tasks completed as part of this UST closure project.

Due to the magnitude and extent of contamination in the subsurface at the site, the excavation used to remove contamination in the area of the UST's, as well as excavations used to assess the extent of the contamination, were left open. The intent in leaving the excavations open was to allow use of all available corrective action

investigation drilling. However, pressure from the area community resulted in backfilling the excavations before the full extent of the contamination could be identified. This backfilling precludes some corrective action measures from being used, particularly the complete removal (mining) of the contaminated soil at the site. 1017

### 3.1 Field Screening of Soils

During the removal of the UST system, field screening with a calibrated portable photoionization detector (PID) was used to segregate obviously contaminated soil from soil determined to be acceptable for backfill. In addition, PID headspace screening was also used to screen samples of soil collected in the bottom of excavations used to remove dispensers, product distribution piping and UST's. The layout of the UST's and the dispenser piping is shown in the Figure III, UST and Piping Layout.

PID headspace screening measurements were taken from air above the collected soil samples that were placed in sealed half-full ziplock baggies and heated. The locations of all headspace screening samples are shown in Figure IV, PID Screening Location. PID headspace screening results are shown in Table 1. These screening locations correspond with dispensers, pipe unions or elbows, and where contamination was removed and the underlying soils were sampled.

In addition, approximately 300 cubic yards of potentially clean (contaminant free) soil that was stockpiled while excavating during the UST closure site assessment was also screened using headspace screening. The locations of the screen points in this stockpiled soil, and the headspace screening results, are shown in Figure V, Stockpile Screening.

### 3.2 Handling of Excavated Soils

The soils screened to be clean during excavation activities were stockpiled at ground surface along the excavated areas. PID headspace screening results of this stockpiled soil (see Figure IV), as well as a soil sample collected from the highest screen point and analyzed by an Analytica Alaska, Inc (see Section 4.0 Analytical Results below), indicated that contaminant levels were well below the most stringent ADEC levels in this soil. Therefore, this soil was backfilled in the excavations used to remove the UST system.

All soil screened to be contaminated, except for a small volume of soil stockpiled for a short time on-site, was directly hauled to Anchorage Soil Recycling (ASR) in Anchorage for remediation and disposal. The small volume (approximately 40 cubic yards) of contaminated soil stockpiled on the site was eventually transported to ASR for disposal. See Section 5.0 below for a more complete discussion on the soil transported to ASR.

### 3.3 Removal of Contaminated Soil

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No soil contamination was found in any area of the excavation used to remove the heating fuel UST at the site. However, contaminated soil was encountered at the tanks tops of all three automotive fuel UST's.

The turbine end (north end) of the North UST was contaminated near the tank top, along the sides of the tanks and for some distance below this end of the tank. The contaminated soil in this area was excavated to ground water at a depth of approximately 22 to 23 feet at the time of excavating (see Photos #5 and #6 in Appendix C). PID screening along the excavation walls north, west and east of this end of the North UST indicated that only low levels of contamination remained in this area after excavating, and only near the bottom of the excavation. Soil samples collected and submitted to the laboratory for analytical testing confirmed the PID screening results. Field screening also indicated that the contaminated soil diminished near the center of the North UST for a short distance and then contamination from the fill port end of the tank became prevalent.

The fill port ends of the North and South UST's were end to end (see Figure II, UST and Piping Layout). This location of adjacent fill ports was probably one of the worse areas of contamination encountered at the site. Obvious contamination infiltrated away from these fill port ends in all directions. PID screening at depths of 19 feet and 21 feet in this area indicated contamination was still present at these depths. Soil samples collected and submitted to the laboratory for analytical testing confirmed the PID screening results.

PID screening while segregating excavated soil indicated that contaminated soil diminished near the center of the South UST for a short distance and then contamination from the turbine pump end of the tank became prevalent. Soil contamination was also indicated by field screening in soils around the fill port end of the East UST. The piping connection for the dispenser suction line at the opposite end of the East UST appeared not to be impacted; however, the diesel dispenser supplied by this suction line further south had obvious contaminated soil just below the dispenser island.

Initially, soil was only excavated to approximately 12 feet below ground surface (bgs) in areas below the southern half of the East and South UST's (see Photos #7 and #8 in Appendix C). This area was used for the backhoe to ramp down into the excavation. Using this ramp, soil was excavated to approximately 23 feet in areas below the northern half of the South UST and the entire North UST. To install a soil vapor extraction (SVE) line in the excavated area, part of the area previously excavated to only 12 feet bgs was later deepened to approximately 19 feet (see Photos #9 and #10 in Appendix C). PID headspace screening in the

excavation used to install SVE line indicated that soil was contaminated between approximately 16 to 19 feet bgs here as well. Soil samples submitted for laboratory testing indicate that soil sampled in this area had some contamination at 17 feet, but had minor contamination at 19 feet (see Figure V, Excavation Limits, for an outline of all the areas discussed above.)

Based on observations during the removal of the USTs, the extent of contamination appeared large; therefore, four backhoe trenches were used to further investigate the extent of contamination on the property before continuing to excavate soil in the UST areas. One long trench (Trench #1) was excavated from the west sidewall of the UST excavation starting near the center of the fill ports for the North and South USTs and ending near the center dispenser of the east fueling island (Dispenser #5). Three other shorter trenches were excavated; one (Trench #2) near the center dispenser of the west fueling island (Dispenser #2), one (Trench #3) along the west property line, and one (Trench #4) along the south property line (see Figure V).

PID headspace screening in Trench #1 indicated that contaminated soil was present out away from the fill port ends of the North and South USTs. This contaminated soil was in a zone starting at approximately 15-16 feet bgs and extended to the maximum reachable depth of the backhoe (roughly 20 feet), but may extend to ground water at approximately 21 feet bgs. The end of Trench #1 was near Dispenser #5. PID headspace screening of soil directly below Dispenser #5 indicated contaminated soil was present. However, based on the deeper screening in the end of Trench #1, the impact below Dispenser #5 does not appear to be very deep.

This same zone of contamination (from approximately 16 feet to the maximum depth reachable by the backhoe) was also encountered in Trench #3. The other two trenches (Trench #2 and Trench #4) had contamination from shallower depths (approximately 10-12 feet) to the maximum depth of the backhoe (19.5 feet). The shallower contamination in Trench #2 and Trench #4 may be attributed to the closeness of these trenches to former dispenser locations that appear to be release points based on shallow PID screening measurements. However, a soil sample collected for laboratory testing from the west end of Trench #2 at 6.5 feet bgs had low levels of contamination. Contaminants below Dispenser #2 near the west end of Trench #3 did not appear to have infiltrated far, based on a sample collected at 6.5 feet bgs. This apparent minor infiltration depth may be due to a shallow silt/silty fine sand layer that was observed consistently across the site. This layer was thicker on the western side of the site (approximately 2.5 to 3 feet) and appeared to be pinched out near the eastern side of the site.



