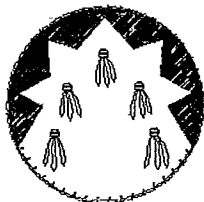


EXPLORATORY DRILLING AND MONITORING WELL INSTALLATION

**Sharp's Automotive Service
Moxee, WA**

**Prepared For:
Mr. Bradley T. Sharp
208 E. Moxee Street
Moxee, WA 98936**

AUGUST, 1995



WHITE SHIELD

INC.

**P.O. BOX 477, 801 GRANDRIDGE ROAD, GRANDVIEW, WA 98930
TELEPHONE: (509) 882-1144 VOICE (509) 882-4566 FAX**

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1.0 Introduction

1.1 Purpose

The purpose of this report is to describe the drilling and sampling of six test boreholes and the installation of four groundwater monitor wells located at 208 E. Moxee Avenue, Moxee, Washington. The objective of the work was to establish the vertical and horizontal extent of the remaining petroleum contamination in the soil and groundwater at the Sharp's Automotive Service site. Contamination was discovered during the removal of underground fuel storage tanks in November 1994. Reference is made to a report entitled "UST Closure/Interim Remedial Action Report" prepared by White Shield, Inc., December, 1994. This latest work is conducted under Contract Number USTCAP-PVT-084-94, Pollution Liability Insurance Agency, State of Washington.

1.2 Scope

The scope for the drilling phase of this project was to establish the boundaries of the remaining petroleum contamination in the groundwater at Sharp's Automotive and to install a minimum of three groundwater monitor wells required by WAC 173-340-450. To determine the boundaries and establish the required monitor wells, White Shield contracted with Boretac, Inc., of Spokane, Washington, to drill six exploratory boreholes, sample the soil water interface, and establish four groundwater monitor wells. WSI performed field screening of five interface samples, sent four groundwater samples to Onsite Environmental Inc., Redmond, Washington for laboratory analysis, and surveyed the groundwater depth to develop a groundwater gradient at this site. This report completes the characterization phase of this project.

Subsurface explorations were conducted using a trailer mounted, modified B-24 Drill Rig, equipped for both auger and core drilling. The laboratory analysis was conducted using methods WTPH-G and WTPH-D.

The field screening of the background air quality was conducted using a Foxboro Organic Vapor Analyzer and/or a Foxboro TVA1000A Toxic Vapor Analyzer. The field screening of the soil sample from soil/water was conducted using a Foxboro Organic Vapor Analyzer and/or a Foxboro TVA1000A Toxic Vapor Analyzer for volatile and Thin Layer Chromatography for semi-volatile organic contaminants.

