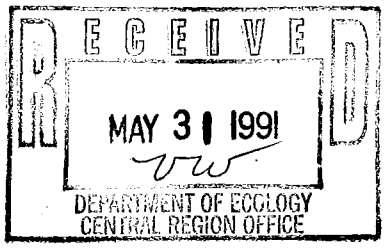
DATA REPORT
SOIL SAMPLING AT RAILROAD/LOADING DOCK AND FORMER OIL SHED AREAS

Prepared for

KEYES FIBRE COMPANY
WENATCHEE, WASHINGTON



Prepared

by

CH2M HILL Northwest, Inc.
May 1991

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05/30/91

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TABLES

FIGURES

Section 1
INTRODUCTION

BACKGROUND

Keyes Fibre's Wenatchee Plant, located north of Wenatchee on the east side of the Chelan Highway (Figure 1) processes used paper and manufactures it into packing trays for apples and other fruit. Keyes plans to modernize the plant and this, in part, will involve the railroad spur/loading dock area at the rear (east side) of the main building (Figure 2). Surface soils in this area previously exhibited staining by oily substances. A second area of stained soils was present at the location of a former oil storage shed near the southeast corner of the main building.

In January 1991, a preliminary sampling and analysis program was conducted to initially characterize the stained soils with respect to the disposal criteria of the Greater Wenatchee Regional Landfill. Results of the analyses indicated that the stained soils contained concentrations of petroleum hydrocarbons above those considered acceptable by the Washington State Department of Ecology (Ecology). Results for the flash point, metals (by the toxicity characteristic leaching procedure; TCLP), and polychlorinated biphenyls (PCBs) analyses were below regulatory limits.

After reviewing the January sampling results, Keyes sought to remove and dispose of the stained soils prior to beginning site work for the plant modernization. During initial cleanup efforts in early April, it was discovered that the extent of the oil-stained soils was greater than had been thought. Consequently, a program of borings and additional soil sampling and analysis was undertaken in May to attempt to better define the extent of the oily soils. The information gained from these activities will be used to assess the need for, and scope of, possible further actions.

PURPOSE AND ORGANIZATION OF THIS REPORT

The purpose of this report is to provide a description of the data-gathering activities conducted and a compilation of the data obtained to date. Sections 2, 3, and 4 summarize the following information for the January, April, and May sampling events, respectively:

- Purpose of sampling
- Sample collection procedures
- Decontamination procedures
- Sample analysis
- Analytical results

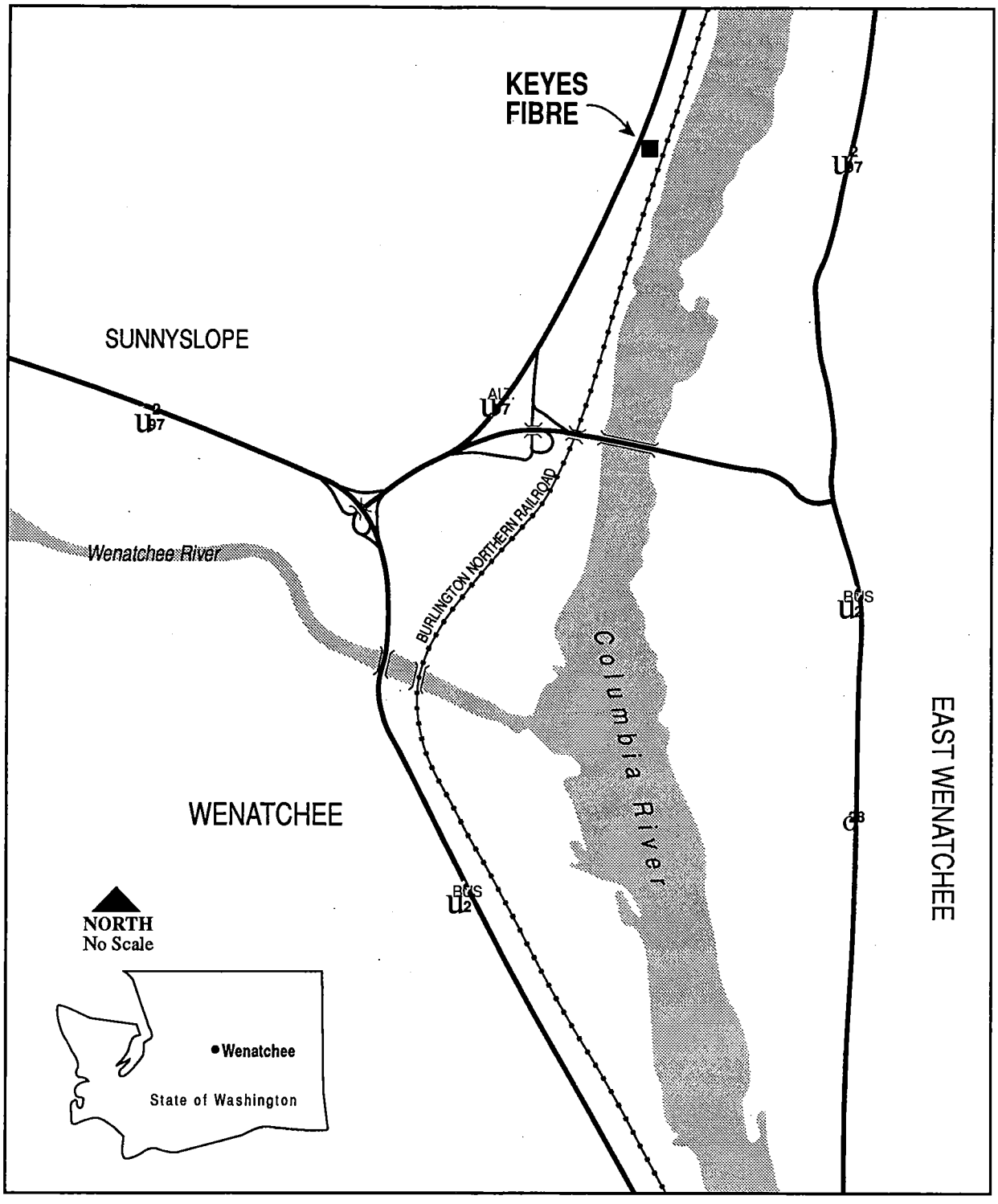
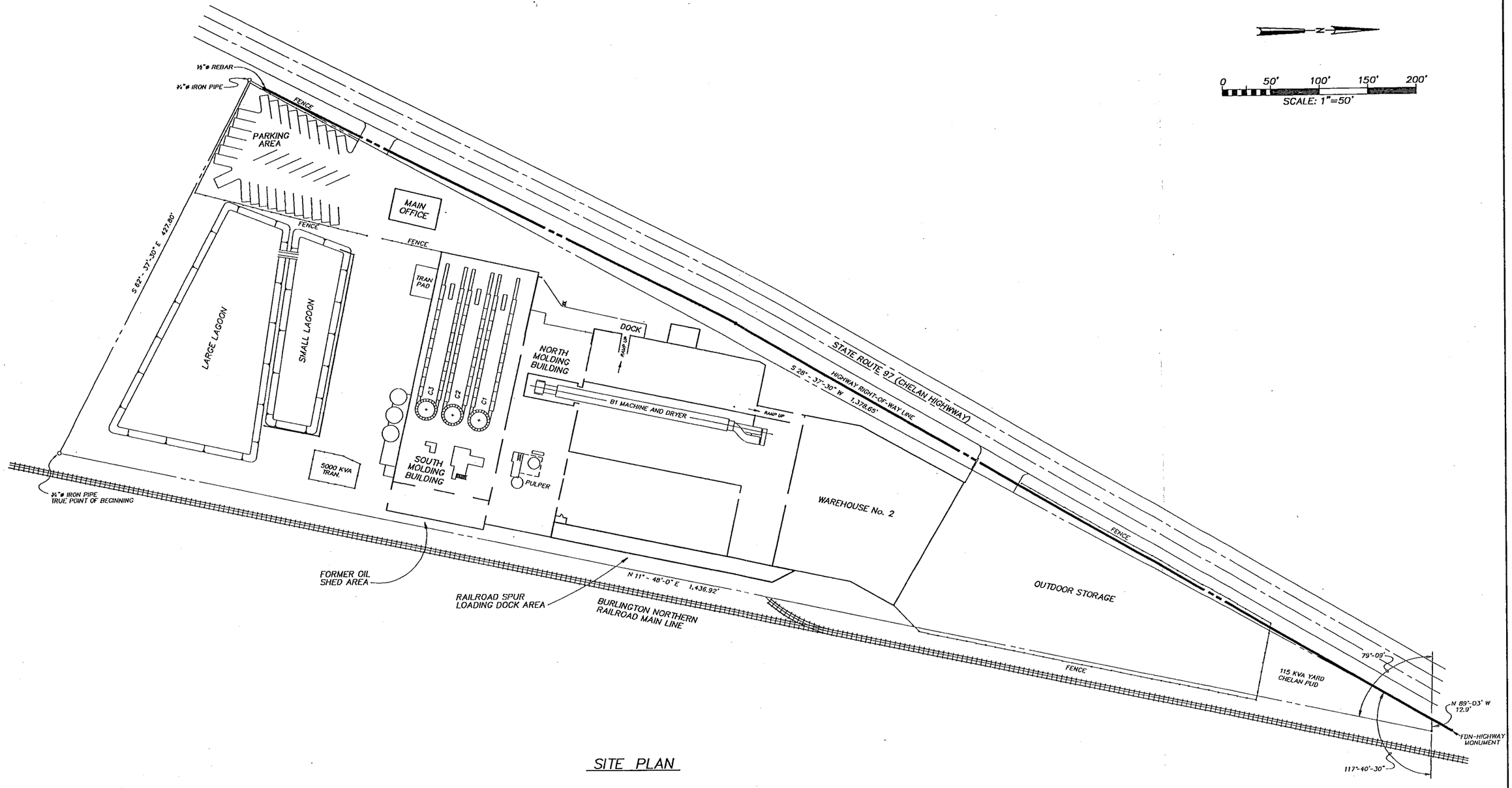


FIGURE 1
VICINITY MAP
Keyes Fibre Company
Wenatchee, Washington

05-17-91 D:\KEYES\FIG2.DWG



SITE PLAN

CH2M HILL	DSGN	NO.	DATE	REVISION	BY	APVD	KEYES FIBRE COMPANY WENATCHEE PLANT WENATCHEE, WASHINGTON
	DR D:\KEYES\FIG2.DWG RK LATTA						FIGURE 2 SITE PLAN AND EXISTING BUILDING LAYOUT
	CHK						SHEET
	APVD						DWG NO.
1=500.0							DATE JAN 1991
							PROJ NO. SEA31410.P1

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Sampling and analysis plans and laboratory data reports for the three sampling events are included as appendixes.

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Section 2
JANUARY 1991 SAMPLING EVENT

PURPOSE OF SAMPLING

The primary purpose of this initial sampling was to preliminarily characterize the stained soils in the railroad spur/loading dock area and provide information for use in assessing possible disposal options, particularly with respect to the requirements of the Greater Wenatchee Regional Landfill (GWRL). The results of the sampling also were expected to aid in evaluating whether visual inspection of the soils could be used as a general field guide for classifying them as contaminated or uncontaminated and determining the extent of necessary excavation. It was recognized that the information generated by this preliminary characterization would need to be supplemented with additional sampling and analysis data to support detailed project planning and final cleanup and disposal decisions, including confirming that selected cleanup levels had been achieved.

SAMPLE COLLECTION PROCEDURE

The areas sampled were: (1) at the rear of the plant between an abandoned spur track from the Burlington Northern Railroad and the loading dock; and (2) the site of a former oil storage shed at the southeast corner of the building (see Figure 3). The sampled areas contained gravelly and rocky soils with dark oily stains.

Two composite soil samples (a "clean" composite and a "dirty" composite) were collected from the locations shown in Figure 3. A backhoe was used to excavate shallow pits to facilitate sample collection and observation of the depth of stained soils.

Sample number KF-001-SO-01891-CO ("Sample 001") was composited from five discrete areas (C1 through C5 in Figure 3) that visually did not appear to be contaminated. A decontaminated stainless steel spoon was used to collect five spoonsful of soil from the bottom of the excavated pit at each of the five discrete clean sample locations. Depths ranged from 16 to 21 inches. The subsamples were mixed well in a decontaminated stainless steel bowl and the composite sample was collected from this mixture.

Sample number KF-002-SO-01891-CO ("Sample 002") was composited from five discrete areas (D1 through D5 in Figure 3) that appeared to be heavily stained by oily substances. A decontaminated stainless steel spoon was used to collect five spoonsful of soil from the bottom of the excavated pit at each of the five discrete dirty sample locations. Depths ranged from 16 to 21 inches. The subsamples were mixed well in a decontaminated stainless steel bowl and the composite sample was collected from this mixture.

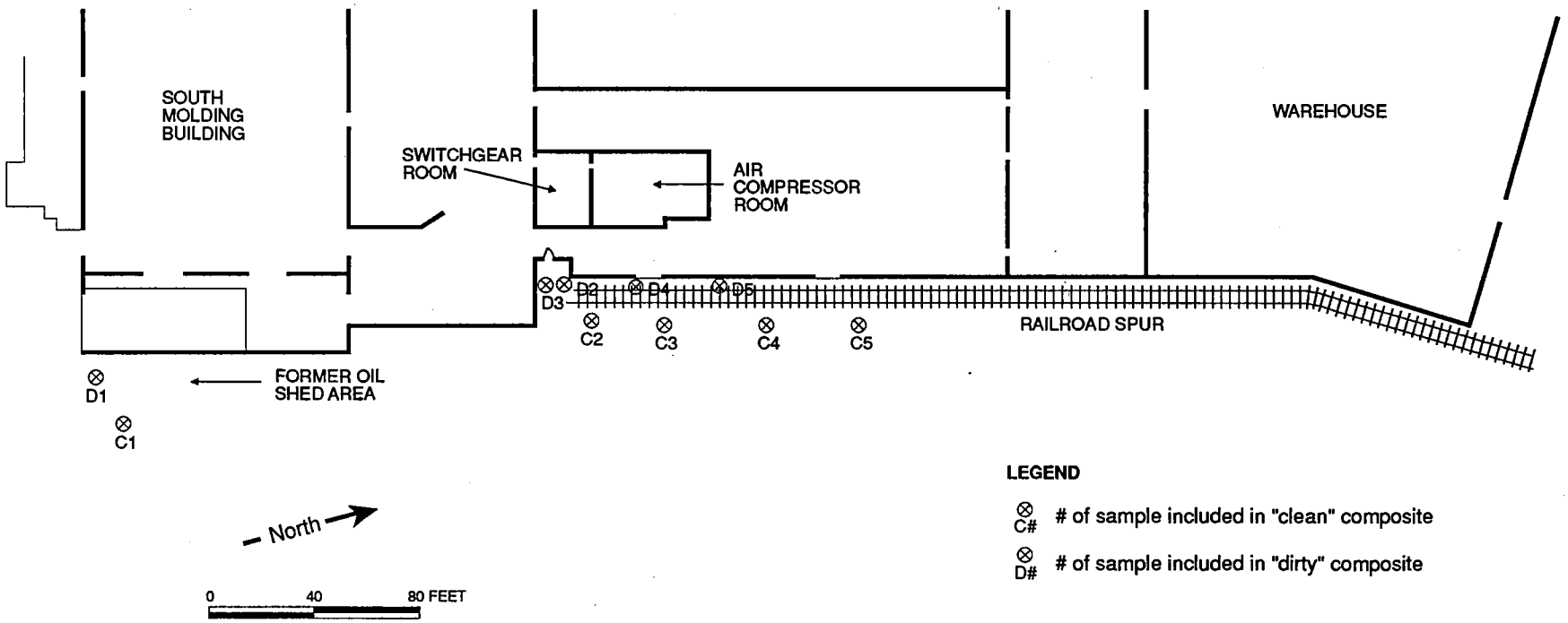

FIGURE 3
SOIL SAMPLE LOCATIONS
JANUARY 18, 1991
Keyes Fibre Company
Wenatchee, Washington

The samples were handled in accordance with the procedures specified in the Sampling and Analysis Plan prepared for the project (Appendix A).