All excavated areas at the site, except for Trenches #2 and #3, were left open to allow continued excavation of contaminated as a possible corrective action measure. The decision on what corrective action measure would be used was going to be made after the extent of the contamination was determined using a two phased release investigation drilling program. Phase I of the release investigation had been completed and Phase II was being scheduled to be completed when pressure from the nearby community required that the excavations be immediately backfilled. Therefore, the vapor extraction line mentioned previously was installed and the entire site was backfilled.

### 3.4 Soil Sampling

All soil samples collected during this site assessment were discrete grab samples collected in accordance with the ADEC UST Procedures Manual (September 22, 1995) and our firm's Quality Assurance Program Plan (QAPP) approved by ADEC in May 1993. The samples were stored at a maximum temperature of 4 degrees Celsius in a cooler with blue ice and delivered under Chain of Custody procedure to Analytica Alaska, Inc. in Anchorage.

A total of 16 discrete soil samples (labeled S1 through S14, Location A and Location C) including one duplicate sample (labeled S9) were collected from the excavated area and submitted for laboratory analysis. The samples were collected from below the fuel dispensers or in areas of the excavation used to remove the USTs. The locations of all 16 samples are shown in Figure VI, Sample Locations. In addition to these 16 samples, a sample was collected from the stockpile of soil segregated for use as backfill in the excavations on site. This sample was labeled as Stockpile. The location of this sample can be seen in Figure V, Stockpile Screening.

## 4.0 ANALYTICAL PROGRAM

### 4.1 Sample Analysis

Soil samples submitted to Analytica in Anchorage as part of this closure site assessment were analyzed for the following parameters:

- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) by EPA Test Method 8020
- Gasoline Range Organics (GRO) by EPA Method 8015M ; and
- Diesel Range Organics (DRO) by Alaska Method AK 102 (except for the Stockpile sample analyzed using EPA Method 8100M)

Selected soil samples were analyzed for lead using EPA Method 6010.

## 4.2 Analytical Results

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A copy of the laboratory analytical reports and the executed Chain-of-Custody forms for all sample submittals are provided in Appendix E. The analytical results for the soil samples are also presented in Table 1, Excavation Soil Sample Analytical Results.

As shown in Table 1 below, no diesel contamination was detected from the two samples (S1 and S2) collected from below both ends of the heating fuel UST. The analytical results for samples S2 through S9 in Table 1 show that contamination at the turbine pump end of the North UST has been removed to levels well below the most stringent ADEC levels (Category A levels). No benzene or gasoline range organics (GRO) were detected in soil samples from this area. Only very low levels of the other BTEX components (toluene, ethylbenzene and xylenes) were detected, and diesel range organics (DRO) was detected in only one sample from this area, also at a low level. Higher levels of contamination were detected in the samples collected near the fill ends of the North and South USTs (S10 and S11). The deeper sample collected at 21 feet bgs from this area (S11) displayed much lower levels than the shallower sample collected at 19 feet bgs from this area (S10).

The samples collected below Dispensers #1 (S12 and S13) and #2 (S14) show that contaminant concentrations below these two dispensers was below Category A levels. The shallow sample (S12) at Dispenser #1 was from soil just above the shallow silt/silty fine sand layer observed across the site. The deeper sample (S13) at Dispenser #1 is from soil just below this silt/silty fine sand layer.

The more shallow sample collected at 17 feet bgs on the east side of the trench used to install the soil vapor extraction line had GRO and DRO concentrations above the most stringent ADEC Category A levels. However, benzene was not detected in this sample and the other BTEX components do not exceed the Category A level. The deeper sample collected at 19 feet bgs on the west side of the trench used to install the vapor extraction line had no detectable benzene and all other parameters were well below the Category A Levels. None of the selected samples analyzed for lead had detectable levels.

The sample collected from the stockpile at the location had no detectable benzene and all other parameters were well below the Category A levels.

Table 1  
Excavation Soil Sample Analytical Results

Sample ID	Sample Description	Collection Date	PID Headspace	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	Gasoline Range Organics	Diesel Range Organics	Lead
S1	HEATING FUEL FILL END - 6'	4/18/97	0.0	NM	NM	NM	NM	NM	NM	ND (4.2)	NM
S2	HEATING FUEL VENT END - 6'	4/18/97	0.0	NM	NM	NM	NM	NM	NM	ND (4.5)	NM
S3	NORTH OF N. UST TURBINE END - 15'	4/21/97	0.0	ND (0.026)	ND (0.026)	ND (0.026)	ND (0.026)	ND	ND (2.6)	ND (4.2)	ND (5.4)
S4	NORTH OF N. UST TUBRINE END - 20'	4/21/97	1.4	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.025)	ND	ND (2.5)	ND (4.2)	ND (5.4)
S5	EAST OF N UST TURBINE END - 18'	4/21/97	0.0	ND (0.026)	0.031	0.072	0.20	0.303	ND (2.6)	ND (4.3)	ND (5.3)
S6	EAST OF N UST TURBINE END - 23'	4/21/97	4.8	ND (0.029)	ND (0.029)	ND (0.029)	ND (0.029)	ND	ND (2.9)	ND (4.6)	ND (5.9)
S7	WEST OF N UST TURBINE END - 18'	4/21/97	0.0	ND (0.026)	ND (0.026)	ND (0.026)	0.068	0.068	ND (2.6)	26	ND (5.4)
S8	WEST OF N UST TURBINE END - 23'	4/21/97	28.5	ND (0.028)	ND (0.028)	ND (0.028)	0.040	0.040	ND (2.8)	ND (4.5)	ND (5.5)
S9	DUPLICATE OF S8	4/21/97	28.5	ND (0.027)	ND (0.027)	ND (0.027)	0.072	0.072	ND (2.7)	ND (4.4)	ND (5.5)
S10	NORTH UST FILL END - 19'	4/22/97	1651.0	11	23	24	85	143	1400	1200	NM
S11	SOUTH UST FILL END - 21'	4/22/97	>2000	1.4	15	5.7	32	54.1	220	NM	NM
S12	DISPENSER #1 - 2.5'	4/24/97	0.0	0.056	0.26	0.12	0.65	1.086	9.4	ND (4.1)	NM
S13	DISPENSER #1 - 4.0'	4/24/97	0.0	0.046	0.30	0.57	1.1	2.016	42	ND (4)	NM
S14	DISPENSER #2 - 6.5'	4/25/97	0.0	0.025	0.17	0.079	0.55	0.824	4.8	ND (3.9)	NM
LOCATION A	EAST SIDE OF SVE EXCAVATION - 17'	7/1/97	2066.0	ND(0.20)	2.3	1.5	4.2	8	270	290	NM
LOCATION C	WEST SIDE OF SVE EXCAVATION - 19'	7/1/97	1667.0	ND (0.026)	0.3	0.5	1.1	1.9	37	ND(4.3)	NM
S1	STOCKPILE	6/23/97	37.3	ND (0.026)	0.087	NM	0.08	0.167	ND (2.5)	29	NM