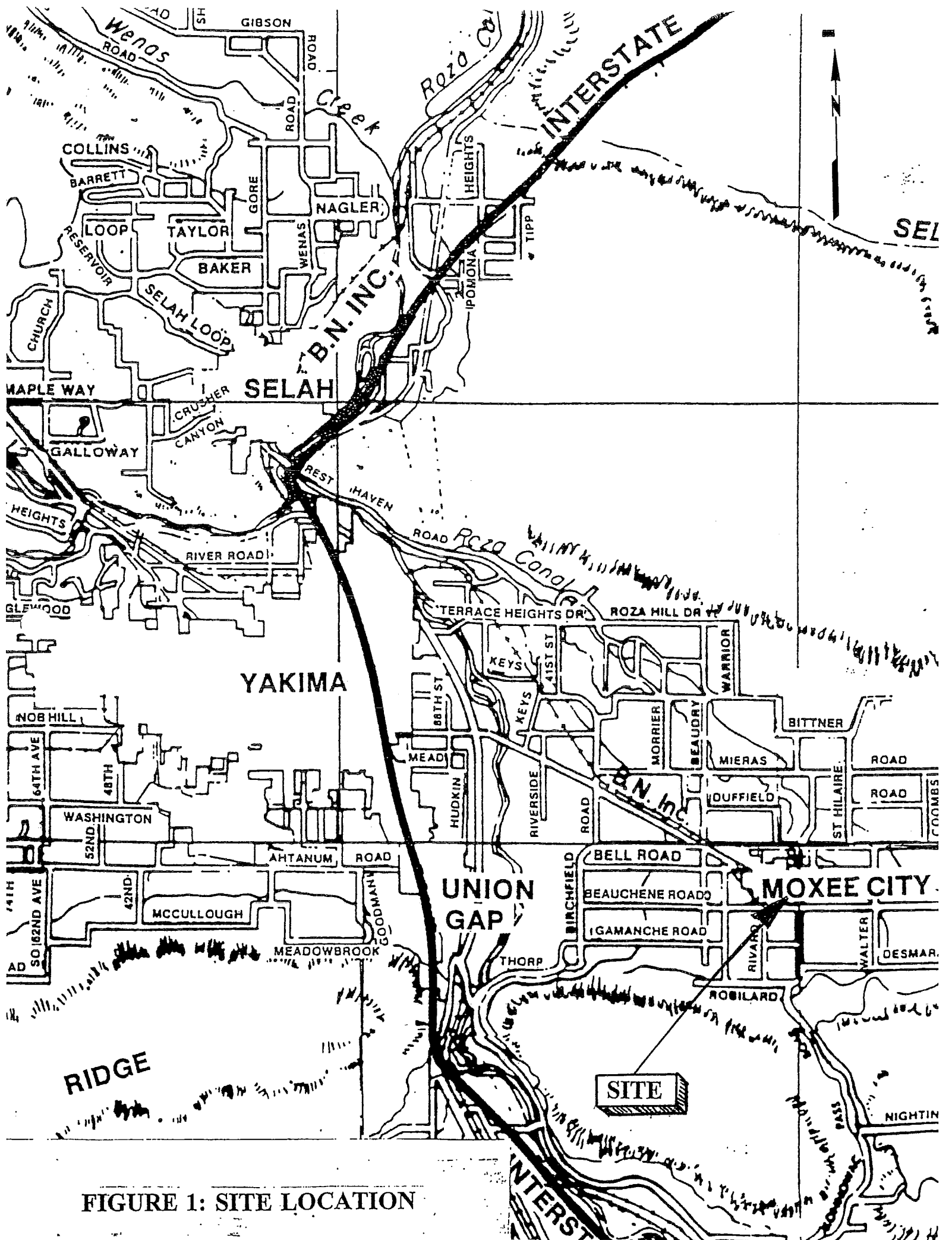


FIGURE 1: SITE LOCATION

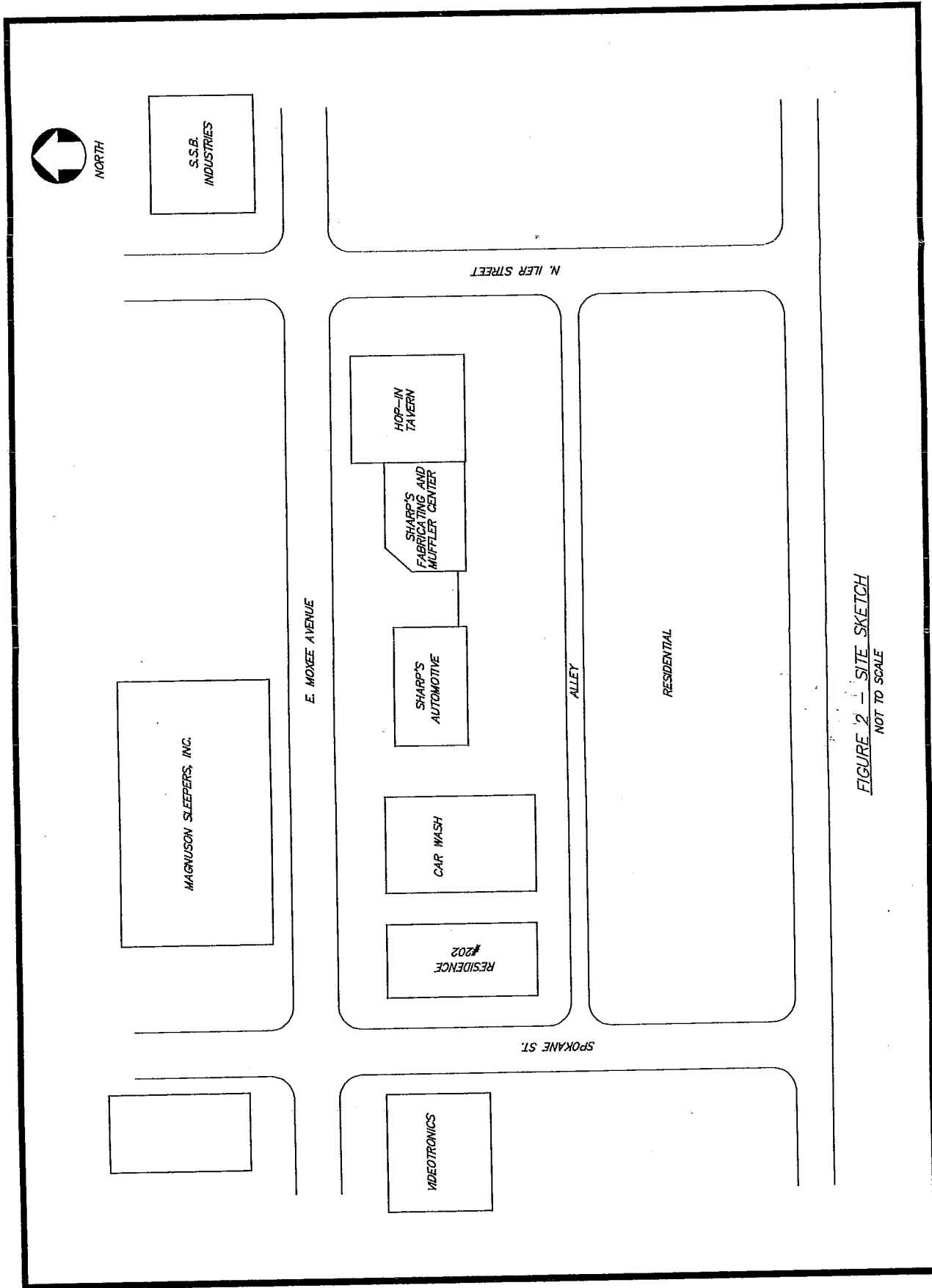


FIGURE 2 - SITE SKETCH
NOT TO SCALE

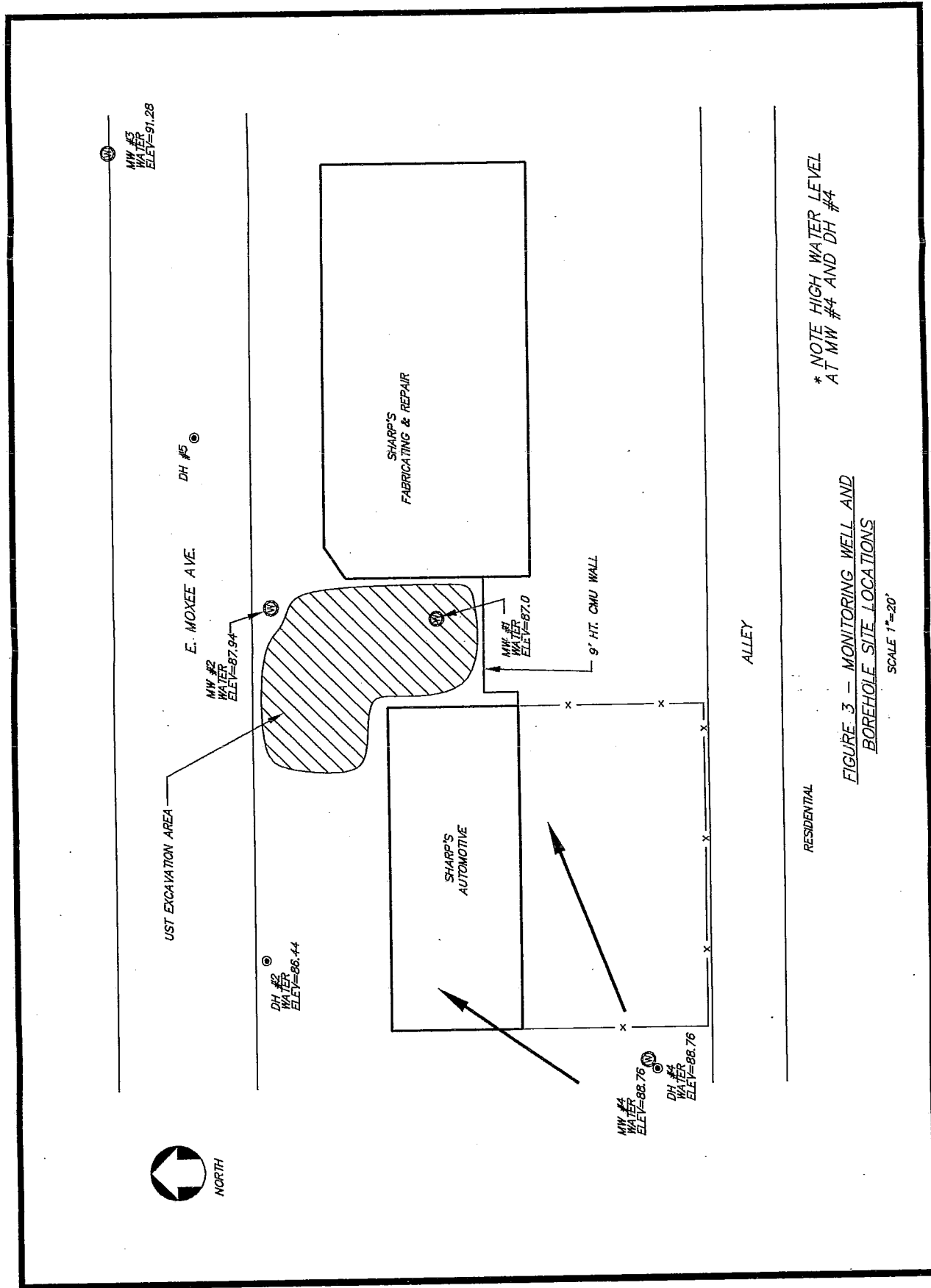
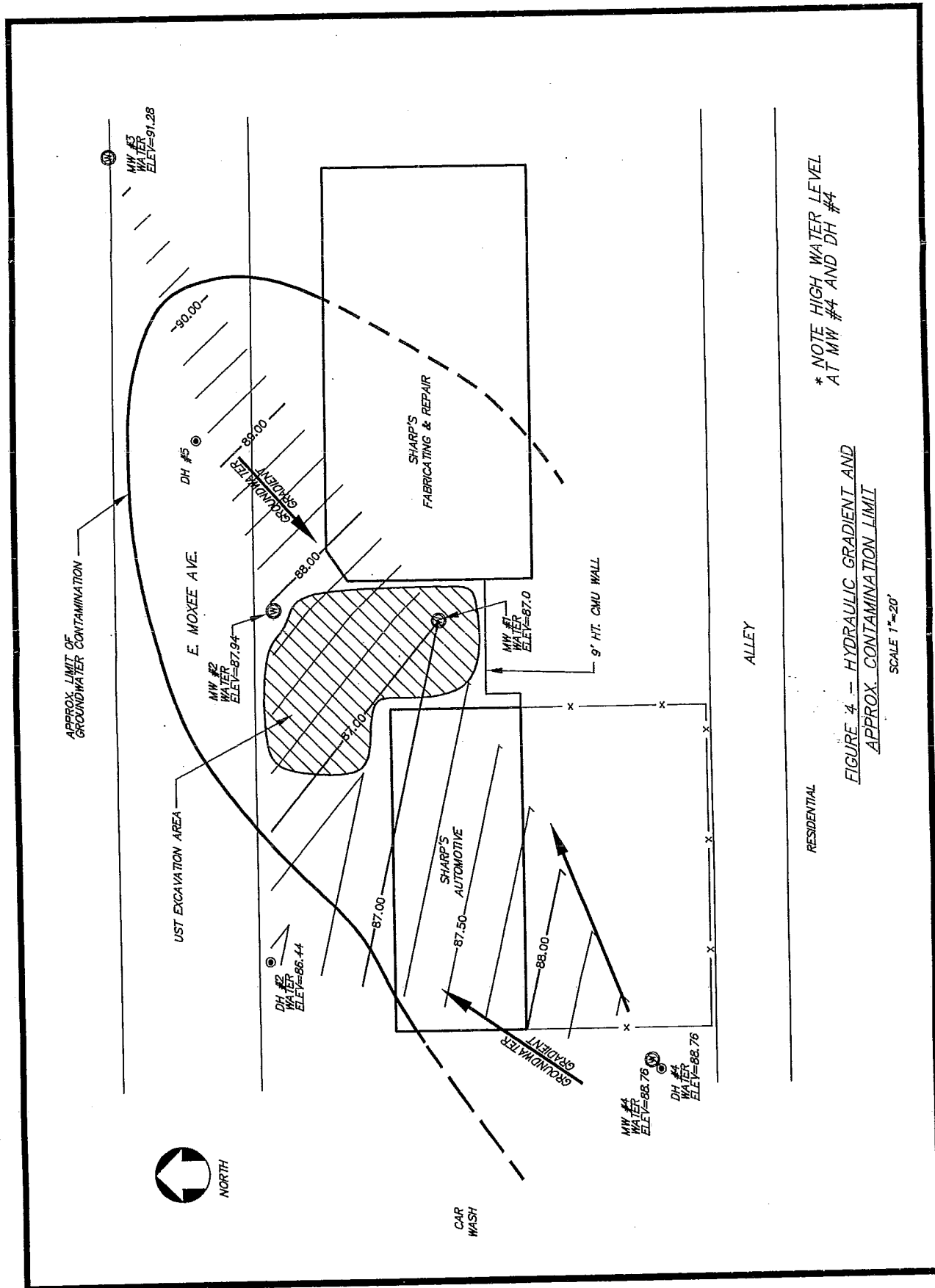


FIGURE 3 - MONITORING WELL AND
BOREHOLE SITE LOCATIONS



* NOTE HIGH WATER LEVEL
AT MW #4 AND DH #4

FIGURE 4 - HYDRAULIC GRADIENT AND
APPROX. CONTAMINATION LIMIT

SCALE 1"=20'

1.3 Personnel On Site

White Shield was represented on site by Hari Sharma, Staff Civil Engineer. Boretac was represented by Jim Lewis, owner / operator, and the driller's assistant was Sean O'Tyson.