DECONTAMINATION PROCEDURES

Excavating Equipment

The backhoe was decontaminated by steamcleaning upon entering the site and after completion of the work prior to leaving the site. All decontamination water was contained, drummed, and labeled as follows:

DECON H_2O
KEYES FIBRE
SOIL SAMPLING
1/18/91

This drum was stored onsite and, after receipt of the soil sampling results, the water was treated in the plant's wastewater treatment system.

Sampling Equipment

Field equipment that could have contacted the samples or sample containers was decontaminated prior to use and between each sampling event by following the steps outlined in the Sampling and Analysis Plan. Decontamination fluids were retained and drummed as described above.

Sample Containers

All sample containers arrived precleaned by the CH2M HILL laboratory.

Workers and Personal Protective Equipment

The work was conducted in modified Level D protection. This included cotton coveralls, steel-toed neoprene boots, outer nitrile gloves, inner latex gloves, hard hat, ear plugs, and safety glasses. Personnel decontamination procedures outlined in the Sampling and Analysis Plan were followed.

SAMPLE ANALYSIS

The collected samples were shipped via express delivery to CH2M HILL's analytical laboratory in Redding, California, following standard chain-of-custody procedures and documentation. Sample analysis parameters and associated test methods are listed in Table 1.

Table 1 Analytical Methods	
Parameter[a]	**Test Method Number**
TPH	EPA 418.1
Ignitability	SW 1010
TCLP metals	SW 1311[b] + SW 6010/7000[c]
PCBs	SW 8080

[a]Parameters based on waste profile requirements of the Greater Wenatchee Regional Landfill
[b]Extraction
[c]Analysis

LABORATORY RESULTS

Results of laboratory analyses for ignitability, total petroleum hydrocarbons (TPH), and toxicity characteristic leaching procedure (TCLP) metals performed on Samples 001 and 002 are summarized in Tables 2 and 3, respectively. Results of the polychlorinated biphenyls (PCB) scan are presented in Tables 4 and 5. Copies of the laboratory reports are provided as Appendix B.

Table 2 Analytical Results for KF-001-S0-01891-CO	
Analytical Parameter	**Result**
Ignitability	Negative
TPH	5.1 mg/kg
TCLP Silver	<0.003 mg/L
TCLP Arsenic	<0.012 mg/L
TCLP Barium	1.10 mg/L
TCLP Cadmium	<0.001 mg/L
TCLP Chromium	<0.003 mg/L
TCLP Mercury	<0.0002 mg/L
TCLP Lead	<0.027 mg/L
TCLP Selenium	<0.021 mg/L

TPH results reported on dry-weight basis.

Table 3 Analytical Results for KF-002-SO-01891-CO	
Analytical Parameter	**Result**
Ignitability	Negative
TPH	176,000 mg/kg
TCLP Silver	<0.003 mg/L
TCLP Arsenic	0.029 mg/L
TCLP Barium	1.51 mg/L
TCLP Cadmium	0.004 mg/L
TCLP Chromium	<0.003 mg/L
TCLP Mercury	<0.0002 mg/L
TCLP Lead	0.071 mg/L
TCLP Selenium	<0.021 mg/L
TPH results reported on dry-weight basis.	

Table 4 Analytical Results for KF-001-SO-01891-CO	
Compounds	**Sample Result**
PCB 1016	< 0.11 mg/kg
PCB 1221	< 0.11 mg/kg
PCB 1232	< 0.11 mg/kg
PCB 1242	< 0.11 mg/kg
PCB 1248	< 0.11 mg/kg
PCB 1254	< 0.22 mg/kg
PCB 1260	< 0.22 mg/kg
Results reported on a dry-weight basis.	

Table 5 Analytical Results for KF-002-SO-01891-CO	
Compounds	**Sample Result**
PCB 1016	< 2.4 mg/kg
PCB 1221	< 2.4 mg/kg
PCB 1232	< 2.4 mg/kg
PCB 1242	< 2.4 mg/kg
PCB 1248	< 2.4 mg/kg
PCB 1254	< 4.9 mg/kg
PCB 1260	< 4.9 mg/kg
Results reported on a dry-weight basis.	

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Section 3
APRIL 1991 SAMPLING EVENT

PURPOSE OF SAMPLING

Results of the January preliminary sampling and analyses indicated that the stained surface soils contained concentrations of petroleum hydrocarbons above those considered acceptable by Ecology. Because of the presence of the oily substances, Keyes sought to remove and dispose of the stained soils prior to beginning site work for the plant modernization. A plan for the soil removal was prepared for Keyes by CH2M HILL (Appendix C) and the work was begun in early April.

During the course of the excavation, it was determined that oily materials extended beneath the main plant building at the corner of the loading dock immediately outside of the compressor room area. Materials exposed beneath the footing of the loading dock in this area appeared different from typical oily soils and so two samples were collected and analyzed for priority pollutants and petroleum hydrocarbon content. Additional sampling and analysis was conducted to characterize the stockpiled soils for disposal purposes and to assess residual levels of petroleum hydrocarbons in the open excavations.

At the recommendation of two independent engineers, Keyes backfilled the excavation at the railroad/loading dock area with compacted, clean fill material from a commercial source to avoid undermining the building and possibly producing instability of the structure. The oil shed excavation and stockpiles were secured pending receipt of analytical results and evaluation of the need for further actions.

SAMPLE COLLECTION PROCEDURES

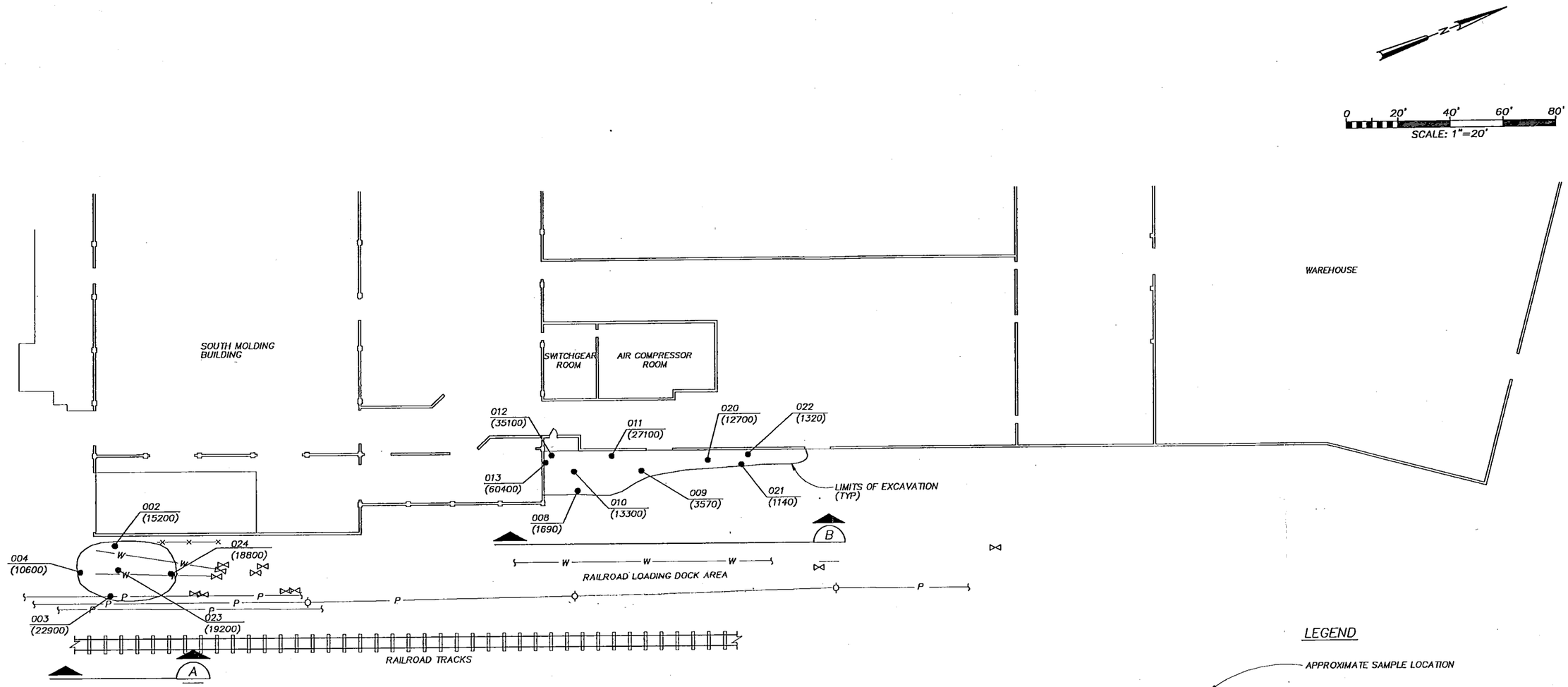
The sample locations are shown on Figure 4. At each location the upper 5 to 6 inches of stockpiled or inplace soil was removed using a precleaned stainless-steel spoon. Sample material was collected using a second precleaned stainless-steel spoon.

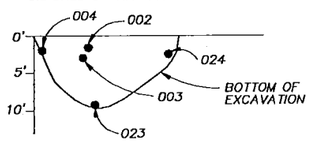
Samples were handled in accordance with the procedures specified in the Sampling and Analysis Plan prepared for the project (contained in the Cleanup Plan; Appendix C).

DECONTAMINATION PROCEDURES

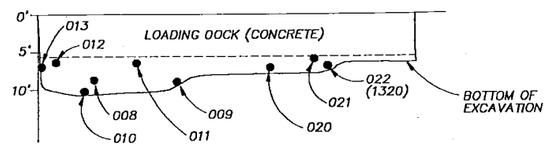
Standard procedures were used to restrict the movement of potentially contaminated materials into noncontaminated areas, and to reduce the potential for the samples collected to be exposed to contamination from other materials or the sampling equipment.

05-22-91 FIG4A.DWG





SECTION A



SECTION B

LEGEND

- APPROXIMATE SAMPLE LOCATION
- SAMPLE IDENTIFICATION
- 025 (44400) — TPH CONTENT IN PPM
- FENCE
- 12" DIA WATER LINES
- OVERHEAD POWER LINES
- VALVE WITH ABOVE GROUND INDICATOR
- POWER POLE

NOTE:
EXCAVATIONS WERE BACKFILLED AFTER SAMPLING COMPLETED.

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DR FIG4A.DWG RK LATTA	
CHK	
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WENATCHEE PLANT
WENATCHEE, WASHINGTON

FIGURE 4A
SOIL SAMPLE LOCATIONS AT EXCAVATIONS APRIL 1991

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DWG NO.	
DATE	JAN 1991
PROJ. NO.	SEA31436.A0

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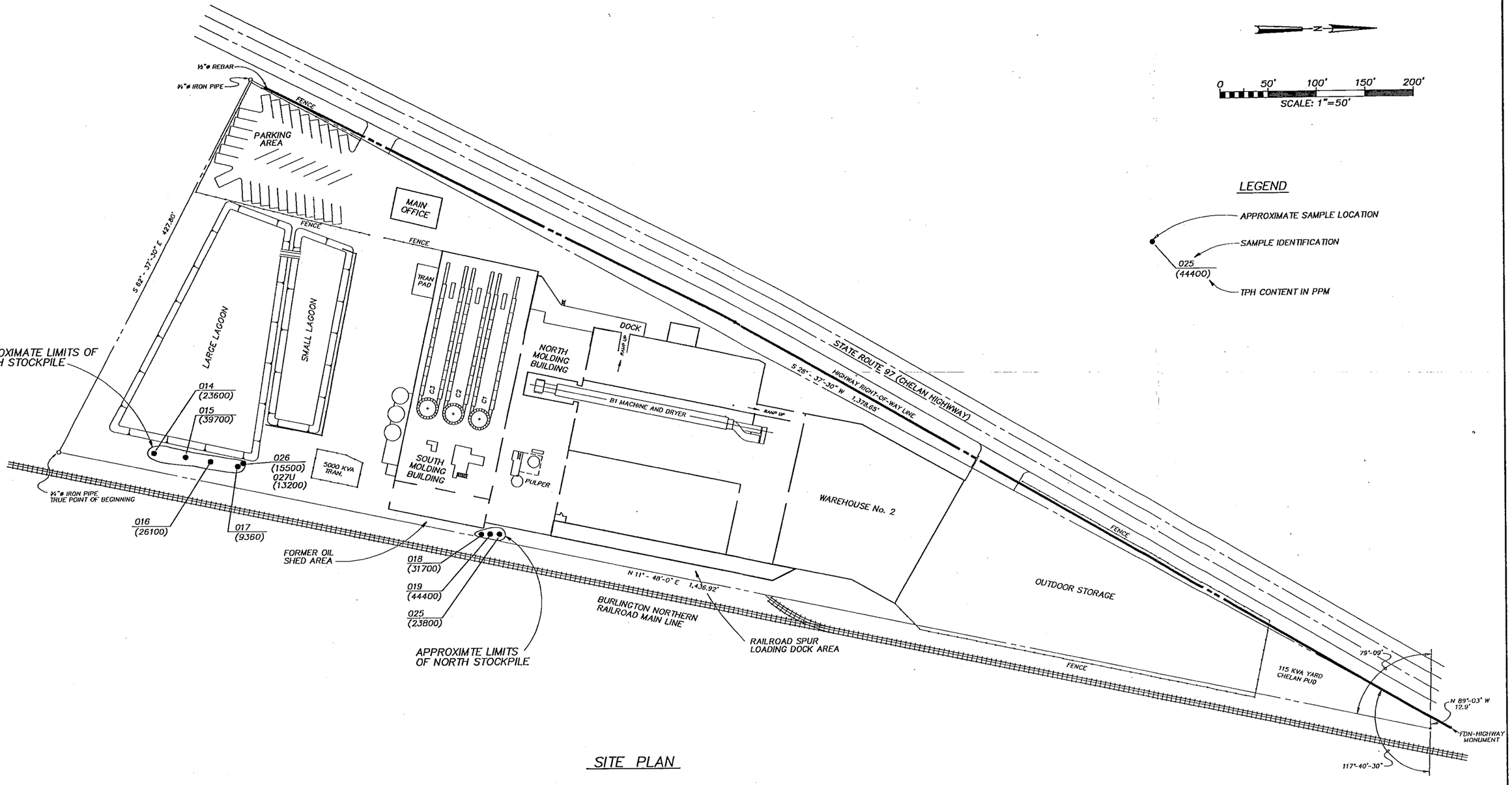

SITE PLAN

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1=600.0	DR D:\KEYES\FIG4B.DWG RK LATTA						FIGURE 4B SOIL SAMPLE LOCATIONS AT STOCKPILES APRIL 1991
	CHK						SHEET
	APVD						DWG NO.
							DATE JAN 1991
							PROJ NO. SEA31410.P1

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Excavating Equipment. The backhoe was steamcleaned upon entering the site and after completion of the work prior to leaving the site.

Sampling Equipment. Field equipment that could have contacted the samples or sample containers was cleaned prior to each use following the procedures specified in the Sampling and Analysis Plan. Rinsate was retained and disposed of in the plant's wastewater treatment system.

Sample Containers. All sample containers were precleaned by the supplier.

Workers and Personal Protective Equipment. The work was conducted in modified Level D protection. Personnel decontamination followed the procedures specified in the Sampling and Analysis Plan.

Fluids generated during decontamination of equipment and personnel were retained at the site in a plastic-lined steel drum that was clearly labelled to indicate its contents and the date it was filled. After evaluation of the soil sampling results, the fluids were disposed of in the plant's waste water treatment system.

SAMPLE ANALYSIS

The samples submitted to the laboratory were analyzed for the parameters listed in Table 6.

