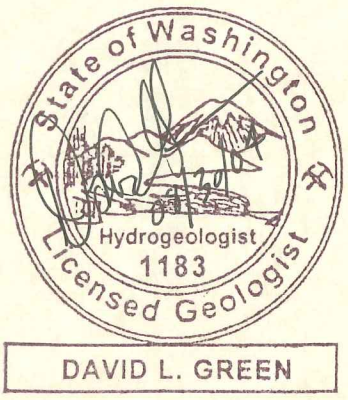
Limited
Phase II Environmental Site Assessment Report

For the GearJammer, Inc.
PCS Treatment Facility
Yakima, WA

Prepared For:

GearJammer, Inc.
2310 Rudkin Road
Union Gap, WA 98903-1609

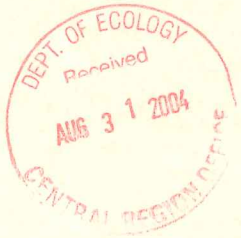
Prepared By:



SAGE
Earth Sciences, Inc.

P.O. Box 1644
Zillah, WA 98953

August, 2004



8/31/04

Executive Summary

In October of 1999, GearJammer, Inc. performed soil remediation activities upon discovery of Petroleum Contaminated Soil (PCS) at 2310 Rudkin Road, Union Gap, WA. Soil remediation activities consisted of excavation and removal of approximately 120 cubic yards of PCS from the site. PCS was transported to property owned by Westwood West Corporation for treatment. The PCS treatment site is situated within the SE 1/4 of the NW 1/4, Section 2, Township 12 North, Range 18 East, Willamette Meridian. The site latitude is approximately N 46° 33' 35.8" and the site longitude is W 120° 32' 10.5".

To assess the progress of treatment activities, Sage collected seven (7) soil samples from the PCS treatment area on July 28, 2004. Sage submitted the soil samples to Friedman & Bruya, Inc. (FBI) for analysis using analytical methods: NWTPH-Gx (Gasoline), EPA Method 8021B (BTEX), NWTPH-Dx (Diesel) and EPA Method 6010 (Total Lead). The FBI analyses found:

- Diesel range petroleum hydrocarbons at concentrations ranging from less than 50 parts per million (ppm) up to 260 ppm,
- No detectable (less than 2 ppm) gasoline range petroleum hydrocarbons,
- No detectable (less than 0.02 ppm) benzene,
- Toluene at concentrations ranging from less than 0.02 ppm up to 0.03 ppm,
- No detectable (less than 0.02 ppm) ethylbenzene,
- Total xylenes at concentrations ranging from less than 0.06 ppm up to 0.11 ppm and
- Total lead at concentrations ranging from less than 2 ppm up to 15 ppm.

Comparison of the analytical results (Appendix C) with the *Method A Soil Cleanup Levels* of WAC 173-340-740 (Appendix D) indicates that no additional soil remediation, to reduce petroleum or lead concentrations, is required at the soil treatment area sampling locations. Comparison of the analytical results with the WSDOE *End Use Criteria for Petroleum Contaminated Soils* indicates that the treated soil is designated as "Class 3 Soil" or lower. The WSDOE recommends that "Class 3 Soil" be used as follows:

- Treatment,
- Disposal at the original site (no solid waste disposal permit needed),
- Road Construction (no solid waste permit disposal permit needed),
- Use or disposal in permitted municipal landfills,
- Permitted as a new PCS landfill,
- (An evaluation should be made to ensure that disposal will not cause a threat to human health or the environment, e.g. use near water bodies).

Sage recommends the soil be utilized in accordance with the WSDOE *End Use Criteria for Petroleum Contaminated Soils*.

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1.0 Introduction

1.1 Purpose

In October of 1999, GearJammer, Inc. performed soil remediation activities upon discovery of Petroleum Contaminated Soil (PCS) at 2310 Rudkin Road, Union Gap, WA. Soil remediation activities consisted of excavation and removal of approximately 120 cubic yards of PCS from the site. PCS was transported to property owned by Westwood West Corporation for treatment.

The purpose of this Limited Phase II Environmental Site Assessment Report is to describe findings associated with soil sampling activities at the GearJammer, Inc. PCS treatment site, located south of the Yakima Airport. The limited investigation was performed to comply with regulatory requirements established by the Washington State Department of Ecology (WSDOE).

1.2 Scope of Work

Sage Earth Sciences, Inc. (Sage) provided soil sampling services. Soil samples were submitted to Friedman and Bruya, Inc. (FBI), Seattle, WA for independent laboratory analysis.