2.0 General Site Description

2.1 Site Location

The Sharp's Automotive address is 208 E. Moxee Avenue. The site is described as being situated in the SE 1/4 of Sec. 1, T12N, R19E, WM. Refer to Figures 1 and 2, Site Location and Site Sketch.

2.2 Site Description and History

The site is a service station that provides automotive services such as automotive repair, and fuel sales. The site is bounded by Sharp's Fabricating and Muffler Center to the east, a car wash to the west, E. Moxee Avenue to the north, and single family residences to the south. Across E. Moxee Avenue, to the north, is the Magnuson Sleeper Inc. building. Spokane street is located to the west of the single family residence at 202 E. Moxee Avenue. A video store is located in the southwest quadrant of Spokane Street/E. Moxee Avenue intersection. A laundry facility and a machine shop are located in the northwest quadrant of the Spokane Street/E. Moxee Avenue intersection. Refer to Figures 2, 3 and 4.

The subject property was purchased by Mr. Bradley T. Sharp from Mr. William T. Sharp in September of 1994. Mr. William T. Sharp purchased the property from R.H. Smith Distributing in 1987. The site was owned by R.H. Smith Distributing for approximately 32 years prior to sale.

2.3 Regulatory History

This site is currently under the regulatory authority of the Washington State Department of Ecology (WSDOE). This work is conducted under contract number USTCAP-PVT-084-94 issued by the Pollution Liability Insurance Agency, State of Washington.

3.0 Field Activities

3.1 General Investigative Methods

The samples from the groundwater interface were inspected and field screened for volatile and semi-volatile organic contaminants. The methods and general conclusions are discussed below.

3.1.1 Field Screening

For field analysis of compounds containing volatile organics, WSI uses a Foxboro Organic Vapor Analyzer (FID\OVA) or Toxic Vapor Analyzer (TVA 1000A) in conjunction with the interim headspace method as recommended by the manufacturer. This method is used to confirm the presence or absence of volatile components in the soil and provides only a rough indication of the contaminant concentrations. The analysis procedure involves:

1. Selecting a clean, wide mouth jar (1 qt.) and filling the bottom 1/3 with a discrete soil sample.
2. Place aluminum foil over the top of the jar and place a ring over the jar to create a seal.
3. Boil the sample for 10 minutes. This causes the volatile compounds to become vapors and collect in the space above the soil.
4. Remove the sample from the boiling water and insert the instrument probe through the aluminum foil for vapor analysis.
5. Record the instrument response on the Field Form.

For field analysis of semi-volatile (diesel) and non-volatile compounds (motor oil), WSI uses Thin Layer Chromatography (TLC) for qualitative and quantitative analysis. This analytical technique utilizes the principle of chromatography to separate individual components for comparison to known standards.

TLC is classified as a solid-liquid chromatographic system, meaning there are two phases through which an extract of the sample is passed; a solid phase (silica gel) and a liquid phase (a solvent such as hexane).

The solid phase is stationary and is coated on a glass plate. During the chromatography process, the liquid phase carries the sample through the solid phase. The solvent moves at a fairly constant rate through the solid phase. However, the compound in the sample (analyte) are partitioned by a relative attractiveness of the analyte between the solid phase and the liquid phase.

Analytes strongly attracted to the silica will remain on the silica longer and move more slowly than Analytes that are not as strongly attracted to the silica. When the chromatography is stopped, the distance the analyte has moved relative to the distance the solvent has moved is used to identify the compound. When the plate is viewed under ultraviolet light, the Analytes can be seen and compared to standards of known concentration for quantitative analysis.

3.1.2 Soil Sampling

Soil samples were collected using a clean split spoon sampler driven into the soil. Samples for OVA and TLC field analysis as well as laboratory samples were retrieved in this manner.

3.1.3 Groundwater Sampling

The procedure for collection of groundwater samples is as follows:

1. Two clean 40 ml glass vials pre-preserved with .5 ml Hydrochloric Acid (HCl) are used for sampling volatile compounds.
2. One clean 1 liter amber narrow mouth bottle is used for sampling for diesel and non-volatile compounds.
3. A well is purged three times its wetted volume or until it is dry. A sample of water is obtained after the water level reaches its static level. It is sampled using a disposable plastic bailer or hand operated vacuum pump and transferred into the sample container using caution to avoid agitation and the subsequent loss of volatile vapors from the sample.
4. The sample containers are filled to overflowing prior to replacing the cap in order to minimize the presence of headspace in the sample.
3. Invert the sample and ensure the absence of airspace.
4. Label the jar with the groundwater sample number, the type of laboratory test required, the date, name of site and the name of the sampler.
5. Cool the sample in wet ice to approximately 4° Centigrade. Care must be taken to ensure that the sample is not cooled to a

temperature below 4° Centigrade. Overcooling results in freezing of the water sample and breakage of the sample vial.

6. Enter the sample on the WSI chain of custody form.
7. Once the sample is cooled to approximately 4° Centigrade, repack the sample in an ice chest packed with blue ice for shipment.
8. When the ice chest is filled, or at the close of each work day, the ice chest shall be sealed.
9. Transport the ice chest to a commercial courier for shipment to the laboratory.

4.0 Description of the Borehole Data

4.1 Drilling

Drilling commenced on July 12, 1995 and was completed on July 12, 1995. A modified B-24 Drill rig with hollow stem 4.25" internal diameter (ID) and 8.25 outer diameter (OD) auger was used for drilling.

4.1.1 Borehole 1/ Monitoring Well #1 (MW-1)

Borehole 1 was drilled on July 12, 1995 to a total depth of 20'. This borehole was located 22' southeast of Sharp's Automotive building. Refer to Figure 3, Monitoring well and borehole site locations. This borehole was converted to a permanent groundwater monitor well, hereafter referred to as Monitoring MW-1.

The soil material intersected in Borehole 1 from 1' to 20' was a light brown clayey silt with a narrow sand layer between 9' and 10.5'. Groundwater was intersected at 13'. The monitor well was constructed using screened 2" PVC from 20' to 10', and blank PVC from 10' to the surface. A sand filter pack was placed around the monitor well between 20' to 3', and a bentonite seal was installed from 3' to the surface. The well was finished with a locking-type cap and a bolt-sealed Morris monument. Table I and Table II summarize drilling, sampling and laboratory analytical information. Drill logs generated in the field are included in Appendix A.

Groundwater sample SHA-0195-108W was collected on July 17, 1995. The water sample analytical results were 470 parts per billion (ppb) TPH gasoline, 110 ppb benzene, 22 ppb toluene, 8.9 ppb ethylbenzene and 51 ppb total xylene.

Contamination levels are above the Model Toxics Control Act limits for benzene and xylene in groundwater. Refer to Appendix E, MTCA Cleanup Levels-Groundwater. No diesel fuel is present in the groundwater.

4.1.2 Borehole 2

Borehole 2 was drilled on July 13, 1995 to a total depth of 14.5'. This borehole was located 28' from the northwest corner and 61' from the northeast corner of Sharp's Automotive building. Refer to Figure 3, Monitoring Well and Borehole site locations. The field screening of a soil sample from the soil/water interface did not indicate any semi-volatile contaminants and 10 ppm organic vapors in the sample.

The soil material intersected in borehole 2 from 1.5' to 14.5' was a brown clayey silt with a minor sand fraction. Groundwater was intersected at 13'. Refer to Table I for sample analytical information. The drill log generated in the field is included in Appendix A. Groundwater samples for WTPH/Gasoline and WTPH/Diesel analyses were not collected from this borehole.

4.1.3 Borehole 3/ Monitoring Well #2 (MW -2)

Borehole 3 was drilled on July 12, 1995 to a total depth of 20'. This borehole was located 33.5' northeast of Sharp's Automotive building. Refer to Figure 3, Monitoring Well and Borehole Site Locations. This borehole was converted to a permanent groundwater monitor well, hereafter referred to as MW -2.

The material intersected in Borehole 3 from 1.5' to 7' was a light brown clayey silt. At 7' in depth, the silt material turned dark in color and exhibited a strong odor of petroleum product. A 1' thick sand layer was encountered from 10' to 11'. Ground water was intersected at 12'. The silt turned light brown in color below 18'. The monitor well was constructed using screened 2" PVC from 20' to 10', and blank PVC from 10' to the surface. A sand filter pack was placed around the monitor well from 20' to 3', and a bentonite seal was placed from 3' to the surface. The well was finished with a locking-type cap and blt-sealed Morris monument. Table I and Table II summarize drilling sampling and laboratory analytical information. Drill logs generated in the field are included in Appendix A.