The following EPA analytical methods were used:

- TPH — 418.1, 8015 modified (2 in-place soil characterization samples)
- TCLP metals — 6010 (barium, cadmium, chromium, lead, silver)
7470 (mercury)
7060 (arsenic)
7740 (selenium)
- PCBs — 8080
- BTEX — 8020
- Flashpoint — 1010

- PPL scan — 6010 (antimony, beryllium, cadmium, chromium, copper, nickel, silver, zinc)
  7060 (arsenic)
  7421 (lead)
  7471 (mercury)
  7740 (selenium)
  7841 (thallium)
  8240 (volatile organics)
  8270 (semivolatile organics)
  8080 (pesticides/PCBs)

Table 6
Summary of Analyses Performed
April 1991 Sampling Event

Purpose of Sampling	Number of Samples[b]	Analyses Performed[a]					
		TPH	TCLP Metals	PCBs	BTEX	Flash-point	PPL Scan
Assessment of Concentrations of Residual TPH in Excavations	9	X					
Characterization of Stockpiled Soils for Disposal	9	X	X	X	X	X	
Characterization of In-Place Soils	2	X					X

Notes:
[a]TPH = Total petroleum hydrocarbons.
TCLP Metals = Arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver.
PCBs = Polychlorinated biphenyls.
BTEX = Benzene, toluene, ethylbenzene, and xylenes.
PPL = Priority pollutant list, includes 13 metals, 29 volatile organic compounds, 57 semivolatile organic compounds, 25 pesticides, dioxin, and 3 other general analytes.
[b]Includes duplicates for quality control purposes.

ANALYTICAL RESULTS

The analytical results for TPH and BTEX are summarized in Tables 7 and 8. PCBs were below detection limit (0.1 mg/kg) in all samples. Metals were all below detection limits except barium, which was present in concentrations ranging from 0.2 to 0.5 mg/kg. All metals concentrations were below toxicity characteristic levels. Purgeable aromatic compounds other than ethylbenzene and xylenes were all below detection limit (1 or 10 ug/L). Laboratory data reports are contained in Appendix D.

Table 7
Total Recoverable Petroleum Hydrocarbons
EPA Method 418.1

Sample Number	Concentration (mg/kg)
KF-014-SO-09391-XX	23,600
KF-015-SO-09391-XX	39,700
KF-016-SO-09391-XX	26,100
KF-017-SO-09391-XX	9,360
KF-018-SO-09391-XX	31,700
KF-019-SO-09391-XX	44,400
KF-025-SO-09391-XX	23,800
KF-026-SO-09391-XX	15,500
KF-027-SO-09391-DU	13,200

Table 8 Purgeable Aromatics (BTEX) EPA Method 8020				
	Concentration (ug/kg)			
Sample Number	Benzene	Toluene	Ethyl Benzene	Xylene
KF-014-SO-09391-XX	<1	<1	930	800
KF-015-SO-09391-XX	<1	<1	1,240	1,170
KF-016-SO-09391-XX	<1	<1	1,040	1,380
KF-017-SO-09391-XX	<1	<1	4	6
KF-018-SO-09391-XX	<1	<1	37	82
KF-019-SO-09391-XX	<1	<1	15	37
KF-025-SO-09391-XX	<10	<10	1,720	2,000
KF-026-SO-09391-XX	<1	<1	11	27
KF-027-SO-09391-DU	<1	<1	8	21

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Section 4
MAY 1991 SAMPLING EVENT

Results of the January and April sampling and analysis events indicated that stained soils at the site contained concentrations of petroleum hydrocarbons above those considered acceptable by Ecology. During initial cleanup efforts, it was discovered that the oil-stained soils in the loading dock area extend an undetermined distance under the main plant building and so additional soil sampling and analysis was determined to be necessary.

PURPOSE OF SAMPLING

The purpose of the May sampling and analysis program was to further delineate the extent of the oily soils in the railroad/loading dock and former oil shed areas. Particular attention was paid to the area beneath the plant building. Boring locations were selected as follows:

- Borings 1, 3, 5, 8, and 10 were situated to assess the lateral and vertical extent of residual oily materials in the railroad/loading dock area and to attempt to define a clean perimeter. Boring 18 was added in this area after analytical results from Boring 5 indicated the presence of oily materials farther to the east than expected. Because of the presence of a steep bank, overhead power lines, underground water line, and railroad tracks immediately east of Boring 18, it was not possible to drill another boring there.

- Borings 2, 4, and 12 were situated to assess the extent to which oily materials extended beneath the building in the railroad/loading dock area. Boring 4 was initiated adjacent to Boring 2 in an attempt to achieve a greater depth; however, the presence of abundant cobbles led to refusal at a shallow depth. Boring 12 was drilled to assess whether the materials detected at Boring 2 extended southward within the loose news storage area. Materials were also detected at Boring 12, but at lower levels than at Boring 2. Consequently, borings 17 and 20 were added to assess whether or not the materials detected in Borings 2 and 12 extend outside the building footprint (the results indicated that they do not).

- Borings 6, 7, 9, and 11 were situated to assess the extent to which the oily soils might extend beneath the building in this area and whether or not the compressor room and vacuum receivers could be sources of the oily materials observed beneath the loading dock (the results suggested they aren't).

- Borings 13, 14, 15, 16, and 19 were situated to assess the extent of the oily soils in the area of the former oil shed. Boring 14 was drilled after the excavation had been filled with compacted, granular material from a commercial supplier to provide access for the drill rig. The primary purpose of this boring was to assess the depth to which oily soils extend. The other four borings were located in an effort to define a clean perimeter in the area.

Sixty-nine soil samples were collected from 20 borings drilled both inside (7 borings) and outside (13 borings) the plant building. Boring locations are shown on Figure 5. The borings extended to depths of between 2 and 30 feet below ground surface. Soil sampling was attempted at approximately 2.5-foot intervals; however, because of the coarseness of the soils, many of the sample recovery attempts were not successful.

SAMPLE COLLECTION PROCEDURES

Keyes Fibre retained several contractors to perform the sampling and analysis activities. CH2M HILL provided technical guidance, overall coordination, sample handling, onsite chemical analysis, and documentation activities. This involved an onsite team of 7 persons. Two drilling contractors, Boretec, Inc. and Tacoma Pump & Drilling Company, Inc., each provided 2-man crews that drilled the borings and collected the downhole samples. A local contractor provided concrete-cutting services. Offsite chemical analyses were performed by Eureka Laboratories, Inc. under contract to Keyes. Payne Riemer Group provided an onsite observer on Keyes's behalf. Table 9 provides a list of the principal participants and their roles.

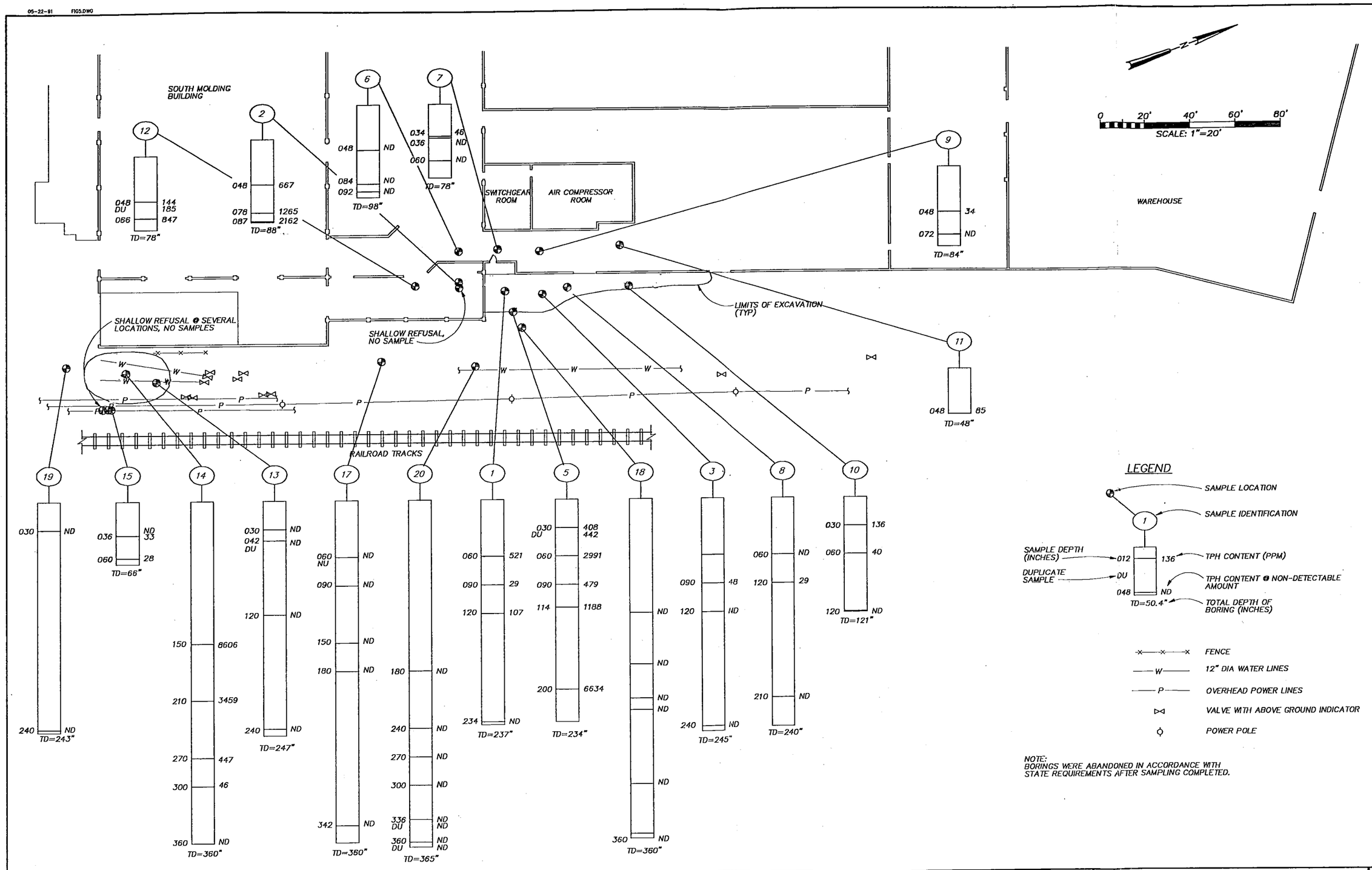
DRILLING

Borings were drilled using hollow-stem auger rigs. A standard sized rig was used for the borings outside the plant. A smaller rig was used inside because standard sized rigs could not enter and work within the building. Drilling of Borings 2, 4, 6, 7, 9, and 11 was conducted within production areas of the plant and required temporarily curtailing the use of loose news paper as well as adjusting plant operations to accommodate the investigative activities. In order to drill Borings 7, 9, and 11, holes had to be cut in the building's roof to allow the drilling rig mast to be raised into position in areas with a low ceiling. Special manifolding was required for conducting exhaust gases from the drill rig engine out of the building and special attention was paid to monitoring CO concentrations within the work area. After sampling had been completed, the borings were abandoned by plugging with bentonite.

SAMPLE COLLECTION

Samples were collected using split-spoon samplers driven ahead of the auger bit. After the sampler had been retrieved from the hole, it was placed on a clean surface and opened by the CH2M HILL geologist or sampling assistant.

05-22-91 FIG5.DWG



NOTE:
BORINGS WERE ABANDONED IN ACCORDANCE WITH STATE REQUIREMENTS AFTER SAMPLING COMPLETED.

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WENATCHEE, WASHINGTON

FIGURE 5
SOIL SAMPLE LOCATIONS AND CSL RESULTS
MAY 1991

SHEET
DWG NO.
DATE JAN 1991
PROJ NO. SEA31436.A0

1-240.0

Table 9
Principal Project Participants and Their Roles

Name	Affiliation	Role
Jim Hartman	Keyes Fibre Company	Wenatchee plant manager
Steve Buckley	Keyes Fibre Company	Wenatchee plant engineer
Don Evenhus	Keyes Fibre Company	Wenatchee plant maintenance foreman
Eldon Ochs	Keyes Fibre Company	Wenatchee plant supervisor
Others	Keyes Fibre Company	Wenatchee plant personnel assisted with many tasks
Herb Scribner	Keyes Fibre Company	Corporate environmental engineer; Keyes project manager
Gerald Yahne	Payne Riemer Group	Technical oversight on Keyes's behalf
Steve Trudell	CH2M HILL	Project manager
Jeff Franklin	CH2M HILL	Onsite laboratory analyses
Brett Nunn	CH2M HILL	Project geologist
John Flinn	CH2M HILL	Project geologist
Mary Pehl	CH2M HILL	Project geologist
Vanessa Peters	CH2M HILL	Sampling coordinator
Debbie Longwill	CH2M HILL	Project assistant
Jim Lewis	Boretec, Inc.	Driller
Ritch Gibson	Boretec, Inc.	Driller
Eric Hansen	Tacoma Pump & Drilling	Driller
Butch Dietsche	Tacoma Pump & Drilling	Driller

After the sample had been logged, some or all of the material was placed into a sample container, depending on the volume of material obtained in the sample. Samples were handled in accordance with the procedures specified in the Sampling and Analysis Plan prepared for the project (Appendix E).

CONSTRAINTS ON SAMPLE COLLECTION

Because of the following factors, fewer samples were collected than had originally been planned.

- Penetration depth inside the building was limited to approximately 6 to 8 feet by the rocky soils and power limitations of the small rig.
- The rocky soils prevented recovery of samples from many sampling intervals.
- Proximity of the Burlington Northern Railroad tracks limited access.
- Proximity of overhead power lines limited access, principally in the vicinity of the former oil shed.
- Proximity of fire water lines and shutoff valves limited access, principally in the vicinity of the former oil shed.

Figure 6 illustrates the locations of principal constraints to access by the larger drill rig in the railroad spur/loading dock and former oil shed areas.

DECONTAMINATION PROCEDURES

Standard procedures were used to restrict the movement of potentially contaminated materials into noncontaminated areas and to reduce the potential for the samples collected to be exposed to contamination from other materials or the sampling equipment.

Drilling Equipment. The drill rigs were steam-cleaned upon entering the site, after each boring, and after completion of the work prior to leaving the site. Between borings, only those pieces of equipment or portions of the rig that could have contacted the borehole or the samples were cleaned.

Sampling Equipment. Field equipment that could have contacted the samples or sample containers was cleaned prior to each use and upon completion of sampling following the procedures specified in the Sampling and Analysis Plan. Rinsate was retained for later disposal in the plant's wastewater treatment system or another appropriate manner.

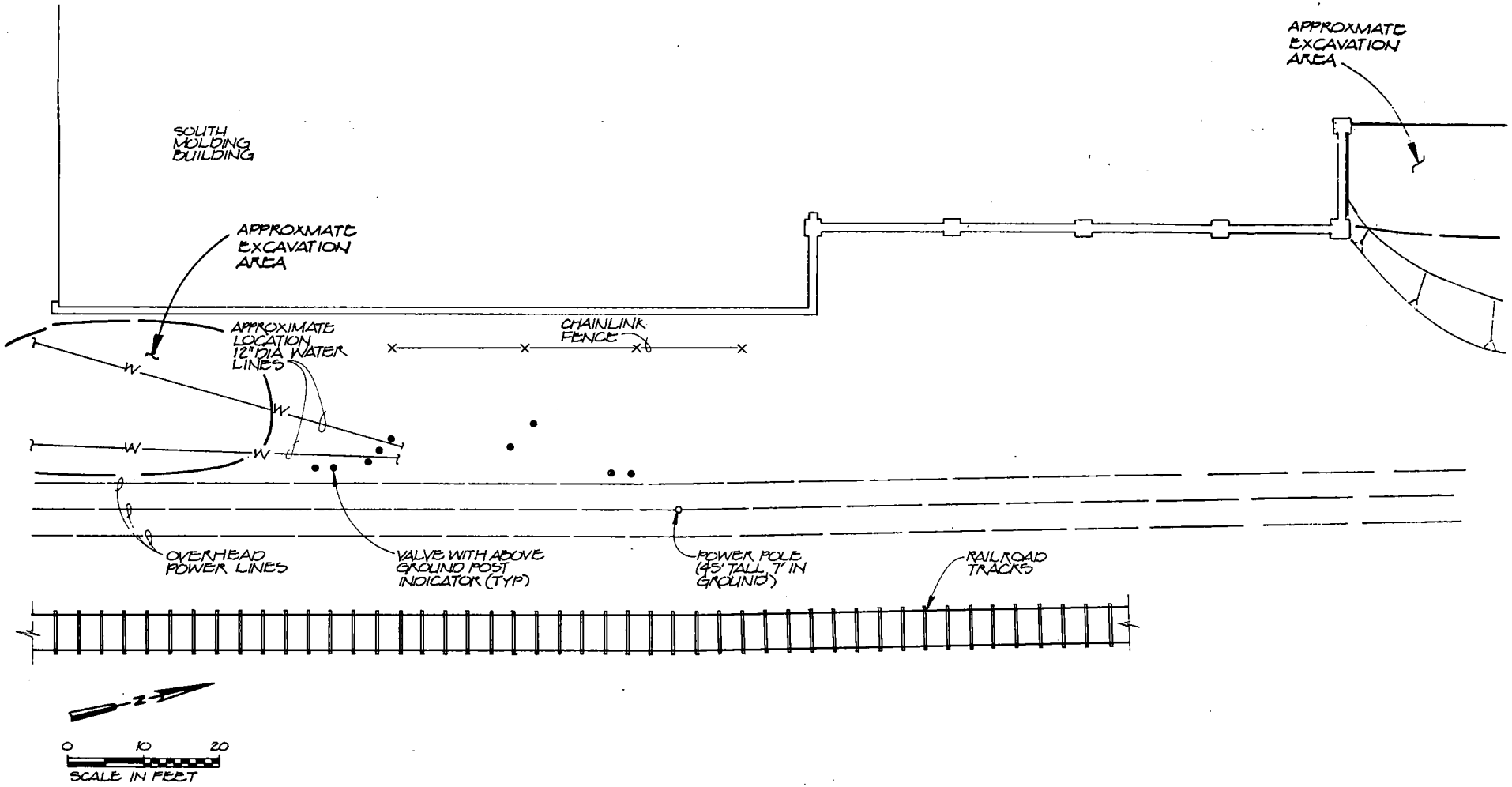

FIGURE 6
SITE CONSTRAINTS
Keyes Fibre Company
Wenatchee, Washington

CH2MHILL

Sample Containers. All sample containers were precleaned by the supplier.