NOTES: BTEX component results by EPA Method 8020  
 Gasoline Range Organics results by Method EPA 8015M  
 Diesel Range Organics results by Alaska Method AK102 except Stockpile result is by EPA 8100M  
 ND indicates result is non-detectable. Method detection limits shown in parentheses.  
 NM indicates an analyte not measured  
 All results measured in mg/kg

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Ken Gaylord, Tesoro Alaska Petroleum Company

Tesoro Northshore #11, Anchorage, Alaska

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### 4.3 Quality Assurance/Quality Control

The laboratory analytical testing for petroleum hydrocarbons was completed by Analytica Alaska, Inc. in Anchorage, Alaska. The laboratory analytical testing for lead was completed by Analytica Environmental Laboratories in Broomfield Colorado. All laboratory analyses were conducted following standard laboratory Quality Assurance/Quality Control (QA/QC) procedures. Based on review of the laboratory data for all samples analyzed, all laboratory QA/QC criteria were met.

GE<sup>2</sup>T determined whether the completeness, precision and holding times of the soil samples submitted as part of this closure site assessment were performed within the limits of the quality control objectives indicated in our QAPP. Table 2 presents a summary of the QA/QC review completed by GE<sup>2</sup>T for the duplicate sample S9 collected with sample S8.

**TABLE 2  
FIELD QUALITY CONTROL OBJECTIVES**

Parameter	Laboratory Ref. No.	Holding Time (Extract/ Analysis)	Precision (RPD)*	Completeness %
GRO (Soil)	A704027-06	3 days/3 days (ASAP/14 days)	0 (±50)	100 (85)
Total BTEX (Soil)	A704027-06	3 days/3 days (ASAP/14 days)	57 (±40)	100 (85)
DRO (Soil)	A704027-06	2 days/3 days (14 days/40 days)	0 (± 50)	100 (85)

RPD = Relative Percent Difference

The numbers in parentheses indicate Data Quality Objectives, as established in GE<sup>2</sup>T's QAPP, Table 1 and Table 2.

As shown in Table 2, the extraction and analysis for the duplicate sample was completed within the maximum allowable holding times. The relative percent difference (RPD) calculated for the GRO and DRO analyses were within our QAPP objectives, but the Total BTEX precision was outside of our objective. The reported Total BTEX concentrations for this duplicate sample set are for xylenes alone because no other BTEX component was present above the method detection limits. The reported concentrations for xylenes in the duplicate sample set are only marginally above the method detection limits. Calculated RPD's for very low concentrations have inherent variation because of the very low concentrations, and the allowable RPD is not appropriate for analytical results so close to the method detection limits. Therefore, the field duplicate samples indicate that analytical data for the samples collected during this UST closure site assessment are accurate and complete.

## 5.0 CONTAMINATED SOIL TREATMENT AND DISPOSAL

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All soil screened to be contaminated, except for a small volume of soil stockpiled for a time on-site, was directly hauled to Anchorage Soil Recycling (ASR) in Anchorage for remediation and disposal. The small stockpile (approximately 40 cubic yards) was transported for disposal while the soil excavated to install the soil vapor extraction line was directly transported to ASR. Approximately 1,606 tons of soil was transported to ASR for treatment and disposal during the UST closure site assessment activities. A letter from ASR indicating complete remediation of the soil is included in Appendix F.

## 6.0 INSTALLATION OF SOIL VAPOR EXTRACTION PIPING

As part of the site assessment, Mr. Rebillard with GE<sup>2</sup>T installed a section of buried piping to be used as part of an in situ soil vapor extraction (SVE) system that potentially could be used for corrective action at the site. This piping was installed prior to backfilling the entire site. The SVE piping consisted of solid 4-inch diameter schedule 40 PVC installed vertically from just below ground surface to approximately 18 feet bgs. The vertical piping was connected with a 90 degree elbow to a 20 foot section of 4-inch diameter 20 slot PVC well screen. Screened gravel was placed around the PVS well. Figure VII, Soil Vapor Extraction Piping, shows the construction of this SVE line. Photo's 9 and 10 in Appendix C show the SVE piping installation.

Following completion of the planned Phase II release investigation drilling in September, corrective action measures to be used at the site will be outlined in a corrective action plan that will be submitted to ADEC for review.