Groundwater sample SHA-0195-109W was collected on July 17, 1995. The water sample results were 5200 part per billion (ppb) TPH gasoline, 99 ppb benzene, 250 ppb toluene, 55 ppb ethylbenzene and 740 ppb total xylene. These contamination levels are well above the Model Toxics Control Act limits for TPH,

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gasoline, benzene, toluene, ethylbenzene and xylene in groundwater. No diesel fuel is present in the groundwater.

4.1.4 Borehole 4

Borehole 4 was installed on July 12, 1995 to a total depth of 14.5'. This borehole was located 58' south and 7' west of the northwest corner of Sharp's Automotive building. Refer to Figure 3, Monitoring Well and Borehole Site locations. Field screening of a soil sample for the soil/water interface indicated 250 ppm organic vapors in the sample.

4.1.5 Borehole 5

Borehole 5 was drilled on July 13, 1995 with the intention of converting it into an upgradient monitoring well. However, a dark layer of soil with extensive contamination was encountered at the depth of 6.5' and the drilling was discontinued. The borehole was located 72.2' northeast of Sharp's Automotive building on E. Moxee Avenue. Refer to Figure 3, Monitoring well and borehole site locations.

The material intersected in Borehole 5 from 0.5' to 4" was a dark brown clayey silt. The material from 4' to 6.5' was dark brown clayey silt with a sand fraction. The material intersected from 6.5' to 9' was dark and had strong odor of petroleum product. Due to the presence of gross contamination in the soil, the drilling was discontinued and a new site was selected for the location of an upgradient monitor well (MW#3).

4.1.6 Borehole 6/ Monitoring Well # 3 (MW-3)

Borehole 6 was drilled on July 13, 1995 to a total depth of 19'. This borehole was located 97' west and 9' north of a power pole at E. Moxee Avenue and N. Iler Street. Refer to Figure 3, Monitor Well and Borehole Site Locations. This borehole site was converted to a permanent groundwater monitor well, hereafter referred to as MW-3.

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The material intersected in Borehole 6 from 0' to 19' was a light brown clayey silt. Ground water was intersected at 9'. The monitor well was constructed using screened 2" PVC from 19' to 9', and blank PVC from 9' to the surface. A sand filter pack was placed around the monitor well from 19' to 3', and bentonite seal was emplaced from 3' to the surface. The well was finished with a locking-type cap and a bolt-sealed Morris monument. Table I and Table II summarize drilling sampling and laboratory analytical information. Drill logs generated in the field are included in Appendix A.

Groundwater samples SHA-0195-110W was collected on July 17, 1995. The analytical laboratory results indicated that there was neither diesel nor gasoline present in the groundwater at this location.

4.1.7 Borehole 7/ Monitoring Well #4 (MW #4)

Borehole 7 was installed on July 13, 1995 to a total depth of 19'. This borehole was located 56' south and 4' west from the northwest corner of Sharp's Automotive building. Refer to Figure 3, Monitoring Wells and Borehole Site Locations. This borehole was converted to a permanent groundwater monitor well, hereafter referred to as Monitoring Well MW-4.

The material intersected in Borehole 7 from 0.5' to 19' was brown clayey silt with a small sand lenses from 8' to 9'. Ground water was intersected at 9.5'. The monitor well was constructed using screened 2" PVC from 19' to 9', and blank PVC from 9' to the surface. A sand filter pack was emplaced around the monitor well from 19' to 3', and a bentonite seal was emplaced from 3' to the surface. The well was finished with a locking-type cap and a bolt-sealed Morris monument. Table II summarizes drilling, sampling and laboratory analytical information. Drill logs generated in the field are included in Appendix A.

Groundwater sample SHA-0195-111W was collected on July 17, 1995. The water sample results were 1600 parts per billion (ppb) TPH gasoline, 30 ppb benzene, 29 ppb toluene, 45 ppb ethylbenzene and 245 ppb total xylene. These contamination levels are above the Model Toxics Control Act limits for groundwater. No diesel fuel is present in the groundwater.

5.0 Sample Collection

5.1 Decontamination of the Drilling Equipment

All drilling equipment was decontaminated prior to arrival on site, and additional decontamination was performed on site prior to each drilling activity. The drill bits, auger flights and sampling equipment were decontaminated with high pressure steam between each borehole.

Boretac accomplished the decontamination by steam cleaning the bits, augers and other equipment utilizing a portable steam cleaning machine mounted on a trailer. The water was collected and stored in 55 gallon drums. The drums were labeled and stored on the site for disposal or recycling by the owner.

5.2 Decontamination of the Sampling Equipment

All sampling equipment was additionally decontaminated using a soap and water scrub and double rinse with clean water between each sampling interval. The decontamination water was stored in 55 gallon drums and stockpiled with the decontamination water generated from the steam cleaning procedure.

6.0 Reclamation of Boreholes

Boreholes were reclaimed using bentonite chips which were placed in the hole from the bottom of the drill hole to the ground surface. Each drill site was restored as near as possible to pre-drilling conditions prior to mobilizing to the next borehole. Four of the seven boreholes were converted to monitor wells as described in section four of this report.

7.0 Conclusion

7.1 Summary

Groundwater elevations measured using the monitor wells installed on July 12, 1995 and July 13, 1995 indicated that the local groundwater flow direction is to the southwest. However, an anomaly exists in the gradient at the southwestern corner of the site. A "mounding" condition appears to exist, possibly caused by a nearby car wash to the east of the subject site. Refer to Figure 4, Hydraulic Gradient, July 13, 1995.

The analytical laboratory results from groundwater samples taken in MW-1, MW-2 and MW-4 indicated that the contamination levels are above the Model Toxics Control Act

limits for groundwater. The contamination at Borehole 5 verified that there is significant petroleum contaminated soil and groundwater within the right-of-way of East Moxee Avenue. Contaminated soil and groundwater was also encountered beneath the Valicoff Car Wash site to the east. Groundwater contamination is also suspected beneath the Sharp's Fabricating and Repair Shop to the west, the alley to the south and numerous residential properties to the south of the site and alley. The contaminated groundwater plume limits have been defined beneath the subject site and E. Moxee Avenue but additional investigative work will be necessary to define the extent of contamination beneath the Valicoff site, Sharp's Fabricating site, alley and residential area. Refer to Figure 4 for the approximate plume definition.

7.2 Recommendations

The data presented within this report is sufficient to define the limits of petroleum contamination in the soil and groundwater beneath the Sharp's Automotive Service site and East Moxee Avenue to the North and East of the subject site. however, extensive contamination is suspected to the southeast and southwest of the original contamination source. Hydraulic gradient information gathered during this investigation presents the possibility of a second source of contamination located to the southwest of Sharp's Automotive Service Site. A "mound" in the groundwater hydraulic gradient in this area appears to be generating a gradient toward the center of the Sharp's Automotive Service site from the nearby car wash located to the west of the subject site. Since the groundwater in this area has been identified to contain gasoline, the potential for a second source of contamination entering the subject site at this point has been identified.

Before proceeding with any further definition of the contaminant plume, White Shield, Inc. recommends precise identification of the constituents within the contaminated groundwater at both the northeast and southwest corners of the subject site. Samples should be taken from monitoring wells in these area and analyzed by capillary gas chromatography to determine their "fingerprint." The gas chromatographs from both samples can then be compared to determine if the gasoline is from the same source.

Depending upon the results from the "fingerprinting" the following actions should be taken:

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Scenario #1 Gasoline Constituents Do Not Match	Scenario #2 Gasoline Constituents Are the Same
1. Determine the secondary source of contamination	1. Initiated exploratory investigative work on the following sites. a. Sharp's Fabricating and Repair b. Alley to the south of the subject site. c. the Valicoff Carwash to the west of the subject site. d. Residential properties located south of the alley.
2. Quantify the secondary source contaminants entering the subject site.	2. Develop a remedial action plan for the site and surrounding affected area.
3. Determine the impact of the secondary source contaminants on the primary source.	3. Begin remedial actions as soon as possible to limit the spread of contamination.
4. Allocate responsibilities for remediation of the affected area.	4. Institute long term monitoring of the affected area upon completion of remedial activities.
5. Develop & implement remedial action plan(s).	

In conclusion, White Shield, Inc. strongly recommends the performance of the fingerprint characterization of the gasoline contaminant to determine if a secondary contamination source is present, prior to performing any further investigative work on the subject site. This information is critical in the development of a remedial action plan and will affect the degree of responsibility that the Pollution Liability Insurance Agency will have in the overall remediation of the contamination plume.

