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DEPARTMENT OF ECOLOGY	
NWRO/TCP TANK UNIT	
INC # 1548	
INTERIM CLEANUP REPORT	<input checked="" type="checkbox"/>
SITE CHARACTERIZATION	<input type="checkbox"/>
FINAL CLEANUP REPORT	<input type="checkbox"/>
OTHER _____	<input type="checkbox"/>
AFFECTED MEDIA: SOIL	<input checked="" type="checkbox"/>
OTHER _____ GW	<input checked="" type="checkbox"/>
INSPECTOR (INIT.) <u>JA</u>	DATE <u>6-10-92</u>



ENVIRONMENTAL SERVICES, INCORPORATED



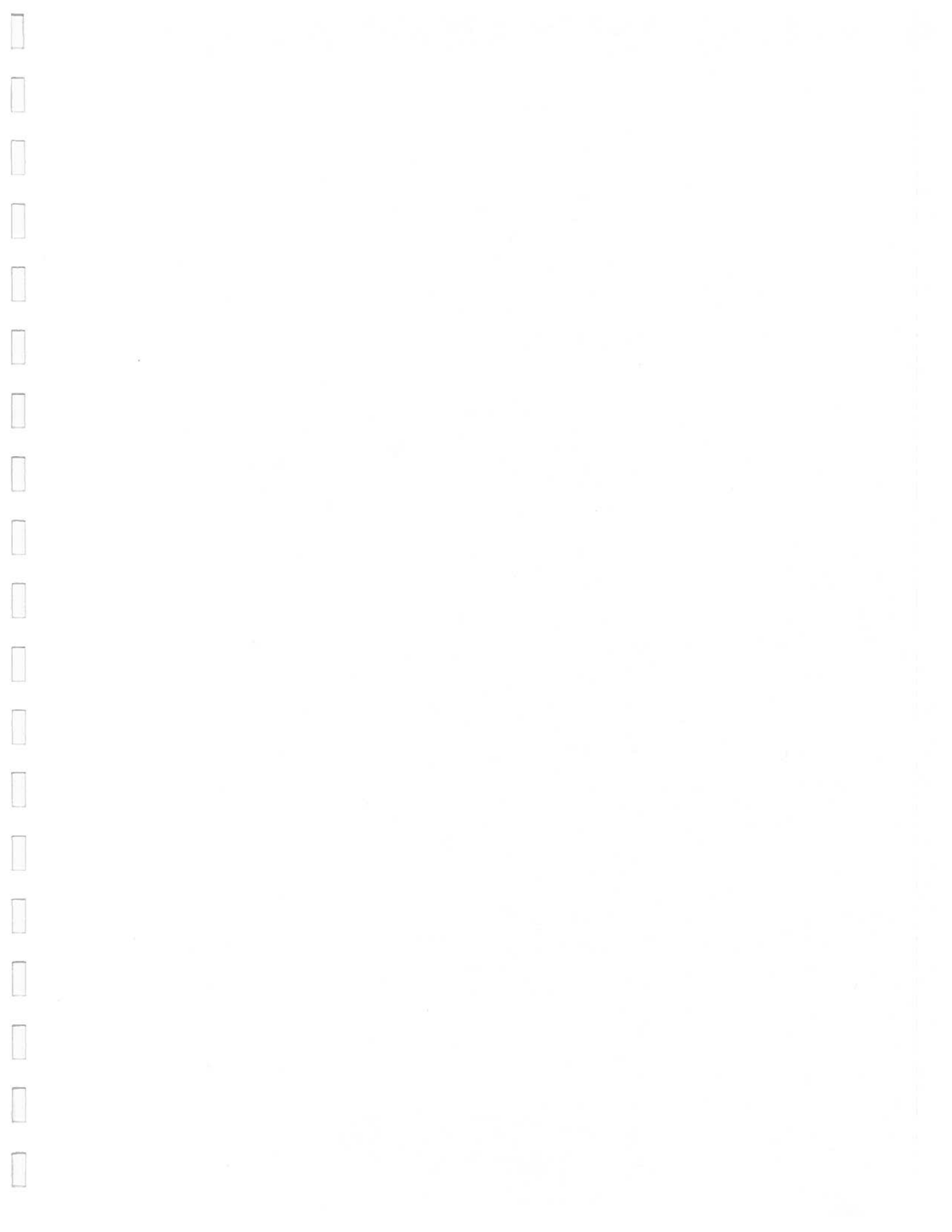
Environmental Remediation & Construction
12521 EVERGREEN DRIVE, SUITE A
MUKILTEO, WA 98275
(206) 355-2826
FAX (206) 290-9186