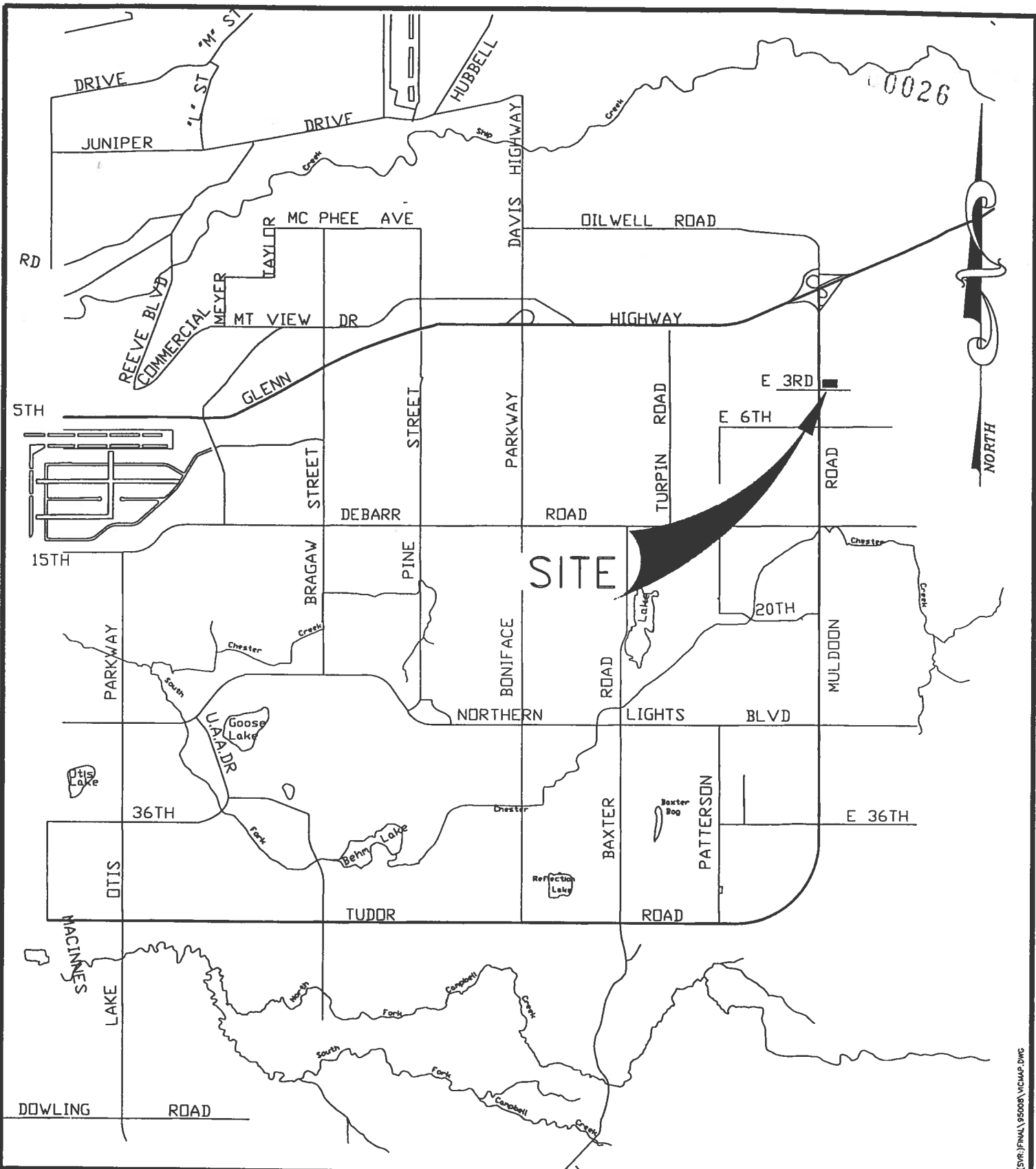
## 7.0 CONCLUSIONS

Based on the field data and analytical results of samples collected during the UST closure site assessment at Tesoro Northstore #11, fuel releases have occurred at the site, and soil contamination remains in the subsurface at the site. Although some of this contamination remains at more shallow depths, the majority of the contamination identified at the site is in a zone between approximately 16 feet to 21 feet below ground surface.

The subsurface geology and extent of contamination at the site is not fully discussed in this report. These topics will be discussed more completely in a subsequent report on the Phase I Release Investigation to be submitted following this UST Closure Site Assessment report.

## FIGURES

- Figure I Site Vicinity Map
- Figure II Site Map
- Figure III UST and Piping Layout Drawing
- Figure IV PID Headscreening Locations
- Figure V Stockpile Screening
- Figure VI Excavation Limits
- Figure VII Sample Locations
- Figure VIII Soil Vapor Extraction Piping



TNS #11 Figure I. Site Vicinity Map



**GILFILIAN ENGINEERING &  
ENVIRONMENTAL TESTING, INC.**

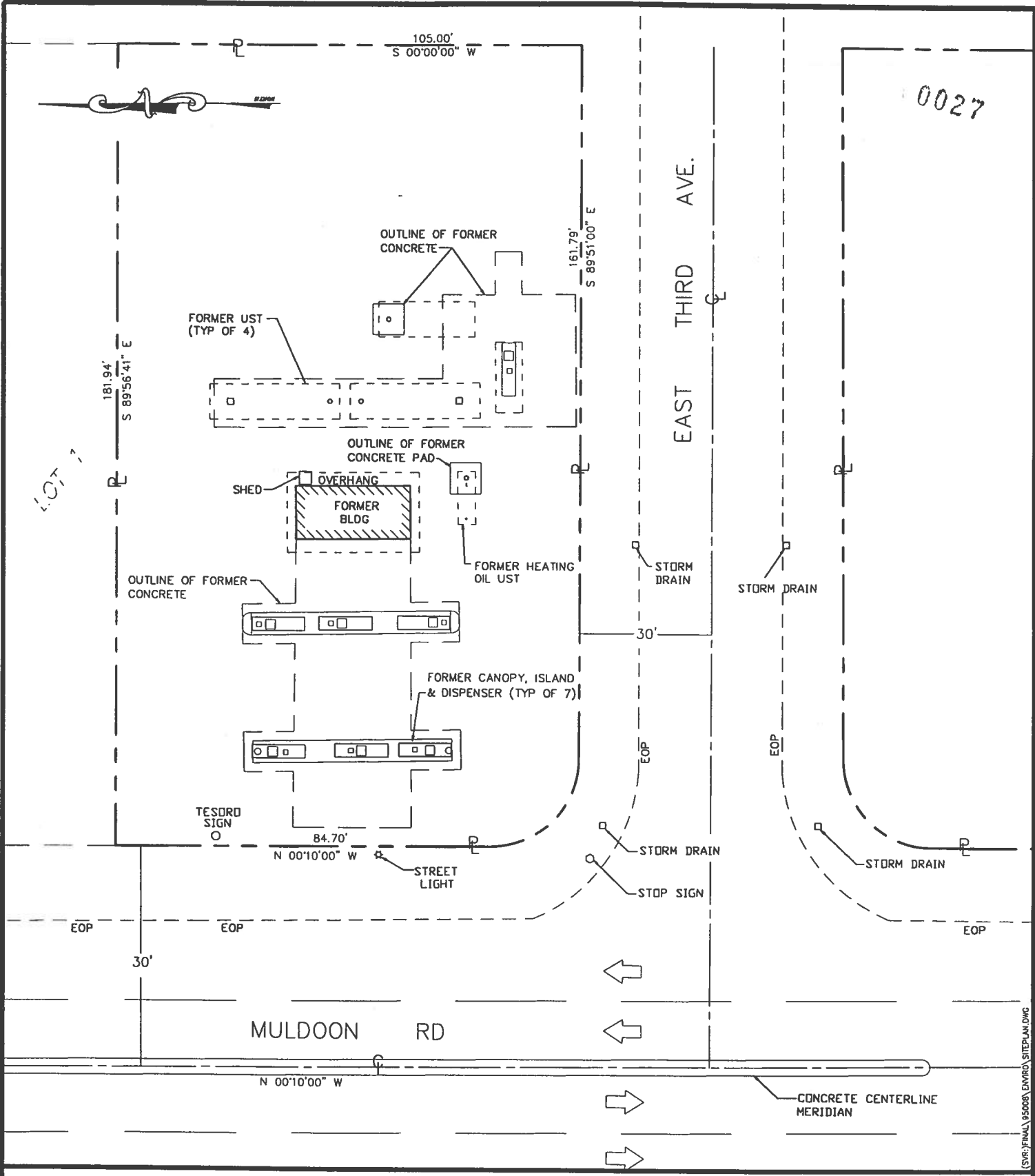
2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE: N.T.S.