TABLE I - SAMPLE NUMBER LOCATION AND FIELD SCREENING TEST RESULTS

(Samples are reported in mg/l - parts per million)

LOCATION	SAMPLE #	DATE	DEPTH	RECOVERY	TLC (ppm)	OVA (ppm)
Borehole 1	SHA-0195-101	7/12/95	13' - 14.5'	89%	<2000	20
Borehole 2	SHA-0195-102	7/12/95	13' - 14.5'	89%	ND	10
Borehole 4	SHA-0195-103	7/12/95	13' - 14.5'	89%	NT	250
Borehole 5	SHA-0195-105	7/13/95	7"	NA	ND	500
Borehole 6	SHA-0195-104	7/13/95	9 - 10.5"	89%	ND	ND

NT - Not Tested

ND - Not Detected

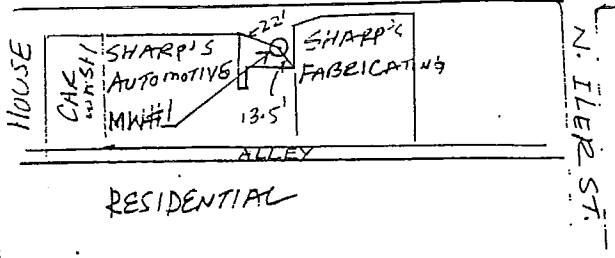
TABLE II: SAMPLE NUMBER, LOCATION AND ANALYTICAL LAB RESULTS FOR PETROLEUM PRODUCTS.

(Sample results are reported in mg/l - parts per billion)

SAMPLE #	DATE	WELL #	WTPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	WTPH-D	Comments
SHA-0195-108W	7/17/95	MW-1	470	110	22	8.9	51	ND	
SHA-0195-109W	7/17/95	MW-2	5200	99	250	55	740	ND	
SHA-0195-110W	7/17/95	MW-3	ND	ND	ND	ND	ND	ND	
SHA-0195-111W	7/17/95	MW-4	1600	30	29	45	245	ND	

ND - Not detected

LOCATION OF BORING: MONITORING WELL #1
JOB NO: SHA-045 CLIENT: BRADLEY T. SHARP
PROJECT NAME: SHARP'S CHARACTER
BORING NO: 1
LOCATION SKETCH: E. MARRS AVE
DRILLING METHOD: AUGER



SAMPLING METHOD: SPLIT SPOON. USED BALER TO OBTAIN WATER SAMPLES.

WATER LEVEL	13'				START	FINISH
					TIME	TIME
					8:50	10:45
TIME						
DATE						
CASING DEPTH					7/12/95	7/12/95

DATUM						ELEVATION		SURFACE CONDITION	
SAMPLE NO.	SAMPLE TYPE	SAMPLE DEPTH	BLOWS PER 6 INCHES	INCHES DRIVEN	INCHES RECOVERED	NUMBER OF RINGS	DEPTH IN FEET	PIEZOMETER	GRAPHIC LOG
							0		ASPHALT.
							1		0 to 6" - ASPHALT AND GRAVEL
							2		6" to 1' - CLAYEY SILT WITH DARK COLOR.
							3		1' - 7' - LIGHT BROWN CLAYEY SILT. SOIL IS MOIST AT 7'.
							4		
							5		
							6		
							7		
							8		
							9		
							10		9' - 10.5' - A DRY SAND LAYER
							11		
							12		
							13		INTERSECTED WATER AT 13'. THE SOIL IS BROWN CLAYEY SILT
18"	SS	13'	14.5	1.1	18"		14		OBTAINED SS SAMPLE FROM 13' TO 14.5'
							15		
							16		
							17		
							18		
							19		
							20		
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							99		
							100		

TD = 20'

DRILLING CONTRACTOR: DUKELI, JIM
DRILLER: JIM LEWIS

HARI SHARMA
DATE: 7/12/95

LOCATION OF BORING DRILL HOLE #2		JOB NO. SHA-145	CLIENT BRADY T. SHARP	BORING NO. 2
LOCATION SKETCH		PROJECT NAME SHARP'S CHAPEL		
		DRILLING METHOD: AUGUR		
<p>HOUSE</p> <p>28'</p> <p>61'</p> <p>SHARP'S AUTOMOTIVE</p> <p>SHARP'S FABRICATING</p> <p>ALLEY</p> <p>RESIDENTIAL</p> <p>N. ILER ST.</p>		SAMPLING METHOD: SPLIT SPOON. USED BAIER TO OBTAIN WATER SAMPLES.		
<p>DATE</p> <p>TIME</p> <p>DATE</p>		<p>START TIME</p> <p>11:42</p> <p>DATE</p> <p>7/12/95</p>		
<p>ELEVATION</p>		<p>FINISH TIME</p> <p>12:25</p> <p>DATE</p> <p>7/12/95</p>		
<p>DATUM</p>		<p>CASING DEPTH</p>		

DEPTH IN FEET	PIEDIMETER	SAMPLING LOG	SURFACE CONDITION
0			ASPHALT.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
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25			
26			
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87			
88			
89			
90			
91			
92			
93			
94			
95			
96			
97			
98			
99			
100			

TD = 14.5'

BORLITEC, INC.

DRILLING CONTRACTOR

DRILLER

JIM LEWIS

HARI SHARMA

DATE 7/12/95

CHART BY

LOCATION OF BORING		JOB NO. <u>SHA-045</u>		CLIENT <u>BRADLEY T. SHARP</u>		BORING NO. <u>3</u>	
LOCATION SKETCH		PROJECT NAME <u>SHARP'S CHARACT.</u>					
		DRILLING METHOD: <u>AUGUR</u>					
		SAMPLING METHOD: <u>SPLIT SPOON. USED BALER</u>					
		<u>TO OBTAIN WATER SAMPLES.</u>					
						START	FINISH
		WATER LEVEL				TIME	TIME
		TIME				<u>2:00</u>	
		DATE				DATE	DATE
		CASING DEPTH					

DATE		SURFACE CONDITION	
SAMPLE NO.	SAMPLE TYPE	DEPTH IN FEET	PIEZOMETER
		0	
		1	
		2	
		3	
		4	
		5	
		6	
		7	
		8	
		9	
		10	
		11	
		12	
		13	
		14	
		15	
		16	
		17	
		18	
		19	
		20	

CLASSIFICATION

DESCRIPTION

0-6" - ASPHALT AND GRAVEL.

6"-1' - CLAYEY SILT WITH DARK COLOR

1'-7' - LIGHT BROWN CLAYEY SILT.

ENCOUNTERED PETROLEUM CONTAMINATED SOIL AT 7' - CLAYEY SILT.

APPROXIMATELY 1' SAND LAYER

INTERSECTED WATER AT 12'.

THE DARK COLOR DUE TO PETROLEUM PRODUCT FROM 7' TO 18'.

TOTAL DEPTH OF WELL = 18.5'. LOST 1.5' OF PERFORATED PIPES.

GRAPHIC LOG

0-6" - ASPHALT AND GRAVEL.

6"-1' - CLAYEY SILT WITH DARK COLOR

1'-7' - LIGHT BROWN CLAYEY SILT.

ENCOUNTERED PETROLEUM CONTAMINATED SOIL AT 7' - CLAYEY SILT.

APPROXIMATELY 1' SAND LAYER

INTERSECTED WATER AT 12'.

THE DARK COLOR DUE TO PETROLEUM PRODUCT FROM 7' TO 18'.

TOTAL DEPTH OF WELL = 18.5'. LOST 1.5' OF PERFORATED PIPES.

DRILLING CONTRACTOR BOR & TEC, INC.
DRILLER TIM LEWIS

HARI SHARMA

7/18/95

DRILLING CONTRACTOR BORETEC, INC.
DRILLER TIM LEWIS

HARI SHARMA
DATE 7/12/95 CHRG BY

DRILLING CONTRACTOR
CORETEC, INC.
DAN LEM
TIM LEWIS

BY
HARI SHARMA
DATE 7/13/95

LOCATION OF BORING DRILL HOLE #5		JOB NO. SHA-045 CLIENT BRADLEY T. SHARP		BORING NO. 5	
LOCATION SKETCH 		PROJECT NAME SHARP'S CHARTER			
		DRILLING METHOD: AUGUR			
		SAMPLING METHOD: SPLIT SPOON. USED BAILER TO OBTAIN WATER SAMPLES.			
		WATER LEVEL		START TIME	FINISH TIME
				7:28	7:30
		DATE		DATE	DATE
				7/13/95	7/13/95
DATUM		ELEVATION		CASING DEPTH	
SAMPLE NO.		SAMPLE TYPE		SURFACE CONDITION ASPHALT	
SAMPLE DEPTH		BLOOD PER 6 INCHES		CLASSIFICATION	
INCHES DRIVEN		INCHES RECOVERED		DESCRIPTION	
NUMBER OF ANGLES		DEPTH IN FEET		0 to 6" - ASPHALT AND CRUSHED AGGREGATE SUBBASE.	
PIEZOMETER		SAMPLING LOG		6" to 4' - DARK BROWN CLAYEY SILT	
				4' - 6.5' - DARK BROWN CLAYEY SOIL MIXED WITH A SANDY LAYER.	
				6.5' - 9' - DARK CLAYEY SILT WITH STRONG ODOUR OF PETROLEUM PRODUCT.	
				DID NOT INTERSECT WATER	
				TD = 9'	

LOCATION OF BORING MONITORING Well #3		JOB NO. SHA-045	CLIENT BRADLEY T. SHARP	BORING NO. 6
LOCATION SKETCH 		PROJECT NAME SHARP'S CHARGES		
DRILLING METHOD: Augur				
SAMPLING METHOD: SPLIT SPOON. USED BALER TO OBTAIN WATER SAMPLES.				
WATER LEVEL 9'				START TIME 8:35
TIME				FINISH TIME 9:30
DATE				DATE 7/13
CASING DEPTH				DATE 7/13