RECEIVED

JUN 1 0 1992

DEPT. OF ECOLOGY

REPORT OF FIRST PHASE ACTIVITY
FORMER CIRCLE K # 1461
2350 24TH AVENUE EAST
SEATTLE, WASHINGTON





ENVIRONMENTAL SERVICES INCORPORATED

June 1, 1992

Mr. Joseph M. Hickey
State of Washington Department of Ecology
Northwest Regional Office
3190 160th Ave. S.E.
Bellevue, Washington 98008-5452

RE: Report of First Phase Activity at Former Circle K #1461,
2350 24th Avenue East, Seattle, Washington.

Dear Mr. Hickey,

Glacier Environmental Services, Inc. (GES) submits the following report pertaining to the State of Washington Field Order F130956 for site activities at the above referenced site.

The former Circle K gasoline station is located at 2350 24th Avenue East in Seattle, Washington (see attached site vicinity map). The property was used as a gasoline station and convenience store from 1968 to 1990. The property is now used as a retail dry cleaning business.

GES understands that leaking underground storage tanks have resulted in a release of hazardous substances at the site. We further understand that Ecology and Mr. Kuk Jin Choung (owner of the property) have entered into a consent decree to begin investigation and remediation of contamination at the site.

GES site activity for the first month included: 1) sampling all existing groundwater monitor wells for the presence of free floating product, 2) sampling wells without free product for dissolved gasoline product, including benzene, toluene, ethylbenzene, xylenes, and total petroleum hydrocarbons (gasoline and diesel range), 3) re-starting and maintaining the existing groundwater/product recovery system including replacement and disposal of activated carbon filters.

GROUNDWATER MONITOR WELL SAMPLING

On April 9, 1992 groundwater samples were collected from nine (9) of the existing 14 wells (MW-1, MW-5, MW-6, MW-7, MW-11, MW-12, M-13, MW-14, and MW-16) at the former Circle K property. A Monitor Well Location Map is attached as figure 1. Free product (gasoline) was found in four (4) of the existing wells (MW-4, MW-8, MW-9, and MW-15), groundwater samples were not collected from these wells. Additionally, the well monument for MW-10 was damaged preventing access to the well.

June 1, 1992
Mr. Joseph Hickey
Page 2

Groundwater levels in the monitoring wells appear to be consistent. However, a leaking fire hydrant located 6 feet from MW-11 likely influenced the water measurement for that well and those in the immediate area (see table 3). Based on the measured water level elevations, groundwater flow appears to be to the southeast. This flow direction appears anomalous as the site is located at the bottom of a grade down-sloping to the north and the Montlake Cut at a lower elevation, is also located north of the site. Previous groundwater studies at the site indicate a groundwater flow to the northeast, consistent with free product migration.

Four to five casing volumes were purged from each well prior to sampling in order to draw fresh formation water into the wells. Well casing volumes were calculated from the internal casing diameter, initial depth to water, and total depth of the well prior to purging. The wells were purged using a 2-inch diameter stainless steel bailer. Monitoring well data is presented in Table 1 (Attached).

Well purge water was placed in a 55 gallon drum and was subsequently stored in a secured area located behind the dry cleaning building. The water will be disposed of with recovered product from the on site recovery system.

Groundwater samples were collected from the wells using a pre-cleansed stainless steel bailer. Water samples were placed directly in sterilized bottles supplied by the analytical laboratory, Sound Analytical, Inc. of Tacoma, Washington. In addition, water samples from each monitoring well were measured for temperature, pH, and electrical conductivity during the sampling episode. Following sampling the water samples were placed in a pre-cooled molded plastic cooler for shipment to the analytical laboratory.

Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline and diesel (WTPH-G and WTPH-D) and benzene, toluene, ethylbenzene, and xylenes by EPA method 602. A copy of the analytical report is attached as Appendix A.

DISCUSSION OF LABORATORY RESULTS

The sample from monitoring well MW-13 contained 56,000 parts per billion (ppb-ug/l) TPH as gasoline and 11,000 ppb TPH as diesel. Both of these concentrations are above the Washington Department of Ecology Model Toxics Control Act (MTCA) Method A Cleanup Standard (1,000 ppb). The MW-13 sample also contained benzene greater than the MTCA Method A Guideline (see table 2).

June 1, 1992
Mr. Joseph Hickey
Page 3

Benzene was detected in the sample from monitoring well MW-1 at a concentration of 51 ppb, this concentration is greater than MTCA Method A Guideline concentration for benzene (5 ppb). The sample from MW-16 indicated the presence of benzene equal to MTCA Method A Guideline of 5 ppb.

OPERATION AND MAINTENANCE OF RECOVERY SYSTEM

On completion of well sampling, GES personnel began maintenance of the free product/groundwater recovery system.

The system consists of a 3/4 horse power submersible water table depression pump and a floating product skimmer. The pumps are installed in a 30 inch diameter by 15 foot deep well at the north end of the property (see site plan). A below grade utility vault houses the recovery gear and recovery well.

Water pump effluent is directed to sanitary sewer under permit by the Municipality of Metropolitan Seattle (METRO). Prior to discharge, the water passes through two 185 pound activated carbon filters to remove dissolved phase product.

Recovered free product is directed to a 55 gallon product recovery drum. The drum is equipped with a high level switch that will shut the product pump off when the drum is 90% full.

Our maintenance effort started with the replacement of both activated carbon filters. Two each Cameron Yakima WSSU 55 units with virgin carbon were installed in place of the spent filters. Spent filters were returned to Cameron Yakima for cleaning and replacement of the activated carbon. The serviced units will be returned to GES and will be installed one at a time at six week intervals.

During test operation of the recovery system, GES personnel discovered that the water table depression pump was not operational. The pump was removed from the well and repaired by an electrical sub-contractor. The pump was re-installed on April 28, 1992 and has been in operation since that time.

In attempt to facilitate fuel recovery, the 30 inch diameter recovery well screen was pressure washed to dislodge accumulated rust scale and algae. Using a portable air operated diaphragm pump, the well was pumped dry to allow for cleaning. Wash water was directed through the filtering system and directed to sanitary sewer. A portable pressure washer was used for cleaning.

June 1, 1992
Mr. Joseph Hickey
Page 4

GES personnel visits the site weekly to check equipment operation and record system pumping data. To date the system has not recovered free product. As of May 28, 1992 1,726 gallons of water have been removed and processed through the system.

CONCLUSIONS AND RECOMMENDATIONS

GES recommends that further investigation of the migration of free product be conducted.

Measurement of water levels within the on site monitoring wells during recovery system operation may help determine the lateral influence of the system. Monitor wells with free product determined to be outside the influence of the system should be bailed at regular intervals to remove floating product.

Product thickness in monitor wells near the property across East McGraw Street may warrant that additional wells be installed to determine the extent of free product migration in that direction.

The recovery system installation on site includes underground conduit for the extraction of hydrocarbon vapor. This series of underground piping is connected to a 1 horse power regenerative vapor extraction system (VES) blower. GES recommends that a permit from the Puget Sound Air Pollution Control Agency (PSAPCA) be applied for and that the vapor recovery system be operated at the site. Operation of the VES may facilitate the migration of free product to the recovery well from off site and aid in the remediation of contaminated soil and groundwater.