DATE: 08/05/97

PROJECT NO. 95008

(S:\JFINAL\95008\VICMAP.DWG



(S:\R\FINAL\95008\ENVIRO\SITEPLAN.DWG)

TNS #11 Figure II. Site Map



**GILFILIAN ENGINEERING &  
ENVIRONMENTAL TESTING, INC.**

2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE:	1" = 30'
DATE:	08/05/97
PROJECT NO.	95008E

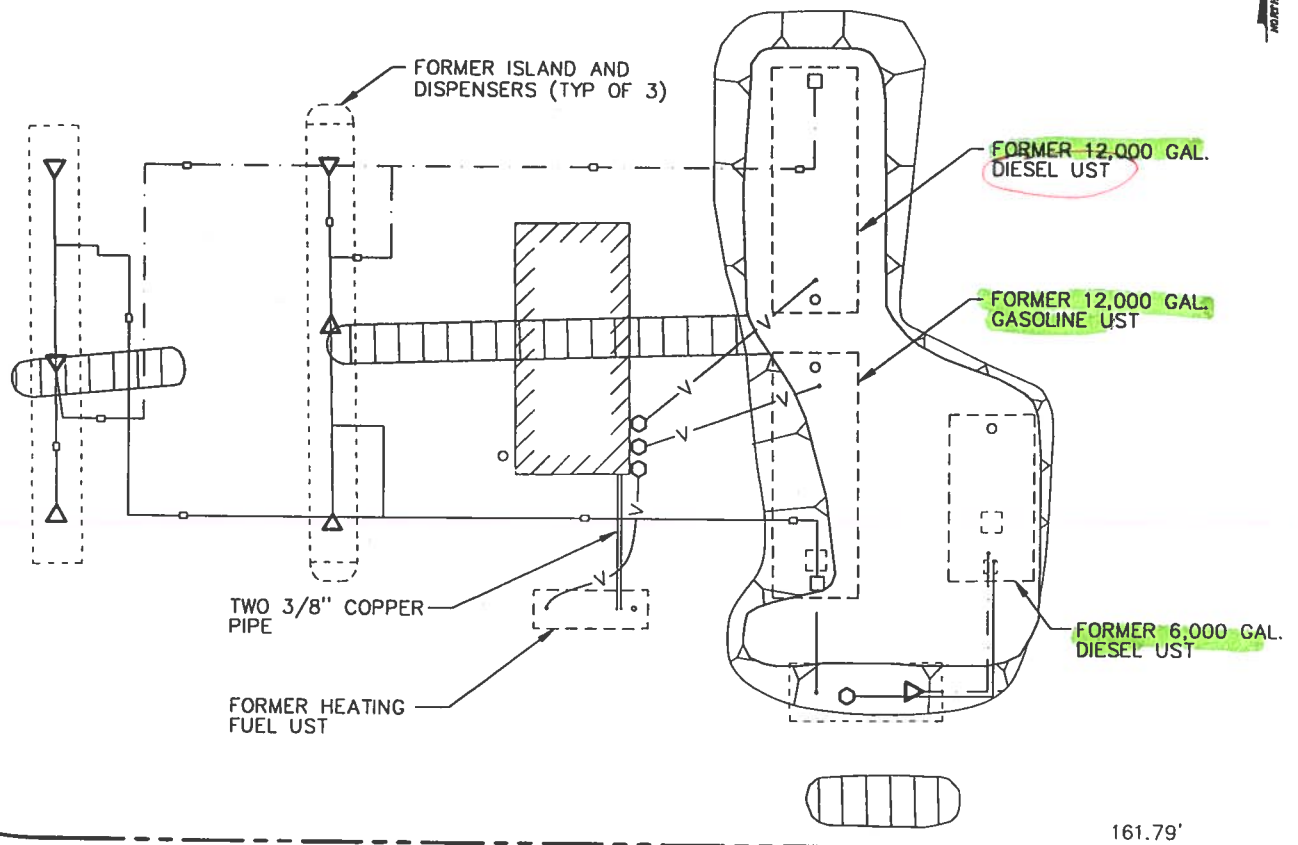


0028

LOT 1

181.94'  
S 89°56'41" E

84.70'



161.79'  
S 89°51'00" E

LEGEND:

- = 2" STEEL DIESEL LINE w/ JOINT COUPLING
- = 2" STEEL GAS LINE w/ JOINT COUPLING
- = SAMPLE LOCATION
- △ = DISPENSER
- = VENT
- V— = VENT PIPE

TNS #11 Figure III. UST and Piping Layout



**GILFILIAN ENGINEERING &  
ENVIRONMENTAL TESTING, INC.**

2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE: 1" = 20'