2.0 Background Information

2.1 Site Location

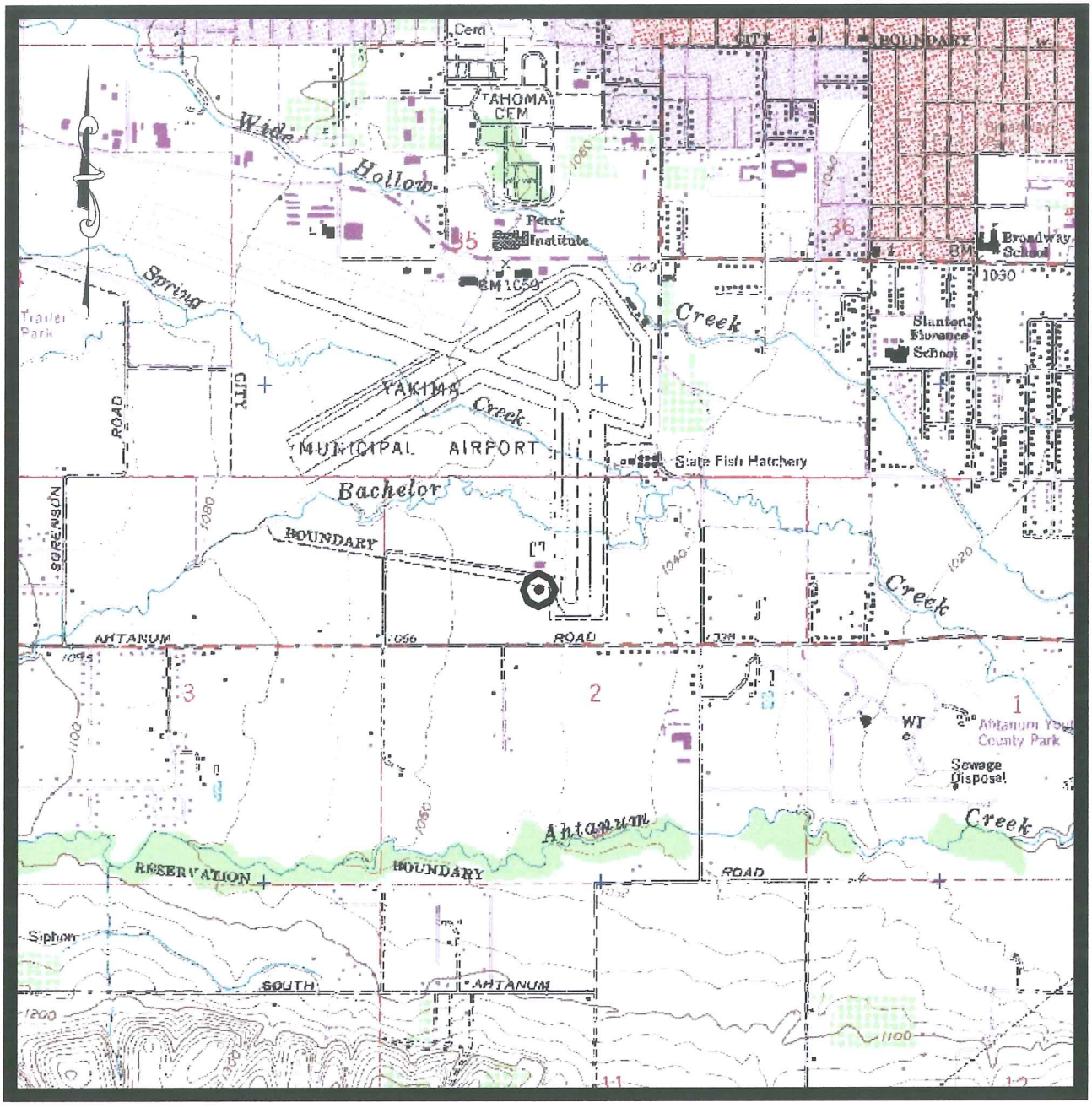
The PCS treatment site is situated within the SE 1/4 of the NW 1/4, Section 2, Township 12 North, Range 18 East, Willamette Meridian. The site latitude is approximately N 46° 33' 35.8" and the site longitude is W 120° 32' 10.5". Figure 1 shows the location of the PCS treatment site. The property is currently vacant. The site vicinity and PCS treatment location is shown by Figure 2.

2.2 Site Description & Adjacent Land Use

The facility is owned and operated by:

Westwood West Corporation
6408 Tieton Drive
Yakima, WA 98908

The authorized site contact is Mr. Chuck Hinckley.