Workers and Personal Protective Equipment. The work was conducted in Level D protection. This included tyvek or cotton coveralls, steel-toed neoprene boots or disposable boot covers, outer neoprene gloves, latex inner gloves, hard hat, ear plugs, and safety glasses. The personnel decontamination procedures specified in the Sampling and Analysis Plan were followed.

Waste Handling

Soil Cuttings. The soil cuttings from the borings were stockpiled at the site. Options for disposal of the cuttings will be evaluated along with those for disposal of the other stockpiled soils.

Decontamination Fluids. Fluids generated during decontamination of equipment and personnel were retained at the site in plastic-lined steel drums. The drums were clearly labelled to indicate their contents and the date they were filled. After evaluation of the soil sampling results, the fluids will be analyzed, if necessary, and disposed of in the plant's wastewater treatment system or at an approved waste management facility, as appropriate.

Personal Protective Equipment. Disposable materials used during the sampling, such as coveralls, booties, and gloves, were placed in double-lined plastic bags and retained for disposal as solid waste.

SAMPLE ANALYSIS

The soil samples were analyzed for TPH content in a close support (onsite) laboratory (CSL) set up for this project. EPA Method 418.1 (modified) was used. After CSL analysis, approximately 10 percent of the samples were sent to an offsite commercial laboratory for analysis.

ANALYTICAL RESULTS

The results of the CSL analyses are shown in Figure 5. Data from the offsite laboratory analyses are listed in Table 10. Supporting information and data reports for these analyses are provided in Appendices G and H.

Comparison of the data sets derived from the CSL Method 418.1 and the offsite laboratory Method 418.1 shows that the offsite results are consistently higher and, at Borings 2 and 5 at the southern end of the railroad spur/loading dock area, substantially so. However, the offsite results using Method 8015 are much lower than those from the offsite Method 418.1. The CSL and offsite results are much closer in samples from the former oil shed area.

One reason that the offsite Method 418.1 results are higher than the CSL Method 418.1 results is that the onsite method focuses on a narrower portion of the spectral band and quantitates on the basis of peak height which can be readily determined by inspection of the chromatogram. The offsite method, on the other hand, scans a broader portion of the spectral band and quantitates by integrating the area beneath the curve on the chromatogram. This is a more difficult process than measuring a peak height and is more amenable to a permanent laboratory situation. Because the CSL was being used primarily to guide investigative activities, this difference between the two methods was not deemed critical for the purpose intended. With the possible exception of Boring 18, the two methods were in agreement with respect to delimiting the clean perimeter of the previously excavated areas.

A possible explanation for the higher values produced by the offsite Method 418.1 is that it "sees" additional compounds that the CSL Method 418.1 and offsite Method 8015 do not. It is not clear what such compounds might be; however, results of previous analyses of inplace and stockpiled soils suggest that benzene, toluene, ethylbenzene, xylenes, or priority pollutant list volatiles or semivolatiles are not the compounds in question. On the basis of past experience at another site, it is possible that woody or wood-based materials could be the substances producing the difference. Investigation of this possibility is continuing.

Table 10
Offsite TPH Analyses
(May 1991 Sampling Event)

Sample Number	TPH Concentration (mg/kg)	
	Method 418.1	Method 8015
KF-B02-048-12791-XX	11,000	2,120
KF-B02-087-12791-XX	7,600	---
KF-B05-200-12891-XX	11,100	842
KF-B06-092-12897-XX	33	---
KF-B07-034-12891-XX	27	---
KF-B14-150-13091-XX	10,900 10,400[a]	--- ---
KF-B14-210-13091-XX	4,840	---

[a]Sample was split prior to submittal to laboratory.

SOURCE CONTROL

Although sources for the oily substances found in the railroad spur/loading dock and oil shed area soils have not been positively determined, Keyes has identified the following possible contributors:

- Releases of used oils from the loading dock
- Releases of oils in the former oil shed
- Concentration of rainfall runoff from a portion of the plant's roof in the loading dock area immediately outside the compressor room area
- Possible leakage from water lines in the vicinity of the compressor room

Keyes has, or will in the near future, provide control of these possible sources by the following:

- The railroad spur has been removed and materials shipments are no longer received at the loading dock area. The loading dock will no longer exist after completion of the plant modernization.
- The oil shed has been removed and oils are now stored within the main plant building in paved and bermed areas
- Oily soils have been excavated from the railroad spur/loading dock and former oil shed areas
- Used oils are accumulated in an indoor contained area and sent to a commercial recycler; access to the locked storage containers is limited to two persons
- Increased control of roof runoff will be provided as part of the plant modernization project
- Water lines in the vicinity of the compressor room will be rerouted overhead as part of the plant modernization project

Further actions at the site are currently being considered by Keyes. When decisions concerning specific actions have been made, work plans will be prepared and a copy will be provided to Ecology.

sea7913/043.51

APPENDIX A
Sampling and Analysis Plan
January 1991 Sampling Event

SAMPLING AND ANALYSIS PLAN
PRELIMINARY CHARACTERIZATION OF RAILROAD AREA SOILS
(JANUARY 1991 SAMPLING EVENT)

OBJECTIVES OF SAMPLING

Keyes Fibre plans to expend its Wenatchee plant. The expansion would, in part, involve the railroad spur/loading dock area. Soils in the railroad spur/loading dock area exhibit staining by oily substances. Keyes Fibre desires to preliminarily characterize the soils and assess disposal options should cleanup be necessary. It is likely that the information generated by this preliminary characterization will have to be supplemented with additional sampling and analyses data to support detailed project planning and cleanup and disposal decisions.

SITE DESCRIPTION

Keyes Fibre's Wenatchee plant processes old newspapers and manufactures them into packing trays for fruit. The site to be sampled is an area at the rear of the plant between a spur track of the Burlington Northern Railroad and an loading dock. This area contains gravelly soils with visible oily stains.

SAMPLE DESIGNATION

Each sample will be designated by a unique alphanumeric identifier ("sample number") according to the following scheme:

AB-123-CD-45690-EF

where:

AB = Two-letter site code (in this case "KF" for Keyes Fibre)

123 = Three-digit sequential number of sample (use zeros as place holders where necessary, e.g., 001, 015, 099)

CD = Two-letter matrix code, from the following:

- SO = Soil
- GW = Groundwater
- SW = Surface water
- SL = Sludge
- PW = Process water
- XX = Other

45690 = Five-digit date where 456 represents the sequential number of the day of the year (001 through 366) and 90 represents the last two digits of the year (in this case "91" for 1991)

EF = Quality control of composite sample code, from the following:

TB	=	Trip blank
FB	=	Field blank
EB	=	Equipment blank
FS	=	Field spike
MS	=	Matrix spike
DU	=	Duplicate
CO	=	Composite
XX	=	Other

SAMPLE COLLECTION PROCEDURE

Two composite soil samples will be collected from the general area near the railroad spur and the loading dock. A backhoe will be used to excavate sample pits at the site to aid in sample collection and help evaluate the depth of contaminated soils. One of the composite samples will be collected from approximately five areas at the site that appear to be uncontaminated. The five "clean" samples will be collected using a decontaminated stainless steel spoon. The clean samples will be mixed in a decontaminated stainless steel bowl until a homogeneous mixture is obtained. A composite sample will be obtained from this mixture. The second composite sample will be collected from approximately five areas at the site that contain the most visible contamination. The five "contaminated" sample swill be collected using a decontaminated stainless steel spoon. The contaminated samples will be mixed in a decontaminated stainless steel bowl until a homogeneous mixture is obtained. A composite sample will be collected from this mixture.

The laboratory results of the sampling will aid in evaluating whether visual inspection of the soils may be used as a guide for delineating the depth and lateral extent of contamination. If the soils can be classified as contaminated or uncontaminated by visual inspection it may be possible to select the soils requiring disposal by visual observation; otherwise, sampling and laboratory analysis would be required during cleanup of the area prior to plant expansion. In any disposal case, additional waste profiling and analysis would be required by the landfill operator before acceptance of material for disposal.

DECONTAMINATION PROCEDURES

Excavating Equipment. The excavating equipment will be dry-brushed and pressure-washed upon entering the site and after completion of the work prior to leaving the site.

Sampling Equipment. Field equipment that could contact the samples or sample containers will be cleaned prior to use and between each sampling event by:

1. Washing in a detergent solution (trisodium phosphate (TSP) or a comparable nonphosphate product) with an added wetting agent.

2. Rinsing with tap water.

3. Rinsing with deionized water or distilled water.

4. Spray-rinsing with methanol or comparable wetting agent.

5. Final air dry.

Rinsate will be drummed and labeled by CH2M HILL in an appropriate manner. All decontamination fluids will be drummed, labeled, and stored onsite pending laboratory analysis of samples. Decontamination fluids will be disposed of in a manner consistent with the results of sample analysis.

Sample Containers. All sample containers will be precleaned by the analytical laboratory.

Workers and Personal Protective Equipment. It is anticipated that all of the work will be conducted in modified Level D protection. Modified Level D protection includes cotton overalls, steel-toe neoprene boots or disposable boot covers, outer nitrile gloves, inner latex gloves, hard hat, ear plugs, and safety glasses. Personnel decontamination procedures for modified Level D includes the following steps:

1. Wash visible soil from neoprene boots using tap water and TSP. Rinse boots with tap water.

2. Remove boots.

3. Remove outer gloves and discard in plastic bag. Dispose of as a solid waste.

4. Remove cotton coveralls.

5. Remove inner gloves and discard in plastic bag. Dispose of as a solid waste.

6. Wash hands thoroughly with soap and water and then wash face.

SAMPLE ANALYSIS

Composite soil samples will be hand carried or shipped via express delivery to the analytical laboratory following CH2M HILL's standard chain-of-custody procedures and documentation. The laboratory will analyze the samples for the following parameters:

Parameter	Test Method Number
TPH	EPA 418.1
Flashpoint	SW 1010
TCLP Metals	SW 1311[a] SW 6010/7000[b]
PCB Scan	EPA 8080

[a]Extraction
[b]Analysis

sea7913/033.51

APPENDIX B
Analytical Results
January 1991 Sampling Event

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Scientists

January 25, 1991

LRD294.10

CH2M HILL
777 108th Ave. N.E.
Bellevue, WA 98004

Attention: Steve Trudell

RE: Laboratory Reference Number - 28569
Keyes Fiber

Dear Mr. Trudell:

The results are enclosed for your samples which were received by our laboratory on January 19, 1991.

If you have any questions please contact Ms. Mona Jones or Ms. Judy Wensloff in Client Services.

CH2M HILL stores samples for 30 days after the written report date at no charge. After 30 days, non-hazardous samples are disposed of at no charge. If you require either of the following services you need to notify us within 15 days:

* Return of samples to the address shown above.

* Storage of samples at $5.00/sample/month.

If a sample is determined to be hazardous, we will contact you to discuss disposal options.

Thank you for selecting a CH2M HILL laboratory for your analytical testing needs.

Sincerely,

CH2M HILL QUALITY ANALYTICS LABORATORY

Peggy A. Norton

Peggy A. Norton
Senior Data Package Specialist

Encl.

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Planners
Economists
Scientists

CASE NARRATIVE
Metals

28569

I. Holding Time:
All holding times were met.

II. Analysis:

A. Blanks:
The TCLP preparation blank was found to be contaminated with Arsenic at a level above the Instrument Detection Limit but below the TCLP action level.

B. Calibration:
All acceptance criteria were met.

C. ICP Interference Check Sample:
All acceptance criteria were met.

D. Spike Sample Analysis:
All acceptance criteria were met.

E. Duplicate Sample Analysis:
The relative percent difference for Arsenic in the quality assurance sample and its duplicate did not meet acceptance criteria.

F. Laboratory Control Sample Analysis:
All acceptance criteria were met.

G. ICP Serial Dilution:
Not required for this level QC.

H. Other:
The June 29 Federal Register (TCLP final rule) directs TCLP analytical results to be "bias corrected" according to the corresponding matrix spike recoveries for that analytical batch. The formula as published is:

$$Xc = 100\ (Xm/\%R)$$

Where Xc = Correct value;
Xm = Measured value of the unspiked sample;
%R = Percent recovery of the batch-specific matrix spike.

All detected analyte concentrations and corresponding reporting limits, for the regulated elements only, were "bias corrected" according to the formula.

III. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, for other than the conditions detailed above.