DATE: 08/05/97

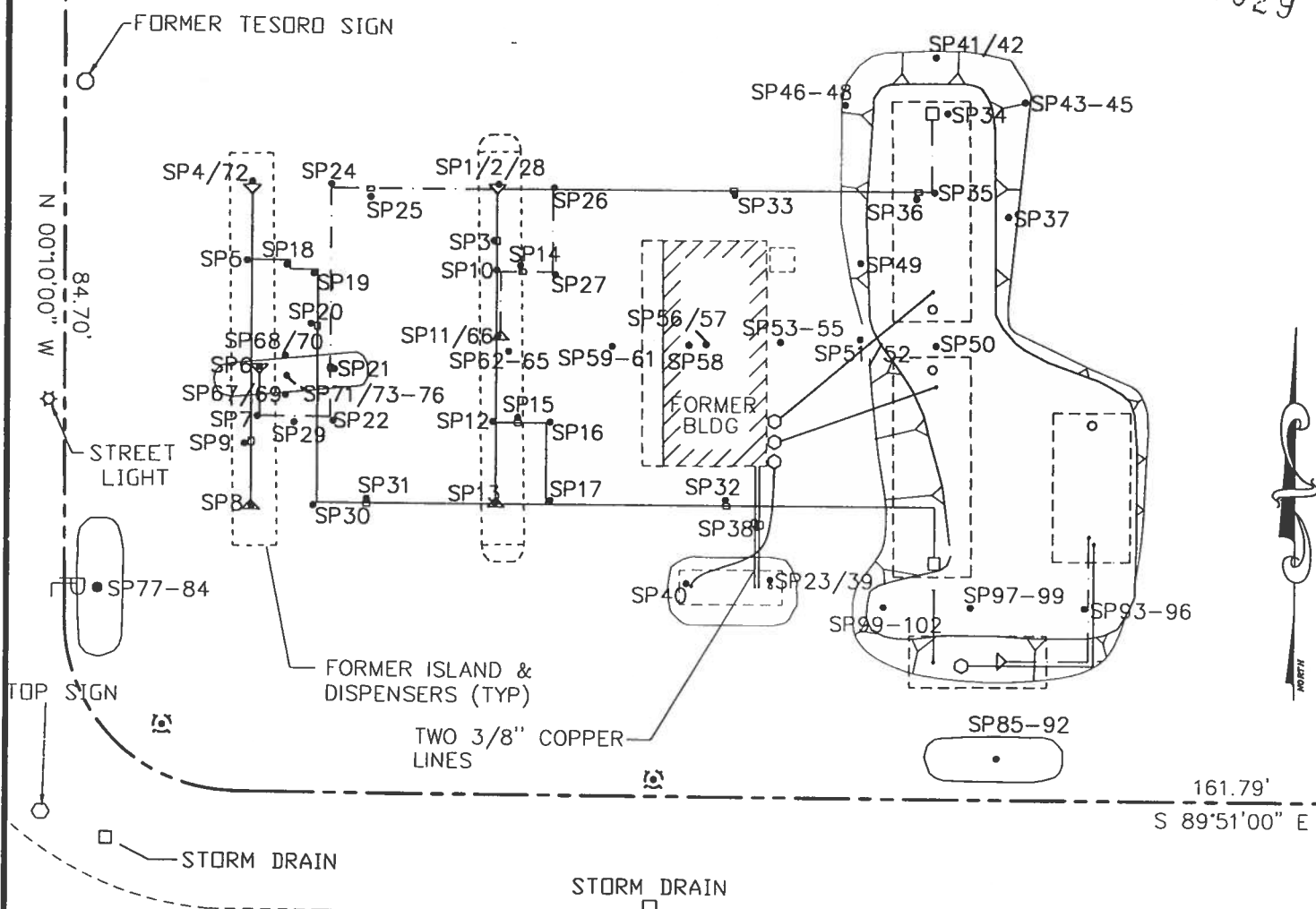
PROJECT NO. 95008E

(SVR) FINAL 95008E TNS11.DWG

LOT 1

181.94'  
S 89°56'41" E

0029



TNS #11 Figure IV. PID Screening Locations



**GILFILIAN ENGINEERING &  
ENVIRONMENTAL TESTING, INC.**

2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE: 1" = 20'

DATE: 08/05/97

PROJECT NO. 95008E

(SVR:) \FINAL\S\95008\TNS11SP.dwg

**TESORO NORTHSTORE #11**  
**PID SCREENING MEASUREMENTS**

0030

DATE	SCREEN POINT	DEPTH (feet)	PID HEADSPACE	DATE	SCREEN POINT	DEPTH (feet)	PID HEADSPACE
4/14/97	SP-1	1.5	85.8	4/15/97	SP-27	1.5	108.0
4/14/97	SP-2	1.5	155.0	4/15/97	SP-28	3.0	17.5
4/14/97	SP-3	1.5	3.9	4/15/97	SP-29	1.5	24.0
4/14/97	SP-4	1.5	215.0	4/15/97	SP-30	1.5	6.4
4/14/97	SP-5	1.0	315.0	4/15/97	SP-31	4.5	>2000
4/14/97	SP-6	1.5	>2000	4/15/97	SP-32	2.5	1.4
4/14/97	SP-7	0.5	>2000	4/15/97	SP-33	3.0	0.3
4/14/97	SP-8	1.5	372.0	4/16/97	SP-34	3.0	1473.0
4/14/97	SP-9	1.0	>2000	4/16/97	SP-35	2.5	4.1
4/14/97	SP-10	1.5	1167.0	4/16/97	SP-36	2.5	2.0
4/14/97	SP-11	2.0	>2000	4/16/97	SP-37	4.0	21.9
4/14/97	SP-12	2.0	334.0	4/16/97	SP-38	2.5	0.0
4/14/97	SP-13	1.5	>2000	4/18/97	SP-39	6.0	0.0
4/14/97	SP-14	1.0	>2000	4/18/97	SP-40	6.0	0.0
4/14/97	SP-15	2.0	281.0	4/21/97	SP-41	15.0	0.0
4/14/97	SP-16	1.5	8.1	4/21/97	SP-42	20.0	1.4
4/14/97	SP-17	2.5	27.4	4/21/97	SP-43	18.0	0.0
4/14/97	SP-18	1.5	26.4	4/21/97	SP-44	23.0	4.8
4/15/97	SP-19	1.0	1.5	4/21/97	SP-45	12.0	0.0
4/15/97	SP-20	1.0	1.1	4/21/97	SP-46	12.0	0.0
4/15/97	SP-21	1.5	14.7	4/21/97	SP-47	18.0	0.0
4/15/97	SP-22	1.0	4.6	4/21/97	SP-48	23.0	28.5
4/15/97	SP-23	1.0	62.7	4/21/97	SP-49	19.0	1651.0
4/15/97	SP-24	2.0	0.3	4/21/97	SP-50	21.0	>2000
4/15/97	SP-25	2.5	0.4	4/24/97	SP-51	11.0	0.0
4/15/97	SP-26	2.5	0.0	4/24/97	SP-52	15.0	7.4