Graphic Scale

Contour Interval 20 Feet

= Site Location

Figure 1. Site Location Map

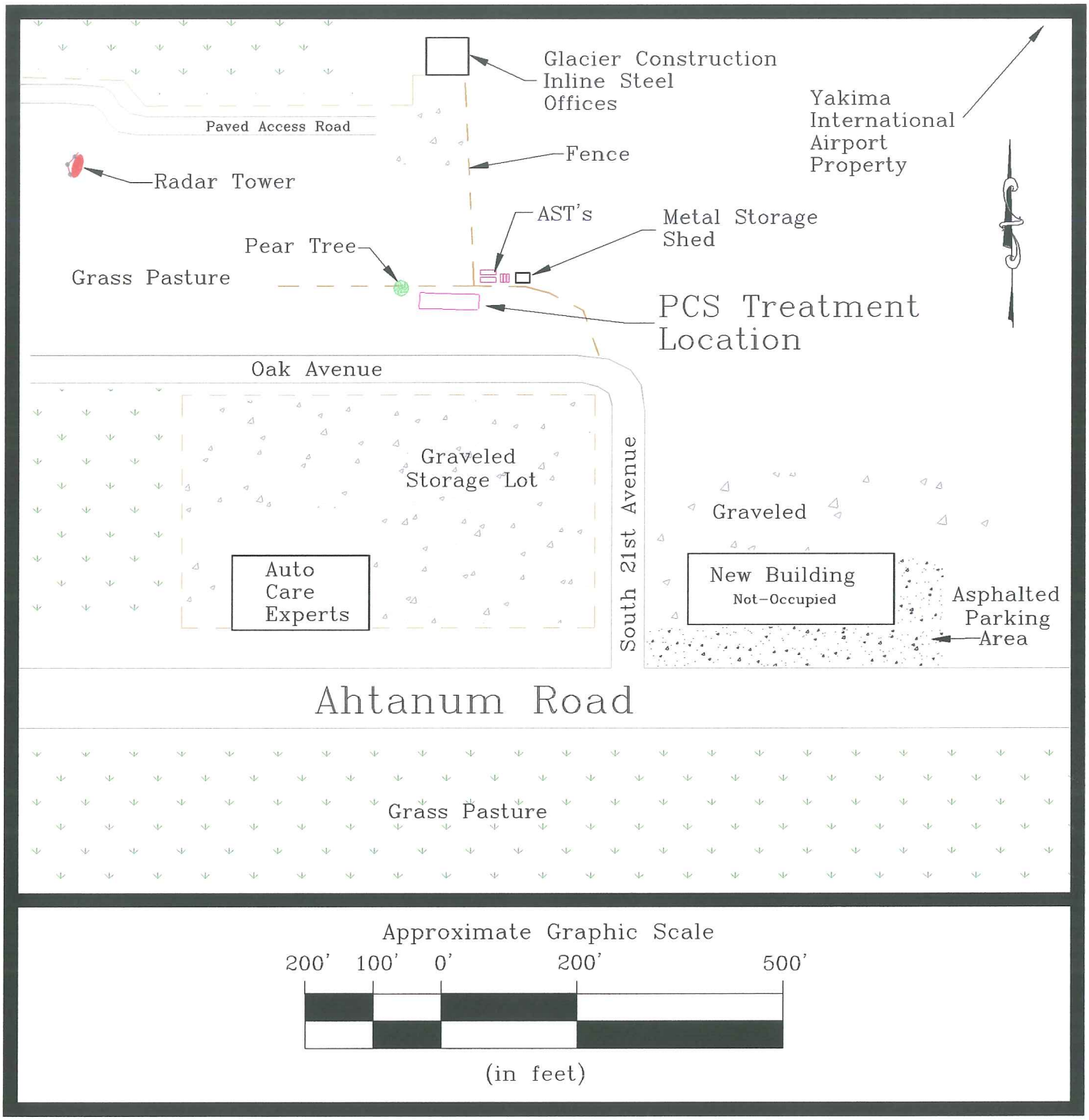


Figure 2. Sketch of Site Vicinity

3.0 PCS Treatment Area Assessment

David L. Green, an environmental assessor licensed by the International Fire Code Institute performed soil sampling services on July 28, 2004. Sage collected soil samples using methods described by Appendix A. Sample descriptions are documented by the *Daily Field Sampling Log* (see Appendix B).

Sage collected seven (7) soil samples (GTP-0604-S1 through GTP-0604-S7) from the treated soil at locations shown by Figure 3. Sage submitted soil samples to Friedman & Bruya, Inc. (FBI) for analyses using the following analytical methods:

- NWTPH-Gx (Total Petroleum Hydrocarbons as gasoline),
- EPA Method 8021B (Benzene, Toluene, Ethylbenzene and Xylenes),
- NWTPH-Dx (Total Petroleum Hydrocarbons as Diesel, extended to include motor oil range hydrocarbons) and
- EPA Method 6010 (Total Lead).

The FBI analytical results (see Appendix C) for soil samples are summarized by Table 1.

Table 1. Analytical Results for Soil Treatment Area Soil Samples

Sample Number	Sample Depth (feet)	TPH as Diesel (ppm)	TPH as Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	Total Lead (ppm)
GTP-0604-S1	1.5	<50	<2	<0.02	<0.02	<0.02	<0.06	3
GTP-0604-S2	0.5	200	<1	<0.02	0.03	<0.02	0.11	10
GTP-0604-S3	0.5	110	<1	<0.02	<0.02	<0.02	<0.06	13
GTP-0604-S4	0.75	140	<1	<0.02	<0.02	<0.02	<0.06	12
GTP-0604-S5	1.0	220	<1	<0.02	<0.02	<0.02	<0.06	11
GTP-0604-S6	1.0	260	<1	<0.02	<0.02	<0.02	<0.06	15
GTP-0604-S7	1.0	200	<1	<0.02	<0.02	<0.02	<0.06	<2

Red Font indicates that concentration exceeds Method A Cleanup Levels of WAC 173-340-740
Green Font indicates that concentration does not exceed Method A Cleanup Levels of WAC 173-340-740
ppm = mg/Kg or parts per million.