Signed: Fred Bickell Date: 1/25/91
Fred Bickell, Cations Supervisor

REPORT OF ANALYTICAL RESULTS Date: 01/25/91

Client: CH2M HILL/SEA
777 108TH AVE. N.E.
BELLEVUE, WA 98004

Project Number: SEA31436.A0
KEYES FIBER
Laboratory Number: 28569
Date Received: 01/19/91

Atten: MR. STEVE TRUDELL

Sample Description: KF-001-SO 01891-CO
Laboratory Sample Number: 28569001 Date Collected: 01/18/91 Matrix: SOIL

Analytical Parameter	Method	Det Limit	Result	Units	Ana Date
Ignitability	SW846(1C):7.1	----	NEGATIVE	----	01/24/91
Total Petroleum Hydrocarbons	EPA418.1(MOD)	1.8	5.1	mg/Kg	01/22/91

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: J. Hawley
INRPRPT(v910124)

Engineers
Planners
Economists
Scientists

REPORT OF ANALYTICAL RESULTS

Date: 01/25/91

Client: CH2M HILL/SEA
777 108TH AVE. N.E.
BELLEVUE, WA 98004

Project Number: SEA31436.A0
KEYES FIBER
Laboratory Number: 28569
Date Received: 01/19/91

Atten: MR. STEVE TRUDELL

Sample Description: KC-002-SO 01891-CO
Laboratory Sample Number: 28569002 Date Collected: 01/18/91 Matrix: SOIL

Analytical Parameter	Method	Det Limit	Result	Units	Ana Date
Ignitability	SW846(1C):7.1	----	NEGATIVE	----	01/24/91
Total Petroleum Hydrocarbons	EPA418.1(MOD)	2980	176000	mg/Kg	01/22/91

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: J. Hawley

INRPRPT(v910124)
000004

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REPORT OF ANALYTICAL RESULTS

Date: 01/25/91

Client: CH2M HILL/SEA
777 108TH AVE. N.E.
BELLEVUE, WA 98004

Project Number: SEA31436.A0
KEYES FIBER
Laboratory Number: 28569
Date Received: 01/19/91

Atten: MR. STEVE TRUDELL

Sample Description: KF-001-SO-TC 01891-CO-(TLCP EXTRACT)
Laboratory Sample Number: 28569003 Date Collected: 01/18/91 Matrix: SOIL

Analytical Parameter	Method	Det Limit	Result	Units	Ana Date
TCLP Silver	EPA200.7/SW6010	0.003	<0.003	mg/L	01/23/91
TCLP Arsenic	EPA200.7/SW6010	0.012	<0.012	mg/L	01/23/91
TCLP Barium	EPA200.7/SW6010	0.001	1.10	mg/L	01/23/91
TCLP Cadmium	EPA200.7/SW6010	0.001	<0.001	mg/L	01/23/91
TCLP Chromium	EPA200.7/SW6010	0.003	<0.003	mg/L	01/23/91
TCLP Mercury	EPA245.1/SW7470	0.0002	<0.0002	mg/L	01/23/91
TCLP Lead	EPA200.7/SW6010	0.027	<0.027	mg/L	01/23/91
TCLP Selenium	EPA200.7/SW6010	0.021	<0.021	mg/L	01/23/91

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: J. Hawley

INRPRPT(v910124)
000005

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

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REPORT OF ANALYTICAL RESULTS Date: 01/25/91

Client: CH2M HILL/SEA
777 108TH AVE. N.E.
BELLEVUE, WA 98004

Project Number: SEA31436.A0
KEYES FIBER
Laboratory Number: 28569
Date Received: 01/19/91

Atten: MR. STEVE TRUDELL

Sample Description: KF-002-SO-TC 01891-CO-(TCLP EXTRACT)
Laboratory Sample Number: 28569004 Date Collected: 01/18/91 Matrix: SOIL

Analytical Parameter	Method	Det Limit	Result	Units	Ana Date
TCLP Silver	EPA200.7/SW6010	0.003	<0.003	mg/L	01/23/91
TCLP Arsenic	EPA200.7/SW6010	0.012	0.029	mg/L	01/23/91
TCLP Barium	EPA200.7/SW6010	0.001	1.51	mg/L	01/23/91
TCLP Cadmium	EPA200.7/SW6010	0.001	0.004	mg/L	01/23/91
TCLP Chromium	EPA200.7/SW6010	0.003	<0.003	mg/L	01/23/91
TCLP Mercury	EPA245.1/SW7470	0.0002	<0.0002	mg/L	01/23/91
TCLP Lead	EPA200.7/SW6010	0.025	0.071	mg/L	01/23/91
TCLP Selenium	EPA200.7/SW6010	0.021	<0.021	mg/L	01/23/91

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: J. E. Hawley

INRPRPT(v910124)

000006

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REPORT OF ANALYTICAL RESULTS Date: 01/25/91

Client: CH2M HILL/SEA
777 108TH AVE. N.E.
BELLEVUE, WA 98004

Project Number: SEA31436.A0
KEYES FIBER
Laboratory Number: 28569
Date Received: 01/19/91

Atten: MR. STEVE TRUDELL

Sample Description: METHOD BLANK
Laboratory Sample Number: 28569ZS1 Date Collected: 01/19/91 Matrix: SOIL BLANK

Analytical Parameter	Method	Det Limit	Result	Units	Ana Date
Total Petroleum Hydrocarbons	EPA418.1(MOD)	1.6	<1.6	mg/Kg	01/22/91

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: J. E. Hawley

INRPRPT(v910124)

000007

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

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REPORT OF ANALYTICAL RESULTS Date: 01/25/91

Client: CH2M HILL/SEA
777 108TH AVE. N.E.
BELLEVUE, WA 98004

Atten: MR. STEVE TRUDELL

Project Number: SEA31436.A0
KEYES FIBER
Laboratory Number: 28569
Date Received: 01/19/91

Sample Description: TCLP EXTRACT METHOD BLANK
Laboratory Sample Number: 28569ZW1 Date Collected: 01/19/91 Matrix: WATER BLANK

Analytical Parameter	Method	Det Limit	Result	Units	Ana Date
TCLP Silver	EPA200.7/SW6010	0.003	<0.003	mg/L	01/23/91
TCLP Arsenic	EPA200.7/SW6010	0.012	0.047	mg/L	01/23/91
TCLP Barium	EPA200.7/SW6010	0.001	<0.001	mg/L	01/23/91
TCLP Cadmium	EPA200.7/SW6010	0.001	<0.001	mg/L	01/23/91
TCLP Chromium	EPA200.7/SW6010	0.003	<0.003	mg/L	01/23/91
TCLP Mercury	EPA245.1/SW7470	0.0002	<0.0002	mg/L	01/23/91
TCLP Lead	EPA200.7/SW6010	0.025	<0.025	mg/L	01/23/91
TCLP Selenium	EPA200.7/SW6010	0.021	<0.021	mg/L	01/23/91

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: J. Hawley

INRPRPT(v910124)

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CASE NARRATIVE FOR
PCBs

LABORATORY: CH2M HILL CLIENT : Keyes-Fibre

CASE NO : N/A CONTRACT NO.: N/A

LAB ID : 28569 SDG # : N/A

I. RECEIPT

A. Date: January 19, 1991

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
28569001	KF-001-SO	Soil	01/18/91	01/21/91	01/22/91
28569002	KC-002-SO	Soil	01/18/91	01/21/91	01/22/91

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: All holding times were met.

B. Extraction Exceptions : Sample 28569002 (KC-002-SO) could not be concentrated below 8 ml, therefore, it was diluted to a final volume of 10 ml with Hexane.

III. ANALYSIS

A. Holding Times: All holding times were met.

B. Analytical Exceptions : Results reported on a dry-weight basis.

Sample 28569002 (KC-002-SO) was analyzed at a 1:10 dilution due to matrix interference with Aroclor 1016 and Aroclor 1221.

IV. QUALITY CONTROL

A. Method Blank : A method blank is a laboratory generated sample used to determine the degree to which laboratory operations may cause false positive results for these samples. No target parameters were detected in the method blank associated with these samples.

B. Surrogate Recoveries : The surrogate recovery for sample 28569002 (KC-002-SO) could not be determined due to the required dilution for matrix interference.

The surrogate recovery for sample 28569001 (KF-001-SO) was low due to the degradation of Dibutyl Chlorendate during sulfuric acid clean-up.

C. Matrix Spike Results: Not applicable.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have not been provided for this data package.

Greg Jordan 1/24/91

Greg Jordan
GC Section Supervisor

Date

F

WLK 1/24/91

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

METHOD: 8080 PCBs

Sample Matrix: Soil
Dilution Factor: 1

Reference No: Method Blank
Date Extracted: 01-21-91
Date Analyzed: 01-22-91

Compounds	Reporting Limit	Method Blank Result	Units
PCB 1016	0.10	< 0.10	mg/kg
PCB 1221	0.10	< 0.10	mg/kg
PCB 1232	0.10	< 0.10	mg/kg
PCB 1242	0.10	< 0.10	mg/kg
PCB 1248	0.10	< 0.10	mg/kg
PCB 1254	0.20	< 0.20	mg/kg
PCB 1260	0.20	< 0.20	mg/kg
Surrogate(SS)		101	% Rec.

SS = Surrogate Standard reported as percent recovery.
Dibutyl Chlorendate was used as a surrogate standard.

Comments:

Approved By: Greg Jordan

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

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METHOD: 8080 PCBs

Client: Keyes-Fibre
Client Sample ID: KF-001-SO

Sample Matrix: Soil
Dilution Factor: 1

Reference No: 28569-1

Date Sampled: 01-18-91
Date Received: 01-19-91
Date Extracted: 01-21-91
Date Analyzed: 01-22-91

Compounds	Reporting Limit	Sample Result	Units
PCB 1016	0.11	< 0.11	mg/kg
PCB 1221	0.11	< 0.11	mg/kg
PCB 1232	0.11	< 0.11	mg/kg
PCB 1242	0.11	< 0.11	mg/kg
PCB 1248	0.11	< 0.11	mg/kg
PCB 1254	0.22	< 0.22	mg/kg
PCB 1260	0.22	< 0.22	mg/kg
Surrogate(SS)		18*	% Rec.

SS = Surrogate Standard reported as percent recovery.
Dibutyl Chlorendate was used as a surrogate standard.

Comments: * Surrogate recovery was low due to the degradation of Dibutyl Chlorendate for sulfuric acid clean-up.

Results reported on a dry-weight basis.

Approved By: Gary Jourdan

000012

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METHOD: 8080 PCBs

Client: Keyes-Fibre
Client Sample ID: KC-002-SO

Sample Matrix: Soil
Dilution Factor: 10

Reference No: 28569-2

Date Sampled: 01-18-91
Date Received: 01-19-91
Date Extracted: 01-21-91
Date Analyzed: 01-22-91

Compounds	Reporting Limit	Sample Result	Units
PCB 1016	2.4	< 2.4	mg/kg
PCB 1221	2.4	< 2.4	mg/kg
PCB 1232	2.4	< 2.4	mg/kg
PCB 1242	2.4	< 2.4	mg/kg
PCB 1248	2.4	< 2.4	mg/kg
PCB 1254	4.9	< 4.9	mg/kg
PCB 1260	4.9	< 4.9	mg/kg
Surrogate(SS)		**	% Rec.

SS = Surrogate Standard reported as percent recovery.
Dibutyl Chlorendate was used as a surrogate standard.

Comments: ** Surrogate recovery could not be determined due to the required dilution for matrix interference.

Results reported on a dry-weight basis.

Approved By: Gary Jourdan

000013

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

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January 21, 1991

SEA31436.A0

MR. STEVE TRUDELL
CH2M HILL/SEA
777 108TH AVE. N.E.
BELLEVUE, WA 98004

Dear MR. TRUDELL:

Subject: Acknowledgement of Sample Set -- Lab Number 28569

We received your sample set on January 19, 1991; it arrived in good condition. It has been assigned laboratory number 28569. Please refer to the laboratory number if you need to inquire about this sample set. We have attached a copy of the chain-of-custody forms to provide additional information.

If you need assistance, please call me or Mona Jones, Client Services Supervisor.

Thank you for choosing our laboratory. We look forward to serving you again.

Sincerely,

CH2M HILL

Judy Wensloff

Judy Wensloff
Client Services Coordinator

Attachment

lims/ACK900503

CH2M HILL Redding Quality Analytical Laboratories 5090 Caterpillar Road, Redding, California 96003 916.244.5227

CH2M HILL QUALITY ANALYTICS
CHAIN OF CUSTODY RECORD

PROJECT NUMBER: SEA 31436.A0 | PROJECT NAME: Keyes Fiber
CLIENT NAME: CH2M HILL (SEA)
PROJECT MANAGER: Steve Trudell
REQUESTED COMP. DATE: Rush
COPY TO:
SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ☐

CLIENT ADDRESS AND PHONE NUMBER: 777 108th Ave NE Bellevue Wa. 98009-2050

ANALYSES REQUESTED: PCB's; TCLP Metals; Flash Point; TPH (418)

FOR LAB USE ONLY: LAB# 28569; LAB#; PROJECT NO.; ACK / VERIFIED; QUOTE# / BS; NO. OF SAMP / PG / OF

STA NO.	DATE	TIME	GRAB	COMP	MAIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	LAB ID	REMARKS
—	1/18/91	10:40	X		X	KF-001-SO-01891-10	3	1	2, 4oz Amber, 1 8oz Amber
.	1/18/91	11:50	X		X	KF-002-SO-01891-CU	3	2	2 4oz Amber, 1 8oz Amber

SAMPLED BY AND TITLE: Brett Vaux Geologist — DATE/TIME: 1/18/91 12:00 — RELINQUISHED BY: Brett Vaux
RECEIVED BY: — DATE/TIME: — RELINQUISHED BY: — DATE/TIME: — RELINQUISHED BY: — DATE/TIME: 1/18/91 2:50
RECEIVED BY: — DATE/TIME: — RELINQUISHED BY: — DATE/TIME: — SAMPLE SHIPPED VIA: UPS BUS FED-EX HAND OTHER — AIR BILL#:
RECEIVED BY LAB: — DATE/TIME: 1/19/91 11:30
REMARKS

HAZWRAP/NEESA Y N
QC LEVEL 1 2 3
COC Y
ANA REQ Y
CUST SEAL Y
SAMPLE COND. Good
ICE Y
TEMP Cool
Ph
ENTERED INTO LIMS ____ COC REVIEWED ____

APPENDIX C
Cleanup Plan for Railroad/Loading Dock and Former Oil Shed Areas (April 1991)

CLEANUP PLAN FOR RAILROAD/LOADING DOCK AND FORMER OIL SHED AREA SOILS

Prepared for

KEYES FIBRE COMPANY
WENATCHEE, WASHINGTON

Prepared by

CH2M HILL

April, 1991

sea7913/034.51/1
5/24/91

CONTENTS

TABLES

FIGURES

sea7909/006.51

Section 1
INTRODUCTION

Keyes Fibre's Wenatchee Plant, located north of Wenatchee on the east side of the Chelan Highway (Figure 1) processes old newspapers and manufactures them into packing trays for apples and other fruit. Keyes plans to expand the plant and this, in part, will involve the railroad spur/loading dock area at the rear (east side) of the main building. The railroad spur is no longer in use and the tracks have been removed. Soils in this area exhibit staining by oily substances. A second area of stained soils is present at the location of a former oil storage shed near the southeast corner of the main building (see Figure 2).

Results of preliminary sampling and analysis indicated that the stained soils contain concentrations of petroleum hydrocarbons (measured as TPH) that are above those considered acceptable by the Washington State Department of Ecology (Ecology). Results for the flash point, metals (by the toxicity characteristic leaching procedure, TCLP), and polychlorinated biphenyls (PCBs) analyses were below regulatory limits.

Because of the presence of the oily substances, Keyes desires to remove and dispose of the stained soils prior to beginning site work for the plant expansion. This cleanup plan provides a description of how the soil removal will be accomplished, and the sampling and analysis that will be conducted to further characterize the soils for disposal purposes and to verify that soils with contamination above the target cleanup level have been removed.

The remainder of this plan includes:

- **Section 2--Basis for Cleanup.** Provides a review of environmental statutes and regulations that might require cleanup of the oily soils.

- **Section 3--Conceptual Plan for Cleanup.** Outlines the actions for excavation, stockpiling, and disposition of the oily soils.

- **Section 4--Sampling and Analysis Plan.** Describes the rationale, procedures, and equipment for further characterizing the soils to be disposed of and for assessing residual concentrations after cleanup has been completed. Also describes the quality assurance (QA) requirements and the quality control (QC) procedures to be followed while conducting the sampling and analysis activities to provide verified and defensible documentation of the analytical data such that their quality is known and their adequacy for project purposes can be assessed.

- **Section 5--Schedule.** Presents the anticipated schedule for the work.