0031

**TESORO NORTHSTORE #11**  
**PID SCREENING MEASUREMENTS**

DATE	SCREEN POINT	DEPTH (feet)	PID HEADSPACE	DATE	SCREEN POINT	DEPTH (feet)	PID HEADSPACE
4/24/97	SP-53	13.0	37.8	4/25/97	SP-78	6.5	0.0
4/24/97	SP-54	15.0	66.9	4/25/97	SP-79	9.0	0.0
4/24/97	SP-55	19.5	1100.0	4/25/97	SP-80	13.5	0.0
4/24/97	SP-56	15.0	565.0	4/25/97	SP-81	15.0	0.0
4/24/97	SP-57	19.5	>2000	4/25/97	SP-82	16.0	34.2
4/24/97	SP-58	13.0	4.4	4/25/97	SP-83	18.5	258.0
4/24/97	SP-59	16.0	33.5	4/25/97	SP-84	19.5	>2000
4/24/97	SP-60	12.0	0.0	4/25/97	SP-85	3.0	118.0
4/24/97	SP-61	19.5	>2000	4/25/97	SP-86	5.0	0.0
4/24/97	SP-62	8.0	0.0	4/25/97	SP-87	8.0	0.0
4/24/97	SP-63	4.0	14.2	4/25/97	SP-88	11.5	0.0
4/24/97	SP-64	15.0	0.0	4/25/97	SP-89	12.5	283.0
4/24/97	SP-65	19.0	1564.0	4/25/97	SP-90	15.0	607.0
4/24/97	SP-66	2.5	4.4	4/25/97	SP-91	17.5	1358.0
4/24/97	SP-67	4.0	0.0	4/25/97	SP-92	20.0	1583.0
4/24/97	SP-68	4.0	4.7	6/30/97	SP-93	11.0	10.0
4/24/97	SP-69	3.5	1.2	6/30/97	SP-94	13.0	40.1
4/24/97	SP-70	3.5	45.4	6/30/97	SP-95	15.0	1913.0
4/24/97	SP-71	8.0	0.0	6/30/97	SP-96	17.0	2066.0
4/24/97	SP-72	6.0	0.0	6/30/97	SP-97	4.0	21.1
4/24/97	SP-73	9.0	59.9	6/30/97	SP-98	12.0	1586.0
4/24/97	SP-74	14.0	467.0	6/30/97	SP-99	17.0	2984.0
4/24/97	SP-75	16.0	443.0	6/30/97	SP-100	6.0	41.3
4/24/97	SP-76	19.5	>2000	6/30/97	SP-101	12.0	1503.0
4/25/97	SP-77	2.5	0.0	6/30/97	SP-102	19.0	1667.0

LOT 1

0032

181.94'

S 89°56'41" E

OUTLINE OF STOCKPILE  
8' AVG. HEIGHT

6' AVG. HEIGHT

15' DIAMETER  
4' AVG. HEIGHT

FORMER  
BLDG.

OUTLINE OF FORMER  
DISPENSER ISLAND  
(TYP. OF 3)

LIMITS OF  
EXCAVATION

SCREEN POINT	PID HEADSPACE	SCREEN POINT	PID HEADSPACE	SCREEN POINT	PID HEADSPACE	SCREEN POINT	PID HEADSPACE
1	3.4	9	3.9	17	4.7	25	3.6
2	4.0	10	4.4	18	4.1	26	3.3
3	2.8	11	4.5	19	4.1	27	3.7
4	4.0	12	4.1	20	37.3	28	3.3
5	4.2	13	3.6	21	3.2	29	3.6
6	3.8	14	4.5	22	3.7	30	18.5
7	5.0	15	4.2	23	3.3	31	3.8
8	5.0	16	3.3	24	10.5	32	3.0
						33	3.5

NOTE: PID BACKGROUND READING = 1.0

⊙ = MARKS LOCATON OF COLLECTED STOCKPILE SAMPLE

TNS #11 Figure V. Stockpile Screening



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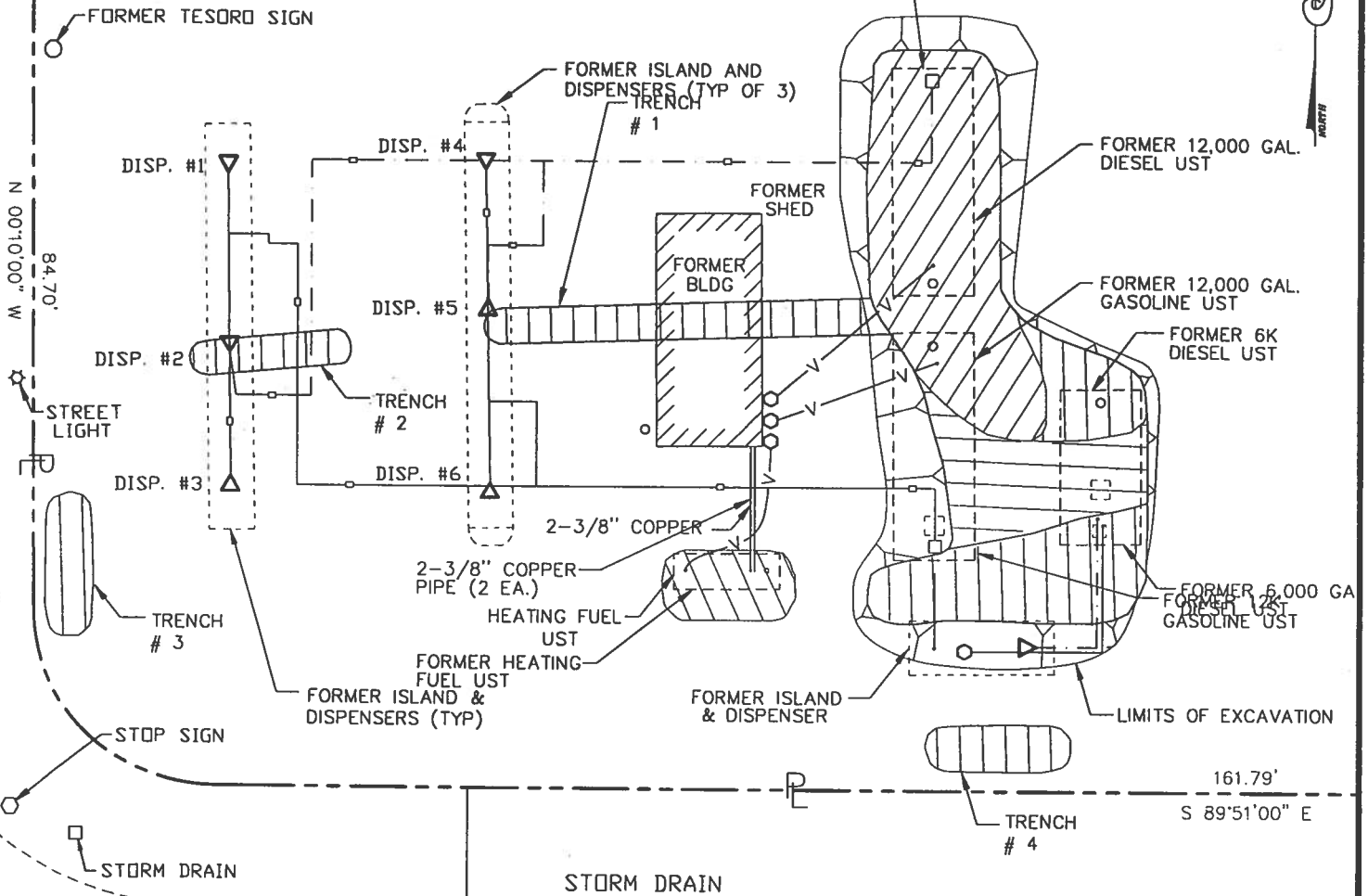
PROJECT NO. 95008E

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LOT 1

181.94'  
S 89°56'41" E

0033



- V — = VENT PIPE
- ▲ = DISPENSER
- = VENT
- ○ — = 2" STEEL DIESEL LINE w/ JOINT COUPLING
- ○ — = 2" STEEL GAS LINE w/ JOINT COUPLING
- — — = LIMITS OF EXCAVATION

**LEGEND:**

- = 6' DEPTH APPROX.
- = 12' DEPTH APPROX.
- = 17' TO 20' DEPTH APPROX.
- = 23' DEPTH APPROX.