Comparison of the analytical results (Appendix C) with the *Method A Soil Cleanup Levels* of WAC 173-340-740 (Appendix D) indicates that no additional soil remediation is required at the soil treatment area sampling locations.

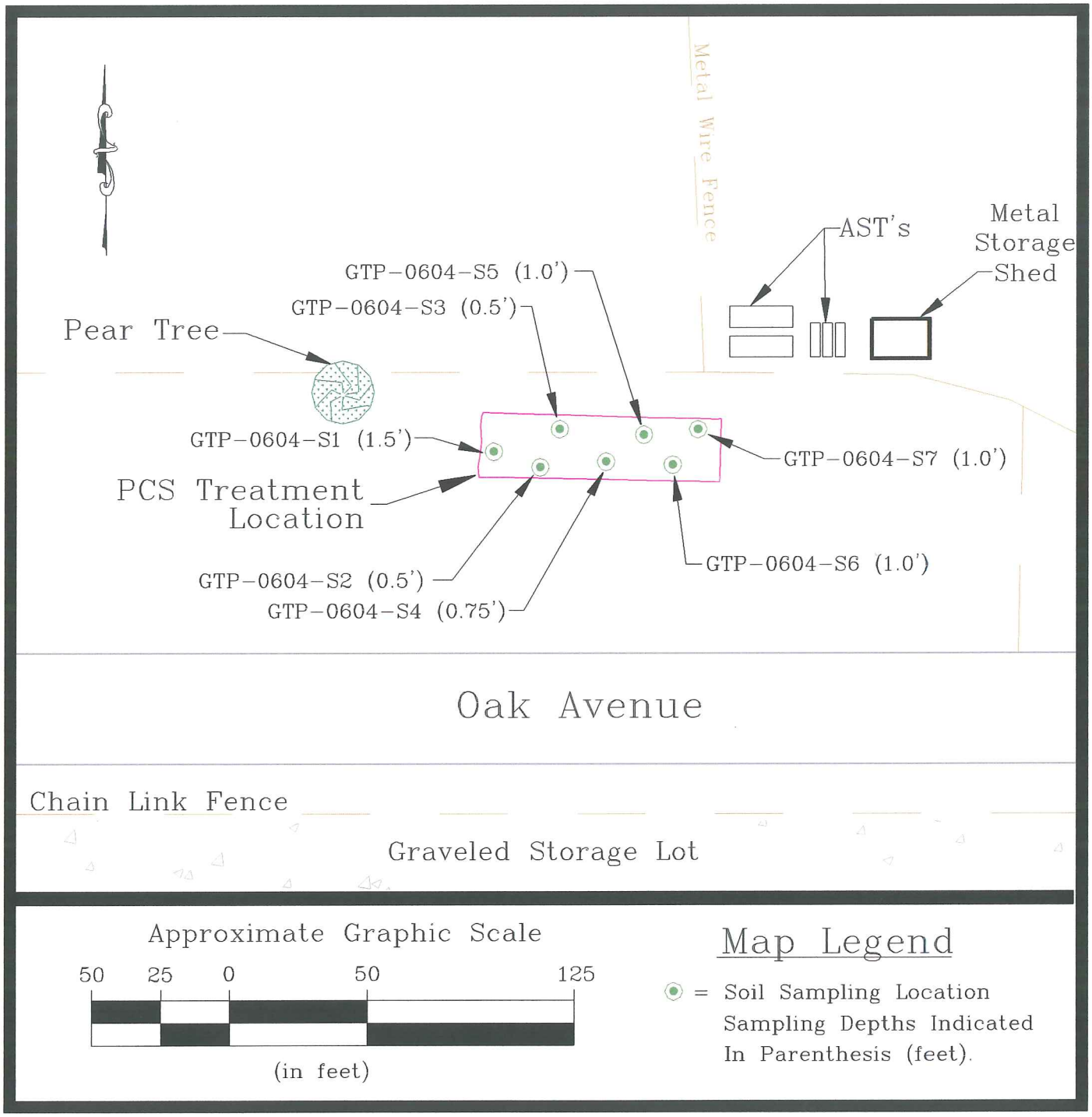


Figure 3. Soil Treatment Area Sampling Locations

Comparison of the analytical results (Appendix C) with the WSDOE *End Use Criteria for Petroleum Contaminated Soils* (Appendix E) indicates that the treated soil is designated as "Class 3 Soil" or lower. The WSDOE recommends that "Class 3 Soil" be used as follows:

- Treatment,
- Disposal at the original site (no solid waste disposal permit needed)
- Road Construction (no solid waste permit disposal permit needed)
- Use or disposal in permitted municipal landfills
- Permitted as a new PCS landfill
- (An evaluation should be made to ensure that disposal will not cause a threat to human health or the environment, e.g. use near water bodies).