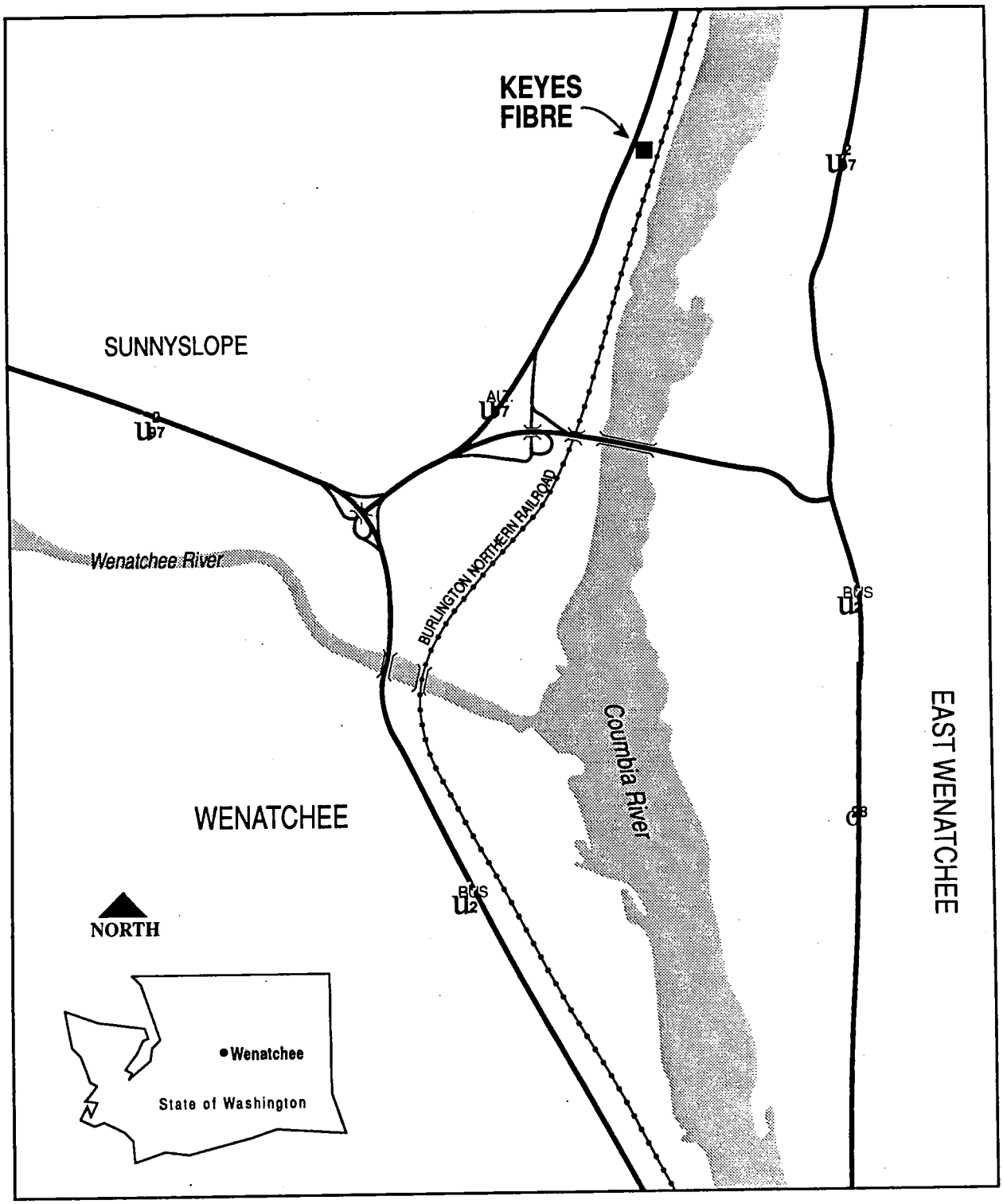

Figure 1
VICINITY MAP
Keyes Fibre Company
Wenatchee, Washington

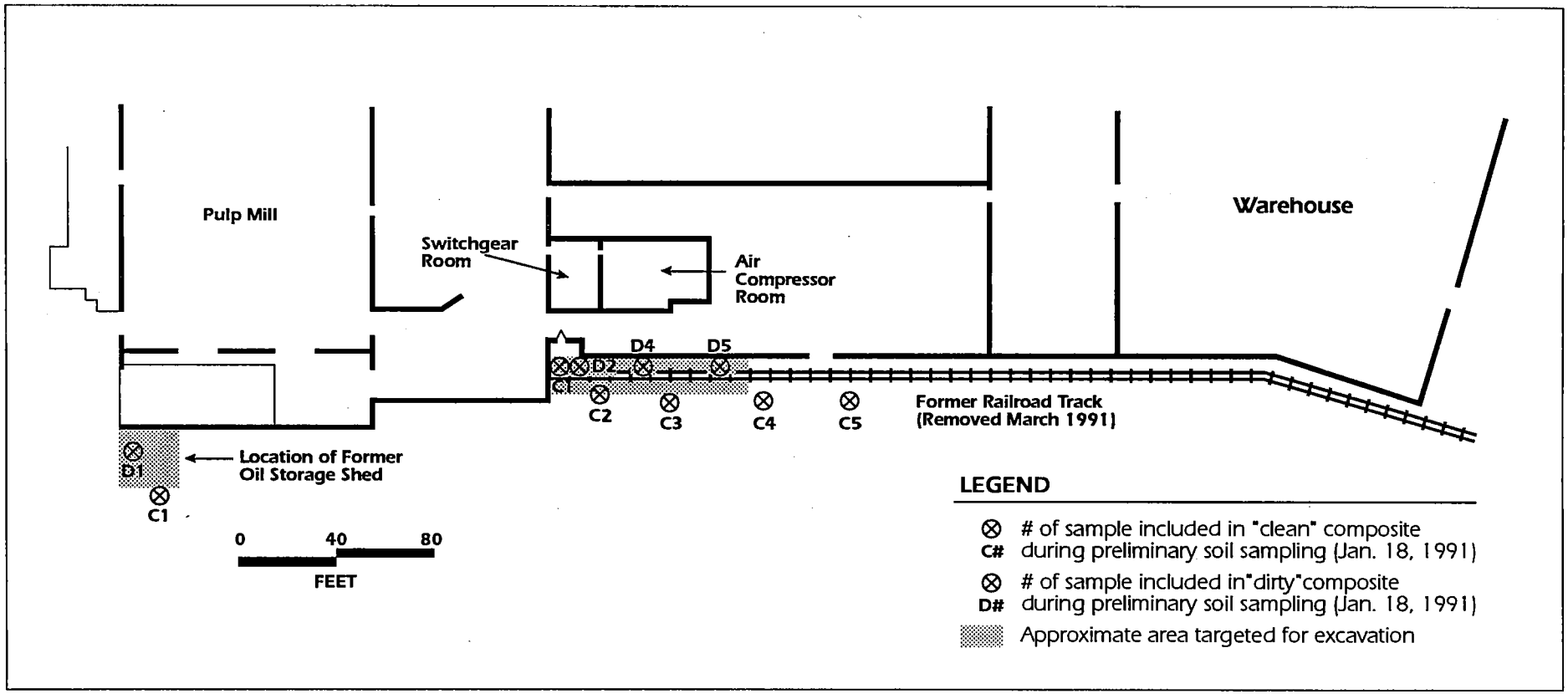

Figure 2

AREAS TO BE EXCAVATED

- **Section 6--Site Safety Considerations.** Describes the potential hazards at the site and general measures which could be taken to protect workers and the public from these hazards during remedial action. Overall safety planning and specific site safety measures will be the responsibility of the individuals at the site or their employers.

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Section 2
BASIS FOR CLEANUP

Depending on the particular circumstances involved, cleanup in response to releases of hazardous substances or improper disposal of solid waste materials can be:

- Mandated by statute or regulation
- Required under the discretionary powers of an authorized federal, state, or local agency
- Initiated voluntarily by a responsible party, landowner, or other person

On the basis of information obtained from discussions with Keyes Fibre personnel and the results of the preliminary sampling, various environmental waste statutes and regulations were reviewed to assess their applicability to the railroad/loading dock and oil shed areas soils. The assessments and their implications for the cleanup approach are summarized below.

2.1 REGULATORY REVIEW

Federal RCRA Regulations (40 CFR 261). The oily soils present at the site are not listed hazardous wastes under the RCRA (Resource Conservation and Recovery Act of 1976) regulations, and the existing information does not indicate that they otherwise meet the regulations' definition of "hazardous waste."

Washington State Dangerous Waste Regulations (WAC 173-303). The oily soils present at the site are not listed dangerous wastes under the Washington state dangerous waste regulations, and the existing information does not indicate that they are characteristic or criteria dangerous or extremely hazardous wastes under the state regulations.

CERCLA (Superfund). The oily soils present at the site are not "hazardous substances," "pollutants," or "contaminants" under the Act's definition of those terms.

Washington State Model Toxics Control Act (MTCA). The oily materials present in the railroad/loading dock and oil shed areas soils are considered a hazardous substance under the Act's definition of the term (found at RCW 70.105D.020(5)). Unlike CERCLA, MTCA includes petroleum and petroleum products in its universe of hazardous substances. MTCA requires that releases of hazardous substances that may pose a threat to human health or the environment be reported to Ecology.

Review of the concentrations of analytes indicated by the preliminary sampling in light of the guidance provided in Ecology *Policy POL 101, Site Discovery--Release Reporting,*

indicates that those levels do not trigger reporting of a release. In addition, because of the restricted access to the area of oily soils, infrequent use of that area, and apparently limited vertical extent of the staining observed, it does not appear that a significant threat to human health or the environment exists. In such a case, reporting of the release is not expressly required. However, Ecology encourages reporting of these releases as a matter of policy.

Although reporting does not appear to be required, the observed petroleum hydrocarbon (measured as TPH) concentrations are above the MTCA cleanup standards Method A cleanup level for "other" TPH (200 mg/kg) and so Ecology could compel cleanup if it determined that a threat to human health or the environment exists.

Washington State Underground Storage Tank Regulations (WAC 173-360). On the basis of the information we have reviewed there is no indication that the oily soils resulted from a release from an underground storage tank (UST) and, therefore, the UST regulations are not applicable. However, because the soils in the railroad/loading dock and former oil shed areas appear to be similar in nature to many of those associated with UST cleanups, we referred to the Ecology document *Guidance for Site Checks and Site Assessments for Underground Storage Tanks* (Document 90-52, February 1991) in developing this cleanup plan.

2.2 CLEANUP APPROACH

Based on the information available concerning the soils at the railroad/loading dock and former oil shed areas and the above review of waste management regulatory considerations it does not appear that cleanup is expressly required by statute or regulation. Thus the decision to perform a soil cleanup at the site would be a voluntary one on the part of Keyes and, for purposes of this cleanup plan, this has been assumed to be the case. However, it is recognized that Ecology could compel a cleanup under MTCA if it determined that a threat to human health or the environment exists.

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Section 3
CONCEPTUAL PLAN FOR CLEANUP

3.1 CURRENT SITE CONDITIONS

Presently there is no activity associated with the plant expansion taking place near the site. Burlington Northern Railroad has removed its tracks from the area, so the soil is immediately accessible.

3.2 PROCUREMENT OF CONTRACTOR AND MOBILIZATION

Keyes will obtain assistance in performing the cleanup from an outside excavation contractor. Once the contractor has been selected and an appropriate contractual mechanism between Keyes and the contractor is in place, the contractor will review this conceptual plan and be prepared to discuss and resolve with Keyes and CH2M HILL any exceptions it might take to the plan. Prior to mobilizing, a kickoff meeting will be held to discuss the cleanup and resolve any outstanding issues. Topics at this meeting could include such things as:

- Personnel and equipment required; specific excavation, handling, transport, and disposal procedures; specific disposal locations or facilities; and site restoration
- Environmental protection measures
- Site safety
- Estimated project schedule

After the meeting, the contractor will mobilize and begin the cleanup.

3.3 CLEANUP ALTERNATIVES CONSIDERED

Keyes considered the following alternatives before selecting its preferred approach:

1. "Capping" in place by the plant expansion
2. In situ treatment
3. Onsite treatment followed by onsite or offsite disposal

4. Incorporation of the soil into asphalt at a commercial facility

5. Treatment and use as cover material at a solid waste landfill that accepts soil contaminated by petroleum hydrocarbons

6. Disposal at a commercial hazardous waste landfill

Capping with the expanded plant was rejected because Keyes preferred an alternative that would include treatment and provide for containment at a facility designed for that purpose. In situ treatment was not feasible because treatment to desired levels could not be accomplished in time to avoid delaying the plant expansion. Onsite treatment was not feasible because of the lack of available area and the need to avoid disruption of plant activities and the expansion project.

Delivery of the soils to an asphalt facility located in Tacoma was rejected by Keyes because of the high cost for transport and tipping fees; these costs combined would have been approximately 5 to 10 times the amount for the preferred alternative. Disposal at a commercial hazardous waste landfill (presumed to be located in Arlington, Oregon) was rejected because of the high cost for transport and disposal (estimated to be 10 to 20 times the amount for the preferred alternative), and the fact that Keyes believes that it is better to reserve use of hazardous waste landfills for hazardous wastes.

Treatment and use as cover material at the Greater Wenatchee Regional Landfill (GWRL) was selected as the preferred alternative because it involves treatment and subsequent use of the soil as cover material rather than direct waste disposal, it can be readily implemented, and it is relatively low in cost. This alternative, however, is subject to acceptance of the soils by the GWRL.

3.4 EXCAVATION OF OILY SOILS

Excavation will be carried out in a carefully controlled manner to allow effective visual inspection of the soil materials removed to assess their apparent degree of contamination. The results of the preliminary sampling suggested that the presence or absence of visual staining could be used as a rough screening method for identifying soils requiring cleanup. Appropriate safety procedures will be strictly followed by all onsite personnel. Potential site hazards and general safety considerations are outlined in Section 6 and can be referred to for general background information.

All stockpiling will be done in a manner such that the materials are effectively contained from the environment and not accessible to the public. Plastic sheeting, fencing, or other barricades, hay bales for sediment runoff control, and portable containers are among the containment options available. Photographs of the work in progress will be taken and an estimate of the quantities of materials excavated will be recorded.

Necessary sampling activities described in Section 4 will be conducted by CH2M HILL after excavation has been completed. Stockpiled materials will remain in place until results of the characterization and verification analyses have been received and evaluated.

3.5 CLEANUP LEVEL

After review of Ecology's regulatory levels for TPH in its MTCA and UST programs, Keyes has elected to use 200 mg/kg TPH as the target cleanup level. This is the designated MTCA Method A cleanup level for diesel or "other" TPH in soils (WAC 173-340-740(2) and -745(2)). 200 mg/kg is also used as the action level for petroleum releases from USTs (Ecology *Guidance for Site Checks and Site Assessments for Underground Storage Tanks*).

3.6 TRANSPORT AND DISPOSITION OF WASTE MATERIALS

After the results of the analyses have been reviewed and disposal at the GWRL has been confirmed to be appropriate, the soils will be transported to the landfill in accordance with applicable federal and state transportation regulations. Loads and/or containers will be lined and securely covered to prevent release of materials while in transit. Trucks will be brushed or washed down prior to leaving the site to remove loose materials that could otherwise fall or blow off along the roadway. To the extent practicable, the routes will follow major roads with as few stops as possible and avoid residential or other high public-use areas. Weight certificates and documentation of delivery to the landfill will be obtained and retained as part of project documentation.

The local health department will be notified in writing prior to transport of the soils. This notification will include: original address of material; name, address, and telephone number of material owner; volume, contaminant type and concentration; destination address, property owner name, and a description of the adjacent areas that could be affected by treatment of oily soils (residences, businesses, surface or groundwater, etc.). This information will also be included in the cleanup summary report.

3.7 BACKFILL AND RESTORATION OF SITE

After it has been verified that the cleanup level has been met, clean fill material from a commercial source will be used to backfill the excavation. Keyes's plant expansion contractor will be responsible for providing the fill material and seeing that it is placed in a manner consistent with the expansion plans.

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Section 4
SAMPLING AND ANALYSIS

This section of the Cleanup Plan describes the methodologies to be used by CH2M HILL in collecting and analyzing soil samples from the railroad/loading dock and storage shed areas of the Wenatchee Plant. It is intended to be used in conjunction with the conceptual plan (Section 3) and in consideration of the site safety issues (Section 6).

4.1 SAMPLING OBJECTIVES

The objectives of the planned sampling and analyses are to:

- Further characterize the oily soils for landfill acceptance purposes
- Assess whether soils remaining after excavation contain residual concentrations of petroleum hydrocarbons that are above the cleanup level

Based on results of the sampling and analyses, Keyes Fibre will evaluate whether it is appropriate to send the excavated soils to the GWRL and whether additional remedial actions need to be taken.

4.2 SAMPLING SCHEME AND RATIONALE

The types and approximate numbers of samples to be collected and analyzed are listed in Table 1, along with the purpose(s) for each type of sampling.

Table 1

Sample Type	Number of Samples	Purpose
Grab	5	Loading Dock Excavation Cleanup Verification
Grab	5	Oil Shed Cleanup Verification
Grab	1 per 25 cubic yards	Stockpile Landfill Characterization
Grab	1	Duplicate Loading Dock Excavation

The sampling scheme for the oily soils at Keyes Fibre was developed using the Washington Department of Ecology document, *Guidance for Site Checks, and Site Assessments for Underground Storage Tanks* (Document 90-52, February 1991) for general guidance. Although the cleanup is not in response to a release from an underground storage tank (UST), use of the guidance in general fashion is appropriate considering the similarity of the situation at the Wenatchee Plant to many UST cleanups.

When the visibly stained soil has been removed from the excavation, a minimum of five samples will be taken. One sample will be taken from each wall of the excavation and one from the floor. For the larger excavation at the loading dock, more samples may be necessary. Exact sample numbers and locations will be determined using the best professional judgment of the field person and by using the field instrument to indicate areas where petroleum hydrocarbons could most likely remain.