June 1, 1992
Mr. Joseph Hickey
Page 5

WARRANTY

Glacier Environmental Services, Inc. makes no warranty to the environmental condition of this property or to any bordering property or properties. GES has solely reported findings from specific actions taken in accordance with state regulations. GES does warranty that all work performed was in accordance with state and federal regulations and with acceptable industry standards.

Please direct any questions regarding this report to Mr. Steve Miles at (206) 355-2826.

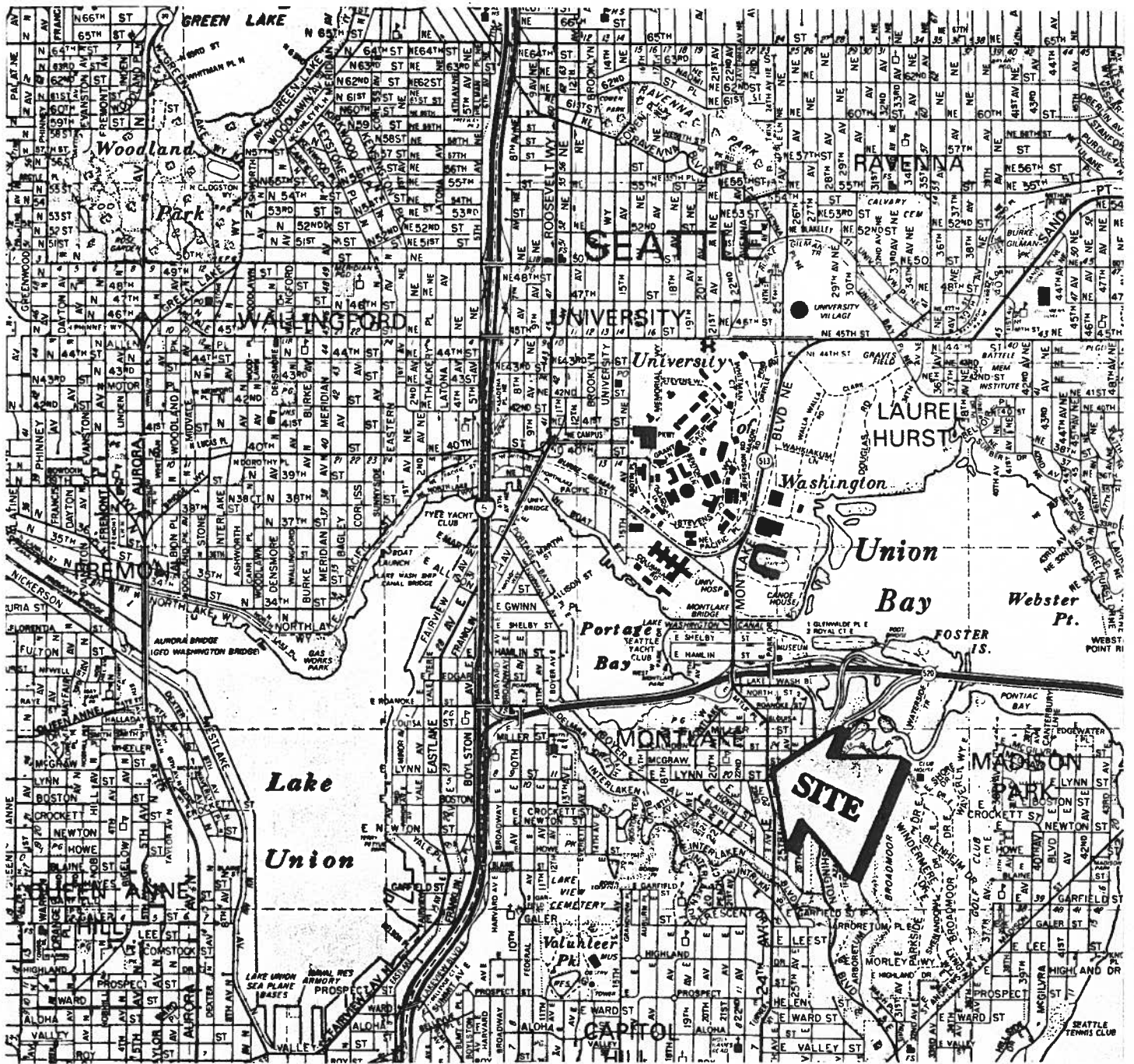
Sincerely,
Glacier Environmental Services, Inc