4.0 Conclusions & Recommendations

Based upon our field observations and FBI independent laboratory analysis of soil samples collected from the soil treatment area, Sage found no evidence of petroleum hydrocarbons at concentrations exceeding the *Method A Soil Cleanup Levels* of WAC 173-340-740. The treated soil is designated as "Class 3 Soil" or lower. Sage recommends the soil be utilized in accordance with the WSDOE *End Use Criteria for Petroleum Contaminated Soils* (see Appendix E).

5.0 Limitations

In performance of this project, Sage Earth Sciences has conducted its activities in accordance with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. The conclusions are based upon our field observations and independent laboratory analyses. Since the scope of work for this project is confined to limited Phase II Environmental Assessment sampling & analysis of soil samples from a soil treatment area, this document does not imply that the property is free of other environmental constraints. This report is solely for the use and information of our client. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and other parameters indicated. Sage Earth Sciences, Inc. is not responsible for the impacts of changes in environmental standards, practices, or regulations subsequent to the performance of services. Sage Earth Sciences, Inc. does not warrant the accuracy of information supplied by others, nor use of segregated portions of this report. Sage Earth Sciences, Inc. assumes no liability for conditions we were not authorized to evaluate, or conditions not generally recognized as predictable when services were performed.

Appendix A

Soil Sampling Methodology

Soil sampling locations were chosen at locations considered representative of soil conditions. To collect representative soil samples, Sage Earth Sciences, Inc. uses the methodology outlined below.

1. Select a new sample jar whose volume is adequate for the appropriate analysis.

2. Remove a minimum of six (6) inches of soil to minimize the loss of volatile compounds.

3. Immediately transfer the soil to the sample container, using the container itself to collect the sample. Using new disposable vinyl gloves, pack the soil tightly into the container to prevent the loss of volatile compounds. Ensure that the container is filled completely to exclude any airspace in the sample.

4. Label the jar with a unique identification number, the analytical procedure to be used, the time and date of sample collection and the person who collected the sample.

5. Enter the sample on the Chain-of-Custody form and the Daily Field Sampling Log.

6. Place the sample in wet ice to cool the samples to approximately four (4) degrees Celsius.

7. Place the samples in a shipping cooler packed with absorbent material and blue ice for shipment.

8. Secure the Chain-of-Custody form to the underside of the cooler lid in a sealable plastic bag with tape.

9. Upon completion of sampling activities, secure the lid of the cooler with strapping tape and affix custody seals across the lid/cooler interface. Place appropriate shipping waybills atop the cooler.

10. Ship the samples to the laboratory via commercial courier.

Appendix B

SAGE Earth Sciences, Inc.
SAGEESI982D1

Daily Field Sampling Log

Project# GTP-0604 Date 07/28/04

Field Crew DAVID GREEN

Sheet 1 of 1

Time	Sample #	Sample Location	Matrix	Staining	Odors	Depth/ Area	TOV/ TLC
09:06	S1	West end of PCS Landfarm	Soil	none	none	1.5'	NA
09:20	S2	SW end of PCS Landfarm	Soil	none	none	0.5'	NA
09:28	S3	NW end of PCS Landfarm	Soil	none	none	0.5'	NA
09:36	S4	South central PCS Landfarm	Soil	none	none	0.75'	NA
09:45	S5	North central PCS Landfarm	Soil	none	none	1.0'	NA
09:53	S6	SE end of PCS Landfarm	Soil	none	none	1.0'	NA
10:01	S7	NE end of PCS Landfarm	Soil	none	none	1.0'	NA

Ambient Vapors NA Units
TLC Standards NA

Appendix C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
TEL: (206) 285-8282
FAX: (206) 283-5044
e-mail: fbi@isomedia.com

August 25, 2004

Rodney Heit, Project Manager
Sage Earth Sciences, Inc.
P.O. Box 1644
Zillah, WA 98953

Dear Mr. Heit:

Included are the results from the testing of material submitted on July 29, 2004 from the GTP-0604, F&BI 407282 project. There are 6 pages included in this report. Please note that sample GTP-0604-S1 was analyzed for NWTPH-Gx/BTEX outside of normal holding time. We apologize for this error.

Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Charlene Morrow

Charlene Morrow
Chemist

Enclosures
SES0825R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/25/04
Date Received: 07/29/04
Project: GTP-0604, F&BI 407282
Date Extracted: 08/09/04
Date Analyzed: 08/11/04 and 08/19/04

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported on a Dry Weight Basis
Results Reported as µg/g (ppm)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 47-132)
GTP-0604-S1 d, h 407282-01	<0.02	<0.02	<0.02	<0.12	<2	101
GTP-0604-S2 407282-02	<0.02	0.03	<0.02	0.11	<1	103
GTP-0604-S3 407282-03	<0.02	<0.02	<0.02	<0.06	<1	99
GTP-0604-S4 407282-04	<0.02	<0.02	<0.02	<0.06	<1	101
GTP-0604-S5 407282-05	<0.02	<0.02	<0.02	<0.06	<1	101
GTP-0604-S6 407282-06	<0.02	<0.02	<0.02	<0.06	<1	103
GTP-0604-S7 407282-07	<0.02	<0.02	<0.02	<0.06	<1	99
Method Blank	<0.02	<0.02	<0.02	<0.06	<1	103

d - The sample was diluted. Detection limits have been raised due to dilution.

h - The sample was analyzed outside of the two week holding period.