DATE		ELEVATION		SURFACE CONDITION	
SAMPLE NO.	SAMPLE DEPTH	BLOWS PER 6 INCHES	INCHES RECOVERED	NUMBER OF ANGUS	DEPTH IN FEET
18"	9'	10.5	11"	18"	16"
GRAVEL FROM 0 to 6" Depth.					
BROWN SILTY clay from 6" to 19'					
WATER AT 9'					

DRILLING CONTRACTOR: **JIM LEWIS**
 DRILLER: **JIM LEWIS**

DATE: **7/12/95**
 CWD BY: **HARI SHARMA**

SHEET / OF /

HARI SHARMA
DATE 7/12/95 CHRG BY

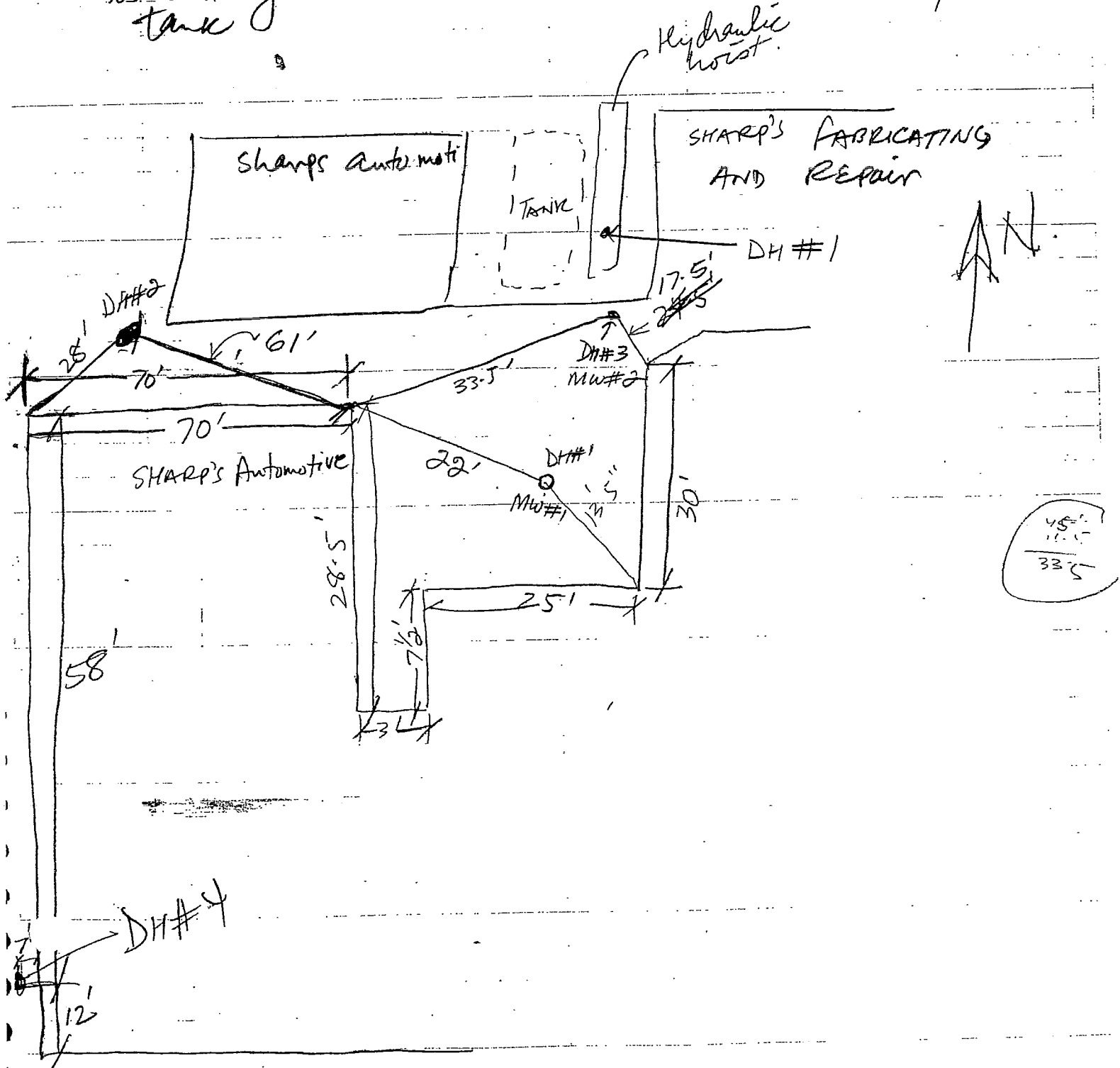
[illegible]

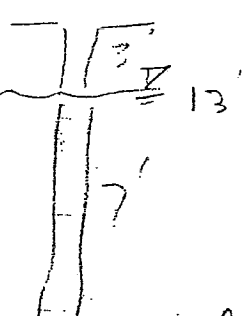
APPENDIX B

7:20 ARRIVED AT THE SITE. MET Mr. Sharp and asked him to show me the boundary of his property.

30 Mr. Byron Adams, City of Moxee Arrived on site. I showed him tentative borehole locations and asked him whether there are any utility lines at those locations.

The Amount of Space available now has imposed limitations on where we can drill. There is a ^{new} hydraulic hoist located to the East of the tank.



Drill Hole #1 (MW#1) 7/12/95 4-56 - Rod reading SHA-0195 (2)
 8:50 Started drilling Through the Asphalt Ref elev of 100 (ASSH)
 0-6" - Asphalt
 6" - 1' Silty Clay. dark in color. moist.
 1' - 7' Lighter brown Clayey silt.
 7' - LIGHT, MOIST, Brown Clayey silt. Wet at 7'.
 9'-10.5' - Sand layer.
 13' - wet Brown Clayey silt.
 OBTAINED SS sample from 13 to 14.5' 
 Recovery = 15"
 Blow Counts 1/1/1.

TEST# OVA TLC
 SHA-0195-101 20 PPM. <200 PPM. SOIL sample from soil/water interface
 completed Hole #1 (MW#1) at 10:36 AM.

Noticed two OBSERVATION wells. Talked with Dennis Dennis said they are 13 to 14' deep and used pea gravel as the surrounding material. He said they didn't intersect at the time the wells were installed.
 DH #2 - set up at 11:42. Started drilling at 11:50. (5.12 Rod reading) - Elev = 99044' and investigate further. He drove SS sampler but there was no resistance.

Resumed drilling at 11:58.
 0-6" - Asphalt.
 6"-1.5' - Dark Clayey silt.
 1.5' - 12.5' Brown, dry, clayey silt with some sandy fractions.
 WATER AT 13'.
 Blow Count 2 for 1.5'.

TEST# OVA TLC
 SHA-0195-102 10 PPM N.D.
 STOPPED drilling at 12:20.
 CLEAN UP 12:45 to 1:30

TD = 14.5'

5.12
 4-56
 0.56

DH#3. Started drilling at 2:00 pm. Stopped at 3:10 pm. ⁽³⁾
ENCOUNTERED dark, silty clay with odor of
Petroleum Product at 7' depth.
10-11' — sand