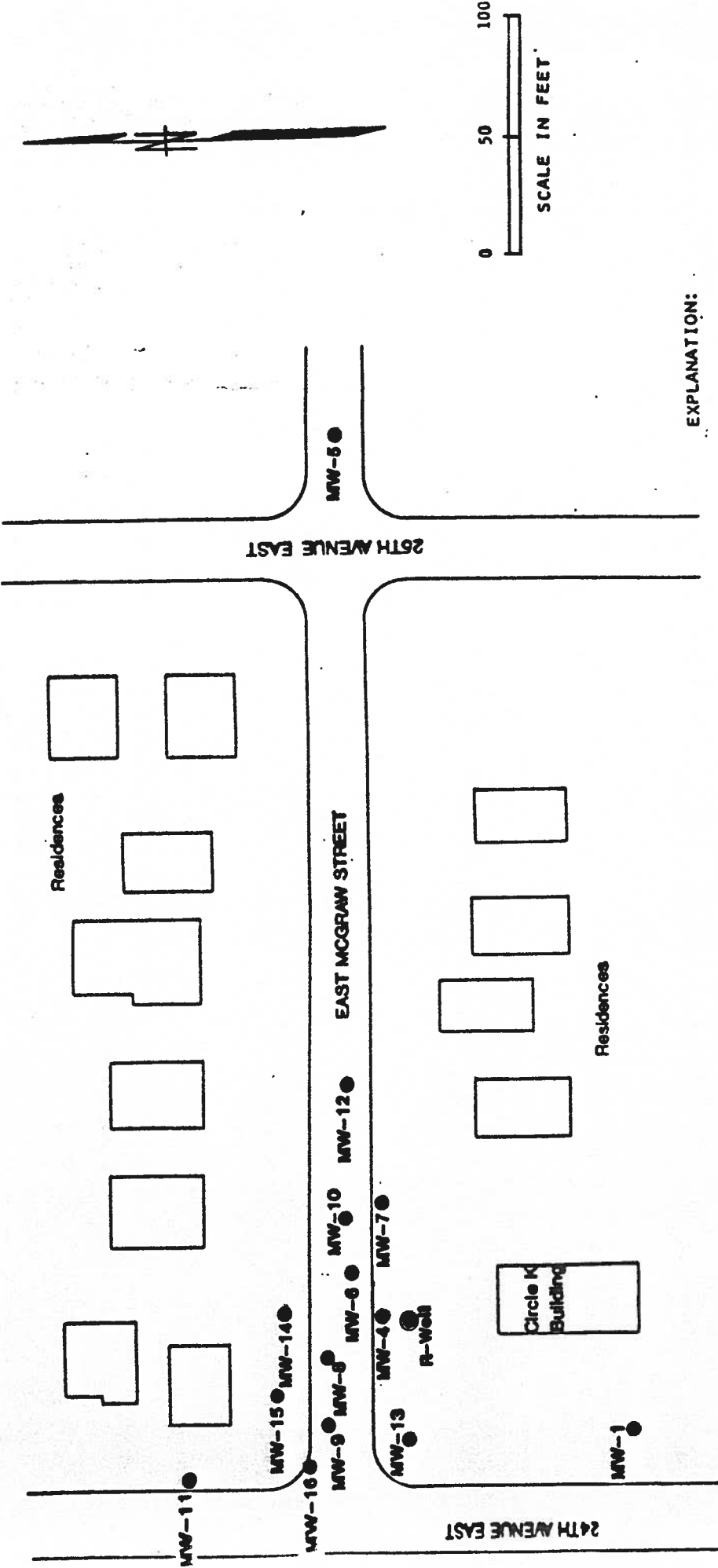


Steve Miles
Vice President

SM/sm
attachments

SITE VICINITY MAP





EXPLANATION:

MW-1 ● MONITOR WELL LOCATION AND NUMBER

R-Well ● RECOVERY WELL LOCATION

FIGURE 1
MONITOR WELL LOCATION MAP

TABLE 1: MONITORING WELL DATA

WELL NO.	DEPTH TO WATER BELOW TOC ¹ (FT.)	FREE PRODUCT PRESENT	TEMP. (F)	pH	EC (uM)	COMMENTS
MW-1	12.65	No	56	7.4	45	Murky water; No gasoline odor
MW-4	9.80	Yes	-	-	-	Measured .9 ft. of free product; Bent casing - could not sample
MW-5	10.12	No	54	7.6	28	Murky water ; No gasoline odor
MW-6	10.02	No	56	7.4	79	Murky water, No gasoline odor
MW-7	8.68	No	53	7.8	28	Murky water, No gasoline odor
MW-8	9.92	Yes	-	-	-	Measured .6 ft. of gasoline in well
MW-9	11.10	Yes	-	-	-	Measured .2 ft. of gasoline in well
MW-10	-	-	-	-	-	Could not open well protector; No water level measured or sample collected
MW-11	1.24	No	53	7.6	28	A leaking hydrant located approx. 6' south of the well may be influencing water level in well
MW-12	9.94	No	55	7.6	28	Murky water; No gasoline odor
MW-13	11.28	No	56	7.4	35	Very strong gasoline odor in water from well
MW-14	6.42	No	54	7.8	29	Murky water; No gasoline odor
MW-15	9.80	Yes	-	-	-	Measured 2.6 feet of free product in well
MW-16	8.76	No	56	7.6	43	Strong gasoline odor; No free product

¹TOC = top of casing

TABLE 2: ANALYTICAL RESULTS

WELL NO.	TPH-gasoline (ppb) ¹	TPH- diesel (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl Benzene (ppb)	Total Xylenes (ppb)
MW-1	<100	710	51	14	14	9
MW-5	<100	<250	<1	1	<1	3
MW-6	<100	<250	4	1	<1	3
MW-7	<100	<250	4	<1	5	9
MW-11	<100	<250	1	<1	<1	<1
MW-12	<100	<250	4	<1	<1	3
MW-13 ²	56,000	11,000	5,900	5,700	1,200	6,400
MW-14	<100	720	4	2	5	8
MW-16	<100	690	5	2	5	9
WATER STAND. (ppb) ¹	1,000	1,000	5	30	30	40

¹Parts per billion (ug/L)

² Washington Department of Ecology, Guidance for Remediation of Releases From Underground Storage Tanks; Model Toxics Control Act, Method A Cleanup Standards; July, 1991.

TABLE 3: GROUNDWATER ELEVATIONS IN MONITORING WELLS

WELL NO.	TOC ¹ ELEVATION (FT)	DEPTH TO WATER BELOW TOC ² (FT)	GROUNDWATER ELEVATION (FT)
MW-1	100.94	12.65	88.29
MW-4	98.38	9.80	88.58
MW-5	90.94	10.12	80.82
MW-6	97.92	10.02	87.90
MW-7	97.43	8.68	88.75
MW-8	98.36	9.92	88.44
MW-9	99.03	11.10	87.93
MW-10	97.55	-	-
MW-11	98.62	1.24 ³	97.38
MW-12	96.56	9.94	86.62
MW-13	99.95	11.28	88.67
MW-14	98.07	6.42	91.65
MW-15	99.04	9.80	89.24
MW-16	99.04	8.76	90.28

¹ TOC = Top of casing; elevations based on assumed datum of 100.00 feet

² Measured on April 21, 1992

³ May have been influenced by a leaking fire hydrant locate within 6 feet of well

APPENDIX A
COPIES OF ANALYTICAL REPORTS

SOUND ANALYTICAL SERVICES, INC.

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 • TELEPHONE (206)922-2310 • FAX (206)922-5047

Report To: Envirocon, Inc.