Date of Report: 08/25/04
Date Received: 07/29/04
Project: GTP-0604, F&BI 407282
Date Extracted: 08/02/04
Date Analyzed: 08/03/04 and 08/04/04

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL USING METHOD NWTPH-Dx

Extended to Include Motor Oil Range Compounds

Results Reported on a Dry Weight Basis
Results Reported as µg/g (ppm)

Sample ID Laboratory ID	Diesel Extended (C_{10}-C_{36})	Surrogate (% Recovery) (Limit 57-136)
GTP-0604-S1 407282-01	<50	68
GTP-0604-S2 407282-02	200	98
GTP-0604-S3 407282-03	110	98
GTP-0604-S4 407282-04	140	90
GTP-0604-S5 407282-05	220	93
GTP-0604-S6 407282-06	260	91
GTP-0604-S7 407282-07	200	88
Method Blank	<50	89

Date of Report: 08/25/04
Date Received: 07/29/04
Project: GTP-0604, F&BI 407282
Date Extracted: 08/03/04
Date Analyzed: 08/03/04

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR TOTAL METALS BY INDUCTIVELY COUPLED PLASMA (ICP) (METHOD 6010)

Results Reported on a Dry Weight Basis
Results Reported as µg/g (ppm)

Sample ID Laboratory ID	Total Lead
GTP-0604-S1 407282-01	3
GTP-0604-S2 407282-02	10
GTP-0604-S3 407282-03	13
GTP-0604-S4 407282-04	12
GTP-0604-S5 407282-05	11
GTP-0604-S6 407282-06	15
GTP-0604-S7 407282-07	<2
Method Blank	<2

Date of Report: 08/25/04
Date Received: 07/29/04
Project: GTP-0604, F&BI 407282

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD Limit 20
Benzene	µg/g (ppm)	0.5	88	86	74-116	2
Toluene	µg/g (ppm)	0.5	88	86	74-122	2
Ethylbenzene	µg/g (ppm)	0.5	96	92	75-121	4
Xylenes	µg/g (ppm)	1.5	93	88	66-128	6
Gasoline	µg/g (ppm)	20	104	102	61-130	2

Date of Report: 08/25/04
Date Received: 07/29/04
Project: GTP-0604, F&BI 407282

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 408001-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	% Recovery MS	% Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	µg/g (ppm)	500	<50	104	94	55-138	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	% Recovery LCS	Acceptance Criteria
Diesel Extended	µg/g (ppm)	500	90	56-138

Date of Report: 08/25/04
Date Received: 07/29/04
Project: GTP-0604, F&BI 407282

QUALITY ASSURANCE RESULTS FOR TOTAL METALS BY INDUCTIVELY COUPLED PLASMA (ICP) (METHOD 6010)

Laboratory Code: 407229-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Lead	µg/g (ppm)	23	20	14	0-20

Laboratory Code: 407229-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	µg/g (ppm)	5	23	107	113	50-150	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Lead	µg/g (ppm)	5	106	109	70-130	3

107292

M 07/21/04

BIS

SAGE
Earth Sciences, Inc.

P.O. Box 1644
601 Glenwood Drive
Zillah, WA 98953
Phone (509) 829-6400
Fax (509) 829-6443

CHAIN-OF--CUSTODY FORM

Project Name: Gear Jammer Landfarm
Project Number: GTP-0604
Sampler: DAVID GREEN
Date: 07/28/04 Time: 09:00-10:15 Am
Destination: Friedman & Bruya, Inc.

Sample Number	Matrix	Number of Containers	Container Size	NWTPH-G BTEX	NWTPH-Dx	Total Lead	Time Sampled	Date Sampled	Lab ID
GTP-0604-S1	Soil	2	4oz.	X	X	X	09:26	7/28/04	01 A-B
GTP-0604-S2	Soil	2	4oz.	X	X	X	09:20		02 A-B
GTP-0604-S3	Soil	2	4oz.	X	X	X	09:28		03 A-B
GTP-0604-S4	Soil	2	4oz.	X	X	X	09:36		04 A-B
GTP-0604-S5	Soil	2	4oz.	X	X	X	09:45		05 A-B
GTP-0604-S6	Soil	2	4oz.	X	X	X	09:53		06 A-B
GTP-0604-S7	Soil	2	4oz.	X	X	X	10:01		07 A-B