The stockpiled soils will be sampled by taking at least one discrete sample for every 25 cubic yards of material. Locations of sample sites will be recorded carefully in the field logbook for future reference. Sampling locations also will be documented with photographs.

4.3 SAMPLE DESIGNATION

Each sample collected will be designated by a unique alphanumeric identifier ("sample number") according to the following scheme:

KF-123-SO-45691-AB

where:

KF = Two-letter site code ("Keyes Fibre")

123 = Three-digit sequential number of sample (use zeroes as placeholders where necessary, e.g., 001, 015, 099); start at 001 each day

SO = Two-letter matrix code (soil)

45691 = Five-digit date where 456 represents the sequential number of the day of the year (001 through 366) and 91 represents the last two digits of the year

AB = Quality control or composite sample code, from the following:

TB = Trip blank
FB = Field blank
EB = Equipment blank

FS = Field spike
DU = Duplicate
CO = Composite
XX = Not QC or composite sample

4.4 SAMPLING PROCEDURES AND EQUIPMENT

SAMPLE COLLECTION

Soil samples will be collected as follows:

1. The upper 5 to 6 inches of stockpiled or in-place soil will be removed using a decontaminated stainless-steel scoop or trowel.

2. Sample material will be collected using a second decontaminated stainless-steel scoop or trowel.

3. If the excavation reaches a depth of more than 4 feet, samples will be obtained from the bucket of the backhoe following the same procedures.

4.5 DECONTAMINATION PROCEDURES

The following procedures will be used to restrict the movement of potentially contaminated materials into non-contaminated areas, and to reduce the potential for the samples collected during this investigation to be exposed to contamination from other materials or the sampling equipment.

Excavating Equipment. The excavating equipment will be steam-cleaned or pressure-washed upon entering the site and after completion of the work prior to leaving the site. A decontamination area will be set up to contain the water used in the cleaning process and all decontamination water will be retained and stored in 55-gallon drums. The drums will remain onsite until completion of the laboratory analysis of the soils. The laboratory results will determine if the decontamination water should be tested before being properly disposed.

Sampling Equipment. Field equipment that could contact the samples or sample containers will be cleaned prior to use and between each sampling event by:

1. Washing in a detergent solution (trisodium phosphate (TSP) or a comparable non-phosphate product) with an added wetting agent

2. Rinsing with tap water

3. Rinsing with deionized water

4. Spray-rinsing with spectra-grade isopropyl alcohol

5. Final spray-rinsing with deionized water

Rinsate will be retained, analyzed if necessary, and disposed of in an appropriate manner.

Sample Containers. All sample containers will be precleaned by the analytical laboratory.

Workers and Personal Protective Equipment. It is anticipated that most or all of the work will be conducted in Level D protection (see Section 6). Level D includes tyvek or cotton coveralls, steel-toed neoprene boots or disposable boot covers, outer neoprene gloves, latex inner gloves, hard hat, and safety glasses. Personnel decontamination procedures for Level D includes the following steps.

1. Remove disposable boot covers (if worn) and place in a plastic bag or 55-gallon drum for later disposal.

2. Wash visible soil from neoprene boots, using tap water and TSP. Rinse boots with tap water.

3. Remove boots.

4. Remove outer gloves and discard in plastic bag or drum.

5. Remove disposable coveralls and place in plastic bag or drum.

6. Remove disposable inner gloves and discard in plastic bag or drum.

7. Wash hands thoroughly with soap and water and then wash face.

A decontamination area will be set up adjacent to the soil stockpile area. The soil stockpile, decontamination area, and both sampling areas will be flagged with warning tape and barricades to keep all nonessential personnel out of the potentially contaminated areas.

During soil removal all efforts will be made to keep all the equipment except for the backhoe bucket and the truck bed out of the potentially contaminated areas and free of potentially contaminated soil.

4.6 SAMPLE HANDLING AND ANALYSIS

SAMPLES OF SOIL

1. The collected samples will be observed visually for obvious staining and any such indications of possible contamination will be recorded in the field notebook.

2. A volume of soil sufficient for analytical and, where appropriate, QA purposes will be placed in a laboratory-provided, precleaned sample bottle using a precleaned stainless steel scoop or spoon.

3. The sample bottle will be checked to be sure that the Teflon liner is in place. The cap will be tightened. A sample label will be filled-out with waterproof ink and firmly affixed to the sample bottle. The bottle will then be placed in an individual plastic bag.

4. The sample label will include the site name, sample number, date and time (24-hour clock) collected, name of sample collector, preservative (if used), and analyses requested. The label will be filled-out prior to collection to reduce handling of the sample bottle.

5. For each sample, the following information will be recorded in the field notebook: sample number, date and time of sample collection, type of sample, sampling method, description of noteworthy physical characteristics of the sample, field observations, and disposition of the sample.

6. Immediately after collection and labelling, the samples for chemical analysis will be placed in a sturdy ice chest containing ice, blue ice, or dry ice and suitable packing materials to protect the containers.

7. When all of the samples have been packed, a copy of the chain-of-custody form will be placed in a plastic bag and taped to the inner side of the lid, and the chest will be closed, and sealed with shipping tape. Two chain-of-custody seals will be affixed in such a manner that they will be broken if the lid of the chest is raised.

8. The sealed chest(s) will be hand-delivered to the analytical laboratory or shipped via an express delivery service for next-day delivery. Special arrangements will be made with the laboratory for Saturday receipt of samples collected on a Friday.

The samples submitted to the laboratory for landfill acceptance characterization will be analyzed for the parameters listed in Table 2. Samples submitted for cleanup verification will be analyzed for the parameters listed in Table 3. Additional information pertinent to laboratory analysis is summarized in both tables.

Table 2
Landfill Acceptance Characterization Analysis
Waste Oil or Unknown Petroleum Component

Matrix	Parameter[a]	Test Method Number	Container	Containers Per Sample	Preservation Method	Holding Time
Soil	TPH	EPA 481.1	8-oz glass jar with teflon lid liner	1	Cool to 4°C	28 days
Soil	BTEX	EPA 8020	120-ml glass vials with teflon septum	2	Cool to 40°C. Protect from light. Minimize head space.	10 days
Soil	Flash Point	SW 1010	4-oz glass jar with teflon lid liner	1	Cool to 4°C	28 days
Soil	TCLP Metals	SW 1311[b]+ SW 6010/7000[c]	8-oz glass jar with teflon lid liner	2	Cool to 4°C	7 days
Soil	PCB Scan	EPA 8080	8-oz glass jar with teflon lid liner	1	Cool to 4°C	7 days

[a]Parameters based on waste characterization requirements of the Greater Wenatchee Regional Landfill
[b]Extraction
[c]Analysis

Table 3
Cleanup Verification Analysis

Matrix	Parameter	Test Method Number	Container	Containers Per Sample	Preservation Method	Holding Time
Soil	TPH	EPA 418.1[a]	8-oz glass jar with teflon lid liner	1	Cool to 4°C	28 days

[a]Parameters based on Ecology recommended analysis for petroleum compounds heavier than diesel.

4.7 WASTE HANDLING

EXCAVATED SOILS

The materials removed from the excavation will be stockpiled on plastic sheeting at the site, and the pile will be covered with plastic sheeting and weights pending receipt of the analytical results. The pile will be surrounded with temporary fencing or barricades. After evaluation of the results, the materials will be delivered to the proper disposal site as determined by the levels of contaminants found in the soil.

DECONTAMINATION FLUIDS

Fluids generated during decontamination of equipment and personnel will be retained at the site in plastic-lined steel drums, pending receipt of the analytical results from the soil sampling. The drums will be clearly labelled to indicate their contents and the date

they were filled. After evaluation of the soil sampling results, the fluids will be analyzed, if necessary, and disposed of in the plant's waste water treatment system or at an approved waste management facility, as appropriate.

PERSONAL PROTECTIVE EQUIPMENT

Disposable materials used during the sampling, such as coveralls, booties, and gloves, will be placed in double-lined plastic bags and retained in plastic-lined steel drums for disposal by Keyes. The drums will be clearly labelled to indicate their contents and the date they were filled.

4.8 FIELD DOCUMENTATION

A bound field logbook will be used to record sampling and site information pertinent to the investigation. Information to be recorded in the field logbook specific to the soil and waste sampling includes:

- Project name
- Date (start and finish) of sampling
- Sample number, location, depth, and time collected
- Sampling method
- Sample description
- Depth to water, if encountered
- Remarks on weather, site conditions, and daily activities

All logbook entries will be made with indelible ink. Any corrections will be made by striking out the incorrect entry with a single line such that the original entry is still legible. The person making the correction will also initial and date the crossed-out entry. The correct entry will then be made near the crossed-out entry.

Progress of the work, sampling locations, and other appropriate information will also be documented by photographs. These will be captioned directly and/or keyed to a log sheet to explain them.

4.9 QUALITY ASSURANCE MEASURES

CHAIN-OF-CUSTODY PROCEDURES

The following chain-of-custody procedures will be used to maintain and document sample possession, handling, and shipping procedures and, in general, to identify and promote the traceability of the collected samples. Custody procedures will trace the samples from collection, through any custody transfers, and finally to the analytical

laboratory where their internal procedures will take over until final disposition of the samples.

Field Custody Procedures

- To the extent possible, the types and numbers of samples to be collected and the sampling locations will be established prior to going to the field
- As few persons as possible will handle the samples
- The field sampler will retain personal custody of the samples until they are properly transferred or delivered
- Sample labels will be filled-out for each sample, using indelible ink

Transfer of Custody and Shipment

- All samples will be accompanied by a chain-of-custody record from the time they are collected until they are received at the laboratory. When transferring possession of the samples, the individuals relinquishing and receiving them will sign, date, and note the time on the record.
- Each container of samples will have its own chain-of-custody record and the containers will be sealed and, if transported by a commercial delivery service, padlocked. The original record will accompany the samples and the field team will retain a copy for the project files.
- If transferred to the laboratory by a commercial delivery service, the freight bill will be retained for the files; if sent by mail, the shipment will be registered with return receipt requested. If delivered directly to the laboratory by the field team, this will be noted on the record.
- The analytical laboratory will have a designated sample custodian to implement a system for controlling samples. This will include accepting custody of arriving samples, verifying that the information on the sample labels matches that on the chain-of-custody record, assigning unique laboratory sample numbers, and distributing the samples to storage and the appropriate analysts.
- After sample analyses and necessary QC checks have been completed, the unused portions of the samples will be returned to Keyes or disposed of properly by the laboratory. All sample labels, data sheets, and laboratory records will be retained as part of the project documentation

The methods listed in Table 4 will be used to analyze the samples:

Table 4
Analytical Methods

Parameter	Test Method Number
TPH (other than gasoline or diesel)	EPA 418.1
BTEX	EPA 8020
Flash Point	SW 1010
TCLP Metals	SW 1311 and SW 6010/7000
PCB Scan	EPA 8080

QA OBJECTIVES

The general sampling scheme was developed so as to provide representative samples. Standard methodologies will be used to the extent practicable. The analyses will be performed in an offsite laboratory using EPA methodologies, using standard validation and documentation procedures.

Target detection limits for the laboratory analyses are provided in Table 5.

CALIBRATION PROCEDURES AND PREVENTIVE MAINTENANCE

All equipment will be maintained and calibrated daily according to manufacturers' instructions or at more frequent intervals if improper operation is suspected.

Calibrated equipment will be identified by means of an identification number such as the manufacturer's serial number. A label with the identification number and the date when the next calibration is due will be attached to the equipment. If this is not possible, records traceable to the particular equipment will be available in the packing case or box. The results of calibrations and records of repairs will be maintained in the field logbook.

Table 5			
Parameter	**Analysis**	**Target Detection Limit**	**Purpose**
TPH	EPA 418.1	4 mg/kg	Excavation Verification
TPH	EPA 418.1	4 mg/kg	Landfill Acceptance Characterization
BTEX	EPA 8020	.001 mg/kg	Landfill Acceptance Characterization
TCLP Metals	SW 1311+ SW 6010/7000	0.01-0.5 mg/kg	Landfill Acceptance Characterization
PCB	EPA 8080	0.1 mg/kg	Landfill Acceptance Characterization

Equipment that fails calibration or fails to operate properly will be removed from service, tagged to indicate its condition, and segregated from the operational equipment. Such equipment will be repaired and re-calibrated if possible; if not, it will be replaced.

DATA REVIEW, REDUCTION, AND REPORTING

The analytical data will be reviewed to provide an objective assessment of the level of uncertainty associated with them. This will involve reviewing the results with respect to field and laboratory QC samples (blanks and duplicates), spike recoveries, detection limits achieved, holding times, and instrument calibrations.

After review, the data will be reduced to tabular and graphical formats, if necessary, for interpretation. After the data have been interpreted, a brief description of the sampling conducted and its results will be prepared and submitted to Keyes as part of the summary report.

INTERNAL QUALITY CONTROL

The following internal field and laboratory quality control methods will be implemented.

Field Activities

- One duplicate sample for all analytical parameters being sampled will be collected and analyzed. If more than 20 samples are collected for any single parameter, one duplicate will be collected for every 20 samples or

each set less than 20 samples. The field identification numbers of the duplicate samples will include the appropriate QC code but otherwise the duplicates will not be identified to the laboratory as such.

Laboratory Activities

- One set of calibration standards will be analyzed each day (or each shift if more than one shift is involved).
- One set of solvent and reagent blanks will be analyzed each day.
- At least one sample will be analyzed in replicate with each batch of 10 or fewer samples.
- At least one spike sample will be analyzed with each batch of 10 samples.
- Quality control charts will be maintained.

PERFORMANCE AND SYSTEMS AUDITS

If requested by Keyes, performance of QC procedures could be monitored and audited by a person not otherwise involved in the project. An audit of the field work in progress would evaluate the execution of sample identification, sample control, chain-of-custody procedures, field documentation, instrument calibration, and field measurement and sampling operations. The evaluation would be based on the extent to which the applicable procedures as set forth in the project plans are being followed.

Field documents pertaining to sample identification and control would be examined for completeness and accuracy, to see that all entries are dated and signed, and that the contents are legible, written in ink, and contain accurate and inclusive documentation of project activities. The auditor also would check to see that chain-of-custody procedures were followed and that samples were being kept in custody at all times.

Sampling operations would be evaluated to assess whether they are being performed as stated in the sampling and analysis section or as directed by the Project Manager. The auditor would check to see that the appropriate number of samples were being collected, samples were placed in proper containers, and proper preservation, packaging, and shipment protocols were being followed.

Field measurement activities would be evaluated to assess whether they were being performed according to the sampling and analysis guidelines. The auditor would spot-check various field instruments for proper calibration procedures and frequency.

sea7913/038.51

Section 5
SCHEDULE

The cleanup is planned to generally follow the schedule outlined below:

• Excavation and sampling	1-5 April
• Laboratory Analysis	8-26 April
• Backfill excavation	15-19 April
• Dispose of soil	After 29 April

The actual schedule will depend on many factors, including weather, field conditions, and extent of contamination discovered, and could vary from the planned schedule.

sea7908/052.51

Section 6
SITE SAFETY CONSIDERATIONS

This section includes a general description of potential site hazards and some of the measures that could be used to protect onsite workers and the public from them. CH2M HILL will provide a site safety plan for its personnel to follow during the sampling; the safety of other persons onsite will be their own responsibility or that of their employer.

6.1 POTENTIAL SITE HAZARDS

Currently available information about the site indicates that there is potential for physical and chemical hazards to exist. Although the potential risks from these hazards appear to be relatively low, the site has not been well characterized, and so a conservative approach to health and safety considerations should be taken. This will involve assuming that hazards exist, being prepared to mitigate them, and monitoring conditions during the work to allow timely implementation of mitigative measures should the monitoring indicate they are necessary.

The types of hazards that could be present at the waste disposal site during the remedial action include:

- **Physical Hazards.** An open excavation, heavy construction equipment and vehicles, possible cold weather
- **Chemical Hazards.** Petroleum-contaminated soils, petroleum fuels for construction equipment, solvents for decontamination of sampling equipment

6.2 GENERAL SAFETY CONSIDERATIONS

- Start at Level D personal protection
- Use proper decontamination procedures (see Section 4)
- Use proper personal hygiene procedures
- Use water sprays if necessary to reduce dust

- Use equipment such as an HNu or OVA for monitoring for the possible presence of organic compounds
- Slope walls of excavation, if necessary, to provide support and eliminate the possible need for shoring
- Keep stockpiled materials covered and fenced or cordoned off
- Provide warning signs
- Restrict public access to contaminated soils and to the exclusion zone

sea7908/053.51

APPENDIX D
Analytical Results
April 1991 Sampling Event

EUREKA LABORATORIES, INC.