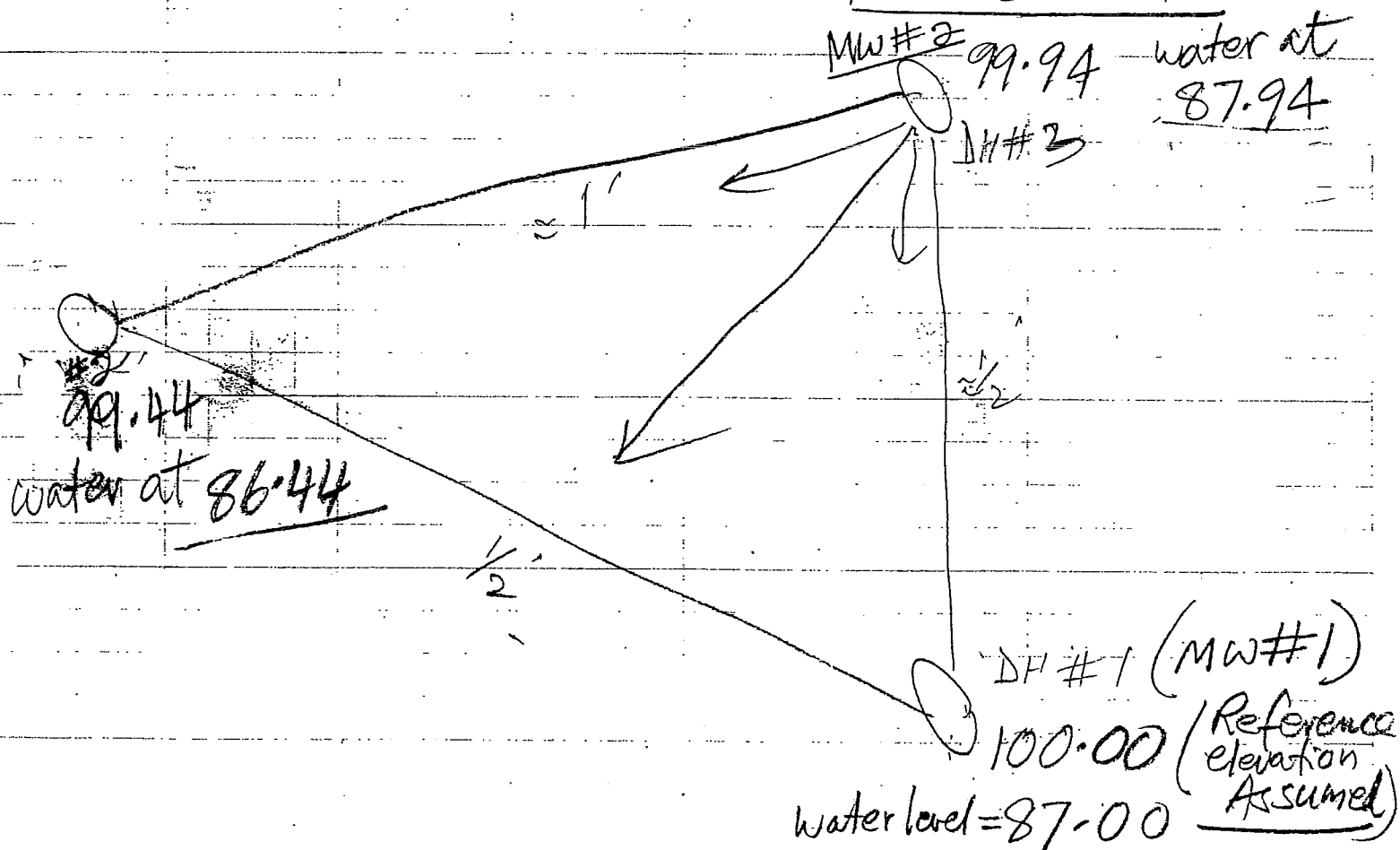
ENCOUNTERED water at 12'.

ROD READING of 4.62 ^{GROSS} Elev = 99.94'

WENT OUT OF ^{GROSS} CONTAMINATION AT 18'.

OBVIOUS GROSS CONTAMINATION AT THIS LOCATION.

Ref. Elev = 100



Jim said he lost 1 1/2' of screen at this hole.

CONVERTED DH#3 to MW#2

TD = 20' but lost 1 1/2' ∴ 18.5' deep

7/12/95

(4)

DH#4.

0-6" — Asphalt

6"-1' — Sand

1'-1.5' — Sand mixed with clayey silt - dark colored

1.5' - 4' — Brown clayey silt

4' — 9' — TURNED DARK AND HAS ODOOR.

AT 9' The sticky silty clay soil turned moist. Water table at 9.5'

SHA-0195-103

TLC

OVA

NT

2:50 PM

ATT

Mr. Brady Shart called Mr. Ron Valicoff and asked for the permission to drill on this site.

7/13/95

DH#5 (NW#3)

7:00 Arrived at the site.

7:00 Started drilling

0-6" — Asphalt and gravel

6"-4' — Dark Brown, clayey silt.

4'-6.5' — Same dark Brown clayey soil AND SAND

6.5'-9' — A Layer of Petroleum contaminated soil

Called City Hall at 8:20 Am.

I asked them to stop drilling at this location at 7:30.

TD = 9'

Collected Sample SHA-0195-105 from 7' depth

I asked Brad to obtain permission from the owner of the property across the alley to drill and install monitoring well. He said he would try at about 9:00 Am.

DH#6 (MW#3)

(5)

8:35 started drilling

9:30 finished drilling

SURFACE: GRASS COVER

0-6" — GRAVEL — Possible parking area. WATER level at 9'

6"-19' — Brown silty clay.

finished installing well at 10:40.

Jim left for western material for sand at 10:40

Test# TLC OVA

SHA-0195-104 ND ND

Surface — ASPHALT

DH#7 STARTED Drilling at 12:30

0-6" — Asphalt and subbase gravel

6"-6½' Brown, moist clayey silt.

6½'-8' TURNED DARK AND HAS ODOR OF PETROLEUM
PRODUCT.

8'-9' SANDY SOIL with some silty/clay fractions.

9'-9.5' ENCOUNTERED MOIST SOIL. Contains
Petroleum Product.

TD = 19'

(6)

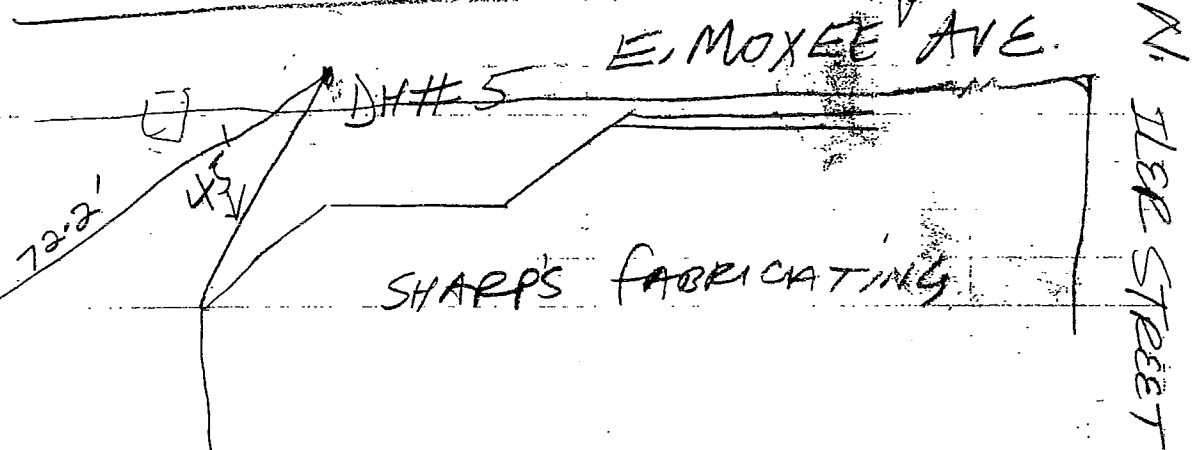
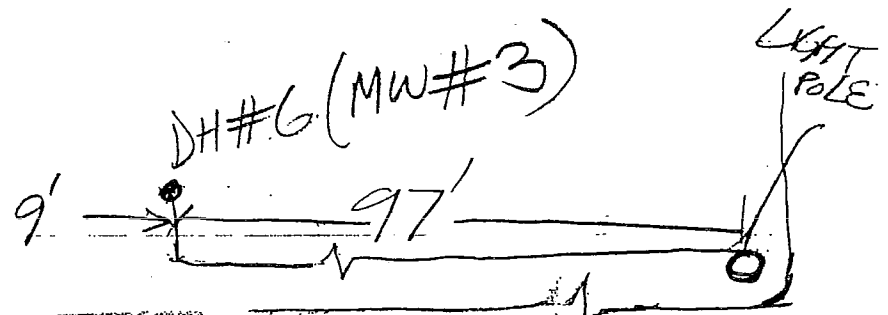
BACKSIGHT Drill Hole #2 — 4.92
FORE SIGHT Drill Hole # 7 (mw#4) — 6.1
FORE SIGHT ^{DH#6} (MW#3) — 3.58

Elev. of Drill Hole #2 with reference
to elev. on top of MW#1 = 99.44'

Elev. at MW#4 = 98.26'
water at 88.76'

Elev at MW#3 = 100.78'
Water Level at 91.28'

(7)



SHARP'S
AUTOMOTIVE

~~28' 11"~~
~~14' 1"~~
4 1/2'

84' 9"
7' 9"

77'

20

97'

7/17/95

11:30 LEFT GRANDVIEW

12:20 ARRIVED AT THE SITE

12:20-1:00 LUNCH BREAK

1:00-1:30 PURGED MW#3

1:30-4:45 SAMPLED 4 wells.

4:45-5:30 Looked at Stockpile. Not Levelled
but has enough plastic for the bottom.

APPENDIX C



July 25, 1995
Lab Traveler #:07-046

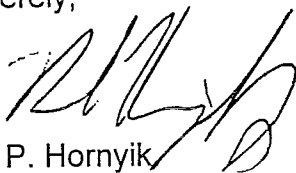
Hari Sharma
White Shield, Inc.
P.O. Box 477
Grandview, WA 98930

Dear Hari:

Enclosed are the results of the analyses of samples submitted on July 19, 1995 from Project SHA-0195.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this report, please feel free to call me.