Analyses Requested

Relinquished by: [signature] Date: 07/28/04
Firm: Sage Earth Sciences, Inc. Time: 10:15 Am

Received By: [signature] Date: 07/29/04
Firm: Friedman & Bruya Time: 09:45

Relinquished by: Date:
Firm: Time:

Received By: Date:
Firm: Time:

Container Condition: Good Violated

Cool (4°C): Yes No

Custody Seals: Intact Violated

Appendix D

Table 740-1
Method A Soil Cleanup Levels for Unrestricted Land Uses.[a]

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	20 mg/kg[b]
Benzene	71-43-2	0.03 mg/kg[c]
Benzo(a)pyrene	50-32-8	0.1 mg/kg[d]
Cadmium	7440-43-9	2 mg/kg[e]
Chromium		
Chromium VI	18540-29-9	19 mg/kg[f1]
Chromium III	16065-83-1	2,000 mg/kg[f2]
DDT	50-29-3	3 mg/kg[g]
Ethylbenzene	100-41-4	6 mg/kg[h]
Ethylene dibromide (EDB)	106-93-4	0.005 mg/kg[i]
Lead	7439-92-1	250 mg/kg[j]
Lindane	58-89-9	0.01 mg/kg[k]
Methylene chloride	75-09-2	0.02 mg/kg[l]
Mercury (inorganic)	7439-97-6	2 mg/kg[m]
MTBE	1634-04-4	0.1 mg/kg[n]
Naphthalenes	91-20-3	5 mg/kg[o]
PCB Mixtures		1 mg/kg[p]
Tetrachloroethylene	127-18-4	0.05 mg/kg[q]
Toluene	108-88-3	7 mg/kg[r]
Total Petroleum Hydrocarbons[s]		
[Note: Must also test for and meet cleanup levels for other petroleum components--see footnotes!]		
Gasoline Range Organics		100 mg/kg
Gasoline mixtures Without benzene and consisting of no more than 20% aromatic hydrocarbons between EC 8 and EC 16		30 mg/kg
All other gasoline mixtures		2,000 mg/kg
Diesel Range Organics		2,000 mg/kg
Heavy Oils		4,000 mg/kg
Mineral Oil		
1,1,1 Trichloroethane	71-55-6	2 mg/kg[t]
Trichloroethylene	79-01-5	0.03 mg/kg[u]
Xylenes	1330-20-7	9 mg/kg[v]

Footnotes:

a **Caution on misusing this table.** This table has been developed for specific purposes. It is intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or for sites with relatively few hazardous substances, and the site qualifies under WAC 173-340-7491 for an exclusion from conducting a simplified or site-specific terrestrial ecological evaluation, or it can be demonstrated using a terrestrial ecological evaluation under WAC 173-340-7492 or 173-340-7493 that the values in this table are ecologically protective for the site. This table may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in this table 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 this table do not necessarily mean the soil must be restored to these levels at a site. The level of restoration depends on the remedy selected under WAC 173-340-350 through 173-340-390.

b **Arsenic.** Cleanup level based on direct contact using Equation 740-2 and protection of ground water for drinking water use using the procedures in WAC 173-340-747(4), adjusted for natural background for soil.

c **Benzene.** Cleanup level based on protection of ground water for drinking water use, using the procedures in WAC 173-340-747 (4) and (6).

d **Benzo(a)pyrene.** Cleanup level based on direct contact using Equation 740-2. This value may also be used as the total concentration that all carcinogenic PAHs must meet using the toxicity equivalency methodology in WAC 173-340-708(8).

e **Cadmium.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4), adjusted for the practical quantitation limit for soil.

f1 **Chromium VI.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

f2 **Chromium III.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4). Chromium VI must also be tested for and the cleanup level met when present at a site.

g **DDT (dichlorodiphenyltrichloroethane).** Cleanup level based on direct contact using Equation 740-2.

h **Ethylbenzene.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

i **Ethylene dibromide (1,2 dibromoethane or EDB).** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4), adjusted for the practical quantitation limit for soil.

j **Lead.** Cleanup level based on preventing unacceptable blood lead levels.

k **Lindane.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4), adjusted for the practical quantitation limit.

l **Methylene chloride (dichloromethane).** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

m **Mercury.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

n **Methyl tertiary-butyl ether (MTBE).** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

o **Naphthalenes.** Cleanup level based on protection of ground water for drinking water use, using the procedures described inWAC 173-340-747(4). This is a total value for naphthalene, 1-methyl naphthalene and 2-methyl naphthalene.

p **PCB Mixtures.** Cleanup level based on applicable federal law (40 C.F.R. 761.61). This is a total value for all PCBs.

q **Tetrachloroethylene.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

r **Toluene.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

s **Total Petroleum Hydrocarbons (TPH).** TPH cleanup values have been provided for the most common petroleum products encountered at contaminated sites. Where there is a mixture of products or the product composition is unknown, samples must be tested using both the NWTPH-Gx and NWTPH-Dx methods and the lowest applicable TPH cleanup level must be met.