Date: April 21, 1992

Report On: Analysis of Water

Lab No: 23709

Page 1 of 3

IDENTIFICATION:

Samples received on 04-10-92

Project: 1440 40010 Glacier MW Sampling

ANALYSIS:

Lab Sample No.	1	2	3
Client ID	MW-1	MW-5	MW-6
Units	mg/l	mg/l	mg/l
WTPH-G Gasoline (C7-C12)	< 0.1	< 0.1	< 0.1
BTEX by 8020			
Benzene	0.051	< 0.001	0.004
Toluene	0.014	< 0.001	< 0.001
Ethyl Benzene	< 0.001	< 0.001	< 0.001
Xylenes	0.009	0.003	0.003
<u>SURROGATE RECOVERY, %</u> Trifluorotoluene	*15	82	80
WTPH-D Diesel (> C12-C24)	0.71	< 0.25	< 0.25
<u>SURROGATE RECOVERY, %</u> Perylene	66	72	60

*Surrogate recovery low due to matrix interference.

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Envirocon, Inc.
 Project: 1440 40010
 Page 2 of 3
 Lab No. 23709
 April 21, 1992

Lab Sample No.	4	5	6
Client ID	MW-7	MW-11	MW-12
Units	mg/l	mg/l	mg/l
WTPH-G Gasoline (C7-C12)	< 0.1	< 0.1	< 0.1
BTEX by 8020			
Benzene	0.004	0.001	0.004
Toluene	< 0.001	< 0.001	< 0.001
Ethyl Benzene	0.005	< 0.001	< 0.001
Xylenes	0.009	< 0.001	0.003
<u>SURROGATE RECOVERY, %</u> Trifluorotoluene	82	80	88
WTPH-D Diesel (> C12-C24)	< 0.25	< 0.25	< 0.25
<u>SURROGATE RECOVERY, %</u> Perylene	72	64	65

Continued . . .

SOUND ANALYTICAL SERVICES, INC.

Envirocon, Inc.
Project: 1440 40010
Page 2 of 3
Lab No. 23709
April 21, 1992

Lab Sample No.	7	8	9
Client ID	MW-13	MW-14	MW-16
Units	mg/l	mg/l	mg/l
WTPH-G Gasoline (C7-C12)	56	< 0.1	< 0.1
BTEX by 8020 Benzene	5.9	0.004	0.005
Toluene	5.7	0.002	0.002
Ethyl Benzene	1.2	0.005	0.005
Xylenes	6.4	0.008	0.009
<u>SURROGATE RECOVERY, %</u> Trifluorotoluene	*12	74	74
WTPH-D Diesel (> C12-C24)	11	0.72	0.69
<u>SURROGATE RECOVERY, %</u> Perylene	64	77	72

*Surrogate recovery low due to matrix interference.

SOUND ANALYTICAL SERVICES


STAN P. PALMQUIST

ENVIROCON, INC.

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME	NO. OF CONTAINERS	REMARKS																						
14010	Gleason MW Sampling		TPH-A5 Gasoline * PTE * TPH-D5 Diesel *																						
STAT. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION																				
MW-1	3/19			X	Forest Creek Station	3	X	X	X																
MW-5				X																					
MW-6				X																					
MW-7				X																					
MW-8				X																					
MW-12				X																					
MW-13				X																					
MW-14				X																					
MW-16				X																					
Relinquished (Signature)		Date/Time		Received by: (Signature)		Date/Time		Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Remarks		Date/Time		Received by: (Signature)		Remarks		Date/Time		Received by: (Signature)	
<i>[Signature]</i>		3/19		<i>[Signature]</i>		1/14/14																			
Relinquished (Signature)		Date/Time		Received by: (Signature)		Date/Time		Relinquished by: (Signature)		Date/Time		Received by: (Signature)		Remarks		Date/Time		Received by: (Signature)		Remarks		Date/Time		Received by: (Signature)	

*VIA WA ONE DEPTROL FFE USES
 ① The TPH-A Diesel sample has not
 been analyzed (preservative)

Visible petroleum hydrocarbon sheen
 Strong gasoline odors in samples

Chain of Custody Seal: _____
 Intact? (yes/no) _____

Split Samples:
 Accepted Declined

Signature