Sincerely,



Karl P. Hornyik
Project Chemist

Enclosures

Date of Report: July 25, 1995
 Samples Submitted: July 19, 1995
 Lab Traveler: 07-046
 Project: SHA-0195

EPA 8020 & WTPH-G

Date Extracted: 7-21&22-95
 Date Analyzed: 7-21&22-95

Matrix: Water
 Units: ug/L (ppb)

Lab ID	07-046-1	07-046-2	07-046-3	07-046-4	
Client ID	SHA-0195-108W	SHA-0195-109W	SHA-0195-110W	SHA-0195-111W	Method PQL
Dilution Factor	1	1	1	1	
Benzene	110	99	ND	30	1.00
Toluene	22	250 ^N	ND	29	1.00
Ethyl Benzene	8.9	55	ND	45	1.00
m,p-Xylene	17	450 ^N	ND	210 ^N	1.00
o-Xylene	34	290 ^N	ND	35	1.00
TPH-Gas	470	5200	ND	1600	100
4-BFB					
Surrogate Recovery	102%	111%	97%	117%	

Note: Sample PQL(practical quantitation limit)= Method PQL x dilution factor

N-Data from 1:10 dilution.

Date of Report: July 25, 1995
Samples Submitted: July 19, 1995
Lab Traveler: 07-046
Project: SHA-0195

**EPA 8020 & WTPH-G
QUALITY CONTROL**

Date Extracted: 7-21-95
Date Analyzed: 7-21-95

Matrix: Water
Units: ug/L (ppb)

Lab ID	MB0721W1	07-046-1	07-046-1	
	Blank	Original	Duplicate	RPD
Dilution Factor	1	1	1	
Benzene	ND	110	120	4.8
Toluene	ND	22	23	5.6
Ethyl Benzene	ND	8.9	9.4	5.8
m,p-Xylene	ND	17	18	6.3
o-Xylene	ND	34	36	4.2
TPH-Gas	ND	470	480	3.5
4-BFB				
Surrogate Recovery	94%	102%	108%	

Date of Report: July 25, 1995
 Samples Submitted: July 19, 1995
 Lab Traveler: 07-046
 Project: SHA-0195

**EPA 8020 & WTPH-G
 QUALITY CONTROL**

Date Extracted: 7-21-95
 Date Analyzed: 7-21-95

Matrix: Water
 Units: ug/L (ppb)

Lab ID	07-046-1		07-046-1		
spiked @ 50 ppb	MS	Percent	MSD	Percent	
Dilution Factor	1	Recovery	1	Recovery	RPD
Benzene	163.0	97%	164.0	98%	1.5
Toluene	74.5	104%	76.6	109%	3.9
Ethyl Benzene	58.4	99%	61.0	104%	5.1
m,p-Xylene	67.2	99%	69.8	104%	5.1
o-Xylene	83.3	96%	85.5	101%	4.6
4-BFB					
Surrogate Recovery	108%		109%		

Date of Report: July 25, 1995
Samples Submitted: July 19, 1995
Lab Traveler: 07-046
Project: SHA-0195

WTPH-D

Date Extracted: 7-19-95
Date Analyzed: 7-19-95

Matrix: Water
Units: ug/L (ppb)

Client ID	Lab ID	Dilution Factor	Total Petroleum Hydrocarbons	Surrogate Recovery	Flags	PQL
SHA-0195-108W	07-046-1	0.02	ND	74%		500
SHA-0195-109W	07-046-2	0.02	ND	89%	C	500
SHA-0195-110W	07-046-3	0.02	ND	69%		500
SHA-0195-111W	07-046-4	0.02	ND	72%	C	500

C-Hydrocarbons in the gasoline range (C7-toluene) present in the sample.

Date of Report: July 25, 1995
Samples Submitted: July 19, 1995
Lab Traveler: 07-046
Project: SHA-0195

WTPH-D
METHOD BLANK QUALITY CONTROL

Date Extracted: 7-19-95
Date Analyzed: 7-19-95

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB0719W1
Client ID: **Batch QA**

	Dilution Factor	Total Petroleum Hydrocarbons	Surrogate Recovery	Flags	PQL
Method Blank	0.02	ND	91%		500

Date of Report: July 25, 1995
Samples Submitted: July 19, 1995
Lab Traveler: 07-046
Project: SHA-0195

WTPH-D
DUPLICATE QUALITY CONTROL

Date Extracted: 7-17-95
Date Analyzed: 7-17-95

Matrix: Water
Units: ug/L (ppb)

Lab ID: 07-036-1
Client ID: Batch QA

	Dilution Factor	Total Petroleum Hydrocarbons	Surrogate Recovery	Flags	PQL
Sample	0.02	ND	71%		500
Duplicate	0.02	ND	76%		500
RPD		NA			

Date of Report: July 25, 1995
Samples Submitted: July 19, 1995
Lab Traveler: 07-046
Project: SHA-0195

WTPH-D
SPIKE BLANK QUALITY CONTROL

Date Extracted: 7-19-95
Date Analyzed: 7-19-95

Matrix: Water
Units: ug/L (ppb)

Lab ID: SB0719W1
Client ID: **Batch QA**

	Dilution Factor	Total Petroleum Hydrocarbons	Percent Recovery	Surrogate Recovery	Flags	PQL
Spike @ 2000 ppb	0.02	1850	92%	101%		500

PM
FIAR1 SWARMA



OnSite

Environmental Inc.

14924 NE 31st Circle, Redmond, WA 98052
Phone (206) 883-3881 Fax (206) 885-4603

REQUESTED

TURK ROUND?

Normal

TRAVELER #

970-70

[illegible]

Submitted

Fairland

Date _____

Received by

2

6/6/17

Final

WHITE SHIELD, INC.

Submitted

Received by

Date _____

Firm

Firm

Time

APPENDIX D

Table 1
Method A Cleanup Levels – Ground Water^a

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	5.0 ug/liter ^b
Benzene	71-43-2	5.0 ug/liter ^c
Cadmium	7440-43-9	5.0 ug/liter ^d
Chromium (Total)	7440-47-3	50.0 ug/liter ^e
DDT	50-29-3	0.1 ug/liter ^f
1,2 Dichloroethane	107-06-2	5.0 ug/liter ^g
Ethylbenzene	100-41-4	30.0 ug/liter ^h
Ethylene dibromide	106-93-4	0.01 ug/liter ⁱ
Gross Alpha Particle Activity		15.0 pCi/liter ^j
Gross Beta Particle Activity		4.0 mrem/yr ^k
Lead	7439-92-1	5.0 ug/liter ^l
Lindane	58-89-9	0.2 ug/liter ^m
Methylene chloride	75-09-2	5.0 ug/liter ⁿ
Mercury	7439-97-6	2.0 ug/liter ^o
PAHs (carcinogenic)		0.1 ug/liter ^p
PCB mixtures		0.1 ug/liter ^q
Radium 226 and 228		5.0 pCi/liter ^r
Radium 226		3.0 pCi/liter ^s
Tetrachloroethylene	127-18-4	5.0 ug/liter ^t
Toluene	108-88-3	40.0 ug/liter ^u
Total Petroleum Hydrocarbons		1000.0 ug/liter ^v
1,1,1 Trichloroethane	71-55-6	200.0 ug/liter ^w
Trichloroethylene	79-01-5	5.0 ug/liter ^x
Vinyl chloride	75-01-4	0.2 ug/liter ^y
Xylenes	1330-20-7	20.0 ug/liter ^z

^a Caution on misusing method A tables. Method A tables have been developed for specific purposes. They are intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. The tables may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in these tables should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in these tables do not necessarily trigger requirements for cleanup action under this chapter.

^b Arsenic. Cleanup level based on background concentrations for state of Washington.

^c Benzene. Cleanup level based on applicable state and federal law.

^d Cadmium. Cleanup level based on applicable state and federal law and concentration derived using procedures in subsection (3)(a)(ii)(A) of this section and a hazard quotient of 0.2.

^e Chromium (Total). Cleanup level based on applicable state and federal law.

^f DDT. Cleanup levels based on concentration derived using procedures in subsection (3)(a)(ii)(B) of this section.

^g 1,2 Dichloroethane. Cleanup level based on applicable state and federal law.

Method A Cleanup Levels - Industrial Soil ^a

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	200.0 mg/kg ^b
Benzene	71-43-2	0.5 mg/kg ^c
Cadmium	7440-43-91	10.0 mg/kg ^d
Chromium (Total)	7440-47-3	500.0 mg/kg ^e
DDT	50-29-3	5.0 mg/kg ^f
Ethylbenzene	100-41-4	20.0 mg/kg ^g
Ethylene dibromide	106-93-4	0.001 mg/kg ^h
Lead	7439-92-1	1000.0 mg/kg ⁱ
Lindane	58-89-9	20.0 mg/kg ^j
Methylene chloride	75-09-2	0.5 mg/kg ^k
Mercury (inorganic)	7439-97-6	1.0 mg/kg ^l
PAHs (carcinogenic)		20.0 mg/kg ^m
PCB Mixtures		10.0 mg/kg ⁿ
Tetrachloroethylene	127-18-4	0.5 mg/kg ^o
Toluene	108-88-3	40.0 mg/kg ^p
TPH (gasoline)		100.0 mg/kg ^q
TPH (diesel)		200.0 mg/kg ^r
TPH (other)		200.0 mg/kg ^s
1,1,1 Trichloroethane	71-55-6	20.0 mg/kg ^t
Trichloroethylene	79-01-5	0.5 mg/kg ^u
Xylenes	1330-20-7	20.0 mg/kg ^v