– **Gasoline range organics** means organic compounds measured using method NWTPH-Gx. Examples are aviation and automotive gasoline. The cleanup level is based on protection of ground water for noncarcinogenic effects during drinking water use using the procedures described in WAC 173-340-747(6). Two cleanup levels are provided. The lower value of 30 mg/kg can be used at any site. When using this lower value, the soil must also be tested for and meet the benzene soil cleanup level. The higher value of 100 mg/kg can only be used if the soil is tested and found to contain no benzene and less than 20% of the gasoline mixture consists of aromatic petroleum hydrocarbons between EC 8 and EC 16. No interpolation between these cleanup levels is allowed. In both cases, the soil cleanup level for any other carcinogenic components of the petroleum [such as EDB and EDC], if present at the site, must also be met. Also, in both cases, soil cleanup levels for any noncarcinogenic components [such as toluene, ethylbenzene, xylenes, naphthalene, and MTBE], also must be met if these substances are found to exceed ground water cleanup levels at the site. See Table 830-1 for the minimum testing requirements for gasoline releases.

– **Diesel range organics** means organic compounds measured using method NWTPH-Dx. Examples are diesel, kerosene, and #1 and #2 heating oil. The cleanup level is based on preventing the accumulation of free product on the ground water, as described in WAC 173-340-747(10). The soil cleanup level for any carcinogenic components of the petroleum [such as benzene and PAHs], if present at the site, must also be met. Soil cleanup levels for any noncarcinogenic components [such as toluene, ethylbenzene, xylenes and naphthalenes], also must be met if these substances are found to exceed the ground water cleanup levels at the site. See Table 830-1 for the minimum testing requirements for diesel releases.

– **Heavy oils** means organic compounds measured using NWTPH-Dx. Examples are #6 fuel oil, bunker C oil, hydraulic oil and waste oil. The cleanup level is based on preventing the accumulation of free product on the ground water, as described in WAC 173-340-747(10) and assuming a product composition similar to diesel fuel. The soil cleanup level for any carcinogenic components of the petroleum [such as benzene, PAHs and PCBs], if present at the site, must also be met. Soil cleanup levels for any noncarcinogenic components [such as toluene, ethylbenzene, xylenes and naphthalenes], also must be met if found to exceed the ground water cleanup levels at the site. See Table 830-1 for the minimum testing requirements for heavy oil releases.

– **Mineral oil** means non-PCB mineral oil, typically used as an insulator and coolant in electrical devices such as transformers

and capacitors, measured using NWTPH-Dx. The cleanup level is based on preventing the accumulation of free product on the ground water, as described in WAC 173-340-747(10). Sites using this cleanup level must also analyze soil samples and meet the soil cleanup level for PCBs, unless it can be demonstrated that: (1) The release originated from an electrical device that was manufactured after July 1, 1979; or (2) oil containing PCBs was never used in the equipment suspected as the source of the release; or (3) it can be documented that the oil released was recently tested and did not contain PCBs. Method B must be used for releases of oils containing greater than 50 ppm PCBs. See Table 830-1 for the minimum testing requirements for mineral oil releases.

t **1,1,1 Trichloroethane.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

u **Trichloroethylene.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).

v **Xylenes.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4). This is a total value for all xylenes.

Appendix E

WSDOE End Use Criteria for Petroleum-Contaminated Soils

		Soil Class (ppm)			
Analyte	**Analytical Method**	**1**	**2**	**3**	**4**
Heavy fuel hydrocarbons (C24-C30)	WTPH-418.1 mod.	<60	60-200	200-2000	>2000
Diesel (C12-C24)	WTPH-D	<25	25-200	200-500	>500
Gasoline (C6-C12)	WTPH-G	<5	5-100	100-250	>250
Benzene	8020	<0.005	0.005-0.5	≤0.5	>0.5
Ethylbenzene	8020	<0.005	0.005-20	≤20	>20
Toluene	8020	<0.005	0.005-40	≤40	>40
Xylenes (total)	8020	<0.005	0.005-20	≤20	>20
Treatment is recommended for all Class 3 and Class 4 Soils					

Notes:

Class 1 Soil Uses:

- Any use which will not cause threat to human health or the environment

Class 2 Soil Uses:

- Backfill at the cleanup site
- Fill in commercial or industrial areas
- Cover or fill in permitted landfills
- Road subgrade or other road construction fill
- Fill in or near: wetlands, surface water, groundwater, drinking water wells or utility trenches is NOT recommended. Use as residential topsoil is also NOT recommended.

Class 3 Soil Uses:

- Treatment
- Disposal at the original site (no solid waste disposal permit needed)
- Road Construction (no solid waste permit disposal permit needed)
- Use or disposal in permitted municipal landfills
- Permitted as a new PCS landfill
- (An evaluation should be made to ensure that disposal will not cause a threat to human health or the environment, e.g. use near water bodies)

Class 4 Soil Uses:

- Treatment
- Disposal in a permitted, municipal landfill
- Permitted as a new PCS landfill