TNS #11 Figure VI. Excavation Limits



**GILFILIAN ENGINEERING & ENVIRONMENTAL TESTING, INC.**

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PROJECT NO. 95008E

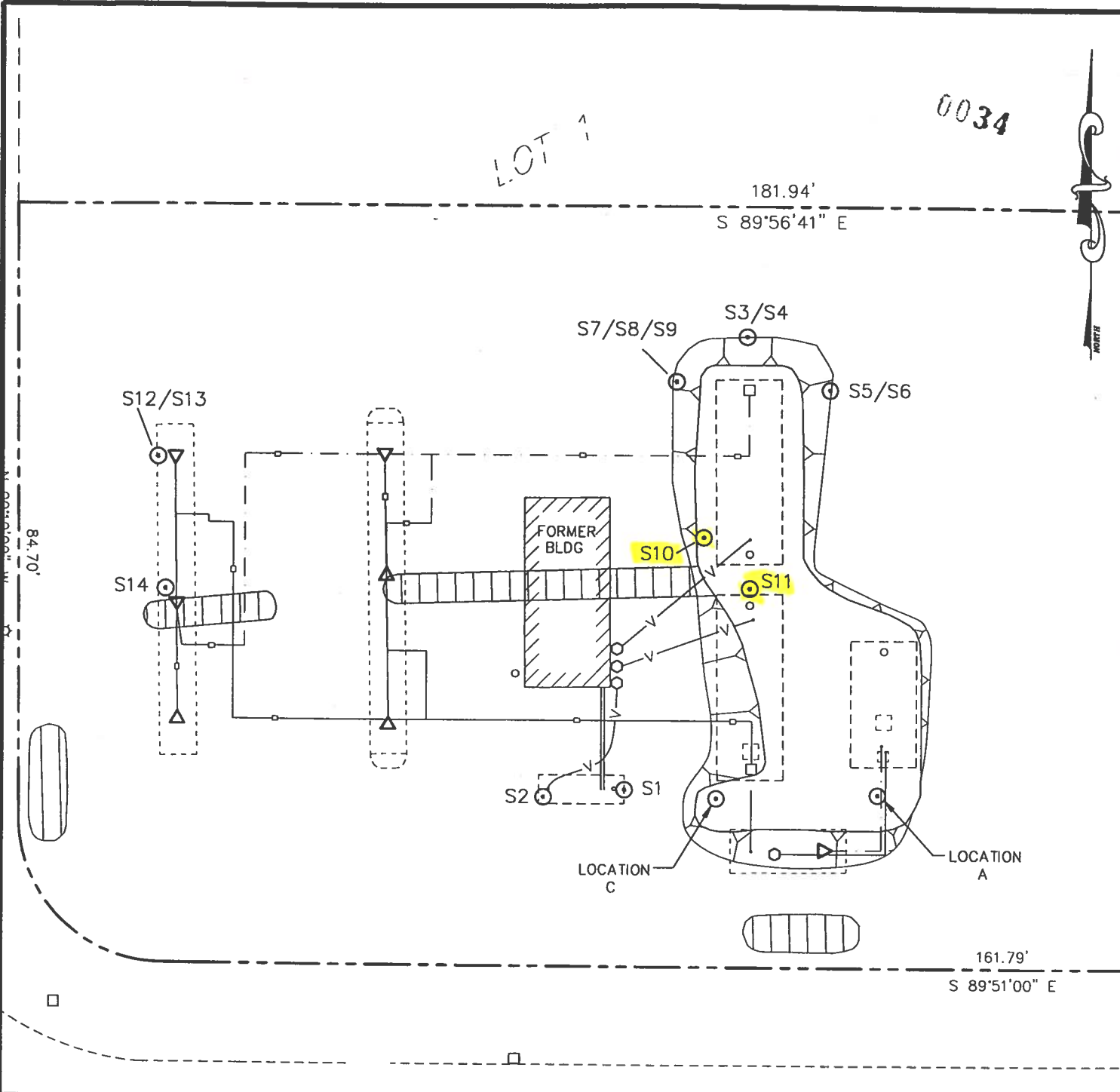
[SYN]FINAL 95008.TNS11EXC.DWG

LOT 1

0034

181.94'  
S 89°56'41" E

84.70'



161.79'  
S 89°51'00" E

**LEGEND:**

- = 2" STEEL DIESEL LINE w/ JOINT COUPLING
- = 2" STEEL GAS LINE w/ JOINT COUPLING

- = SAMPLE LOCATION
- = DISPENSER
- = VENT
- = VENT PIPE

TNS #11 Figure VII. Sample Locations



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PROJECT NO. 95008E

(SVR) FINAL 95008E TNS11.DOC.DWG

LIMITS OF EXCAVATION

LIMITS OF 1-1/2" SCREENED GRAVEL

20' OF 4" SCHD. 40  
20 SLOT PVC WELL  
SCREEN

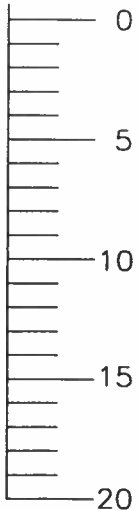
4" PIPE PLUG

4" SCHD. 40 SOLID PVC PIPE  
w/ 90° ELBOW UPRIGHT

0035



SURFACE MOUNTED  
LOCKING COVER



IMPORT  
BACKFILL

12 CYDS 1-1/2" SCREENED  
GRAVEL (1' BASE, 2' OF COVER)

10 MIL REINFORCED VISQUEEN

NATIVE SOILS

TNS #11 Figure VIII. Soil Vapor Extration Piping



GILFILIAN ENGINEERING &  
ENVIRONMENTAL TESTING, INC.

2605 Denali St., Suite 203, Anchorage, Alaska 99503-2749

SCALE: N.T.S.

DATE: 08/11/97

GEI PROJECT NO. 95008

(SVP:FINAL) 95008 ENVIRON 011-SVE.DWG