Air Pollution
Chemical Analysis,
Research & Testing
Environmental Studies
Robotics
Toxicology

Corporate Office:
6790 FLORIN PERKINS ROAD
SACRAMENTO, CA 95828
TEL: (916) 381-7953
FAX: (916) 381-4013

Branch Office:
12121 NORTHUP WAY, SUITE 212
BELLEVUE, WA 98005
TEL: (206) 885-0284
FAX: (206) 885-6162

April 8, 1991

Mr. Steve Trudell
CH2M HILL
777 108th Avenue NE
P.O. Box 91500
Bellevue, WA 98009-2050

Reference: ELI Order No.: W1-04-002
Project: Keyes Railroad Spur
Project #: SEA31436.A0

Dear Mr. Trudell:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject task. This report presents analytical results for eighteen (18) soil samples -EMERGENCY SERVICES-for the following analyses:

ANALYSIS	METHOD	SAMPLE ID.
Total Recovery Petroleum Hydrocarbons	EPA 418.1	KF-001-SO-09191-XX thru KF-005-SO-09191-XX, KF-023-SO-09391-XX, KF-008-SO-09391-XX thru KF-012-SO-09391-XX, KF-013-SO-09391-DU, KF-020-SO-09391-XX thru KF-022-SO-09391-XX, KF-024-SO-09391-XX
Total Petroleum Hydrocarbons	EPA 8015 (Modified)	KF-006-SO-09291-XX & KF-007-SO-09391-XX

Sincerely,
EUREKA LABORATORIES, INC.

By: Chuy P. Li for
Shao-Pyn Yo, Ph.D.
Laboratory Director

SPY/pvc

Attachment

TOTAL RECOVERY PETROLEUM HYDROCARBONS
EPA METHOD 418.1

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-002
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT: NA
PROJECT: KEYES RAILROAD SPUR
TASK #: NA
P.O.#: NA
PROJECT #: SEA31436.A0
SAMPLE LOCATION: NA
ELI SAMPLE ID: SEE BELOW
FILE ID: NA

DATE SAMPLED: NA
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/05/1991
DATE ANALYZED: 04/05/1991
INSTRUMENT ID: FTIR1
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 25 g
DILUTION FACTOR: SEE BELOW

ELI ID.	CLIENT ID.	UNITS [mg/Kg(ppm)]	D/F	D/L	DATE SAMPLED
W104002-01A	KF-001-SO-09191-XX	43200	125	500**	04/01/1991
W104002-02A	KF-002-SO-09191-XX	15200	125	500**	04/01/1991
W104002-03A	KF-003-SO-09191-XX	22900	125	500**	04/01/1991
W104002-04A	KF-004-SO-09191-XX	10600	125	500**	04/01/1991
W104002-05A	KF-005-SO-09191-XX	28900	125	500**	04/01/1991
W104002-08A	KF-023-SO-09391-XX	19200	125	500**	04/03/1991
W104002-09A	KF-008-SO-09391-XX	1690	10	40**	04/03/1991
W104002-10A	KF-009-SO-09391-XX	3570	10	40**	04/03/1991
W104002-11A	KF-010-SO-09391-XX	13300	125	500**	04/03/1991
W104002-12A	KF-011-SO-09391-XX	27100	125	500**	04/03/1991
W104002-13A	KF-012-SO-09391-XX	35100	125	500**	04/03/1991
W104002-14A	KF-013-SO-09391-DU	60400	250	1000**	04/03/1991
W104002-15A	KF-020-SO-09391-XX	12700	125	500**	04/03/1991
W104002-16A	KF-021-SO-09391-XX	1140	10	40**	04/03/1991
W104002-17A	KF-022-SO-09391-XX	1320	10	40**	04/03/1991
W104002-18A	KF-024-SO-09391-XX	18800	125	500**	04/03/1991
W104002-19A	BLANK	<4	1	4	
W104002-20A	REAGENT SPIKE RECOVERY * - 101%				
W104002-21A	REAGENT SPIKE RECOVERY DUP. * - 103%				

* Reagent Spike set is used due to high analyte concentration.

** Higher detection limit is due to high analyte concentration.

Mark Jefcoat
Chemist

April 8, 1991
Date

TOTAL PETROLEUM HYDROCARBONS
EPA Method 8015 Modified

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-002
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL	DATE SAMPLED: NA
CONTRACT: NA	DATE RECEIVED: 04/04/1991
PROJECT: KEYES RAILROAD SPUR	DATE EXTRACTED: 04/05/1991
TASK #: NA	DATE ANALYZED: 04/05/1991
P.O.#: NA	INSTRUMENT ID: SVG1
PROJECT #: SEA31436.A0	MATRIX: SOIL
SAMPLE LOCATION: NA	% MOISTURE: NA
ELI SAMPLE ID: W104002-21A	REPORT WT: WET
FILE ID: NA	SAMPLE VOL./WT.: NA
SAMPLE ID: REAGENT SPIKE RECOVERY DUP. *	DILUTION FACTOR: NA

PETROLEUM HYDROCARBONS	SPIKE RECOVERY
Gasoline Range	125%
Diesel Range	-
Motor Oil Range	122%
Total Petroleum Hydrocarbons	
CARBON NO. RANGE	
Gasoline Range	-
Diesel Range	-
Motor Oil Range	-
PEAK CARBON NO	
Gasoline Range	-
Diesel Range	-
Motor Oil Range	-

* Reagent spike set is used due to matrix interference.

Yun-Ting Chueh
Chemist

April 8, 1991
Date

TOTAL PETROLEUM HYDROCARBONS
EPA Method 8015 Modified

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-002
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL	DATE SAMPLED: NA
CONTRACT: NA	DATE RECEIVED: 04/04/1991
PROJECT: KEYES RAILROAD SPUR	DATE EXTRACTED: 04/05/1991
TASK #: NA	DATE ANALYZED: 04/05/1991
P.O.#: NA	INSTRUMENT ID: SVG1
PROJECT #: SEA31436.A0	MATRIX: SOIL
SAMPLE LOCATION: NA	% MOISTURE: NA
ELI SAMPLE ID: W104002-20A	REPORT WT: WET
FILE ID: NA	SAMPLE VOL./WT.: NA
SAMPLE ID: REAGENT SPIKE RECOVERY *	DILUTION FACTOR: NA

PETROLEUM HYDROCARBONS	SPIKE RECOVERY
Gasoline Range	94%
Diesel Range	-
Motor Oil Range	88%
Total Petroleum Hydrocarbons	
CARBON NO. RANGE	
Gasoline Range	-
Diesel Range	-
Motor Oil Range	-
PEAK CARBON NO	
Gasoline Range	-
Diesel Range	-
Motor Oil Range	-

* Reagent spike set is used due to matrix interference.

Yun-Ting Chueh
Chemist

April 8, 1991
Date

TOTAL PETROLEUM HYDROCARBONS
EPA METHOD 8015 MODIFIED

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-002
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL	DATE SAMPLED: 04/03/1991
CONTRACT: NA	DATE RECEIVED: 04/04/1991
PROJECT: KEYES RAILROAD SPUR	DATE EXTRACTED: 04/05/1991
TASK #: NA	DATE ANALYZED: 04/05/1991
P.O.#: NA	INSTRUMENT ID: SVG1
PROJECT #: SEA31436.A0	MATRIX: SOIL
SAMPLE LOCATION: NA	% MOISTURE: NA
ELI SAMPLE ID: W104002-07A	REPORT WT: WET
FILE ID: NA	SAMPLE VOL./WT.: 40 g
SAMPLE ID: KF-007-SO-09391-XX	DILUTION FACTOR: 10.0

PETROLEUM HYDROCARBONS	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)] *
Gasoline Range	<50	50
Diesel Range	<100	100
Motor Oil Range	8910	250
Total Petroleum Hydrocarbons	8910	-
CARBON NO. RANGE		
Gasoline Range	-	-
Diesel Range	-	-
Motor Oil Range	C18-C30	-
PEAK CARBON NO		
Gasoline Range	-	-
Diesel Range	-	-
Motor Oil Range	C24	-

* Higher detection limit is due to matrix interference.

Yun-Ying Chueh
Chemist

April 8, 1991
Date

TOTAL PETROLEUM HYDROCARBONS
EPA METHOD 8015 MODIFIED

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-002
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL	DATE SAMPLED: 04/02/1991
CONTRACT: NA	DATE RECEIVED: 04/04/1991
PROJECT: KEYES RAILROAD SPUR	DATE EXTRACTED: 04/05/1991
TASK #: NA	DATE ANALYZED: 04/05/1991
P.O.#: NA	INSTRUMENT ID: SVG1
PROJECT #: SEA31436.A0	MATRIX: SOIL
SAMPLE LOCATION: NA	% MOISTURE: NA
ELI SAMPLE ID: W104002-06A	REPORT WT: WET
FILE ID: NA	SAMPLE VOL./WT.: 40 g
SAMPLE ID: KF-006-SO-09291-XX	DILUTION FACTOR: 10.0

PETROLEUM HYDROCARBONS	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)] *
Gasoline Range	261 **	50
Diesel Range	<100	100
Motor Oil Range	11300	250
Total Petroleum Hydrocarbons	11561	-
CARBON NO. RANGE		
Gasoline Range	C9-C12	-
Diesel Range	-	-
Motor Oil Range	C18-C30	-
PEAK CARBON NO		
Gasoline Range	C10	-
Diesel Range	-	-
Motor Oil Range	C24	-

* Higher detection limit is due to matrix interference.
** Hydrocarbons in the gasoline range are detected in the sample. However, their patterns are different from our standard.

Yun-Ying Chueh
Chemist

April 8, 1991
Date

TOTAL PETROLEUM HYDROCARBONS
EPA METHOD 8015 MODIFIED

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-002
Hazardous Waste Testing
Certification: E765

CLIENT:	CH2M HILL	DATE SAMPLED:	NA
CONTRACT:	NA	DATE RECEIVED:	04/04/1991
PROJECT:	KEYES RAILROAD SPUR	DATE EXTRACTED:	04/05/1991
TASK #:	NA	DATE ANALYZED:	04/05/1991
P.O.#:	NA	INSTRUMENT ID:	SVG1
PROJECT #:	SEA31436.A0	MATRIX:	SOIL
SAMPLE LOCATION:	NA	% MOISTURE:	NA
ELI SAMPLE ID:	W104002-19A	REPORT WT:	WET
FILE ID:	NA	SAMPLE VOL./WT.:	40 g
SAMPLE ID:	BLANK	DILUTION FACTOR:	1.0

PETROLEUM HYDROCARBONS	CONCENTRATION [mg/Kg (ppm)]	DETECTION LIMIT [mg/Kg (ppm)]
Gasoline Range	<5	5
Diesel Range	<10	10
Motor Oil Range	<25	25
Total Petroleum Hydrocarbons	-	-
CARBON NO. RANGE		
Gasoline Range	-	-
Diesel Range	-	-
Motor Oil Range	-	-
PEAK CARBON NO		
Gasoline Range	-	-
Diesel Range	-	-
Motor Oil Range	-	-

Yun-Ting Chueh
Chemist

April 8, 1991
Date

CHAIN OF CUSTODY RECORD — QUALITY ANALYTICS

PROJECT NUMBER: SEA 31436.A0 | PROJECT NAME: KEYES RAILROAD SPUR
CLIENT NAME: KEYES FIBRE
PROJECT MANAGER: STEVE TRUDELL | COPY TO: BRETT NUNN
REQUESTED COMP. DATE: RUSH | SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ☐

CLIENT ADDRESS AND PHONE NUMBER

ANALYSES REQUESTED: TPH 418.1 | PCB SCAN | TCLP METALS | BTEX | FLASH POINT | MOD. 8015

STA NO.	DATE	TIME	COMP	GRAB	# OF CONTAINERS	LAB ID	SAMPLE DESCRIPTIONS (12 CHARACTERS)
O.S.	4/1/91	1210		X	1	X	KF-001-SO-04191-XX
O.S.	"	1148		X	1	X	KF-002-SO-04191-XX
O.S.	"	1650		X	1	X	KF-003-SO-04191-XX
O.S.	"	1652		X	1	X	KF-004-SO-04191-XX
O.S.	"	1653		X	1	X	KF-005-SO-04191-XX
F.P.	4/2/91	1514		X	1	X	KF-006-SO-04291-XX

SAMPLED BY AND TITLE: Bob M Thurston Geologist | DATE/TIME: 4/2/91 16:24
RECEIVED BY: | DATE/TIME:
RELINQUISHED BY: [signature] | DATE/TIME: 4/4/91 1345
RECEIVED BY: Linda Ramsey | DATE/TIME: 4/4/91 1450
RELINQUISHED BY: | DATE/TIME:
RECEIVED BY LAB: Thomas Hagerty | DATE/TIME: 4/4/91 9:01
RELINQUISHED BY: Linda A. Ramsey | DATE/TIME: 4/4/91 1630
SAMPLE SHIPPED VIA: UPS BUS FED-EX HAND OTHER | AIR BILL#
REMARKS: PLEASE CALL JIM BAUMANN OF STEVE TRUDELL @ 206/453-5000 AS SOON AS RESULTS ARE AVAILABLE

FOR LAB USE ONLY: LAB# W1-04-002. | LAB# | PROJECT NO. | ACK | VERIFIED | QUOTE# | BS | NO. OF SAMP | PG | OF | REMARKS: RUSH (Priority)

HAZWRAP/NEESA Y N | QC LEVEL 1 2 3 | COC | ICE | AMA REQ | TEMP | CUST SEAL | Ph | SAMPLE COND. | ENTERED INTO LIMS | COC REVIEWED

RUSH

PLEASE BILL DIRECTLY TO KEYES FIBRE P.O. #

P.S. Pauline 4/4/91 16:30 Rec'd Pauline 4/4/91 1715

CHM HILL QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
SFA 31436.AP	RAILROAD SPUR

CLIENT NAME: Keyes Fibre

PROJECT MANAGER	COPY TO:
STEVE TRUDELL	BRETT NUNN

REQUESTED COMP. DATE: Rush

SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ☑

CLIENT ADDRESS AND PHONE NUMBER:

STA NO.	DATE	TIME	COMP	GRAB	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	ANALYSES REQUESTED: TPH 418.1	BTEX	PCB SCAN	TCLP METALS	FLASH POINT	MOD 8015					LAB I.D.
E.R.	4/3/91	1146		X		KF-007-SO-09391-XX	1						X					
O.S.	4/3/91	1227		X		KF-023-SO-09391-XX	1	X										
E.R.	4/3/91	1205		X		KF-008-SO-09391-XX	1	X										
		1208		X		KF-005-SO-09391-XX	1	X										
		1212				KF-010-SO-09391-XX	1	X										
		1217				KF-011-SO-09391-XX	1	X										
		1235				KF-012-SO-09391-XX	1	X										
		1235				KF-013-SO-09391-DU	1	X										
		1236				KF-020-SO-09391-XX	1	X										
		1246				KF-021-SO-09391-XX	1	X										
		1243				KF-022-SO-09391-XX	1	X										
		1335				KF-024-SO-09391-XX	1	X										

FOR LAB USE ONLY: LAB# WI-04-002

LAB#

PROJECT NO.

ACK | VERIFIED

QUOTE# | BS

NO. OF SAMP. | PG | OF

REMARKS: RUSH (Priority)

RUSH

Please Bill Directly To Keyes Fibre P.O. #

SAMPLED BY AND TITLE: Jerry Bensano / Engineer	DATE/TIME: 4/3/91 / 1440	RELINQUISHED BY: Jerry A. Bensano	DATE/TIME: 4/3/91 / 1450
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME: 4/4/91 1345
RECEIVED BY: Jerry A. Bensano	DATE/TIME: 4/4/91 / 1450	RELINQUISHED BY: Jerry A. Bensano	DATE/TIME: 4/4/91 / 16:30
RECEIVED BY LAB: Robin M. Lacey	DATE/TIME: 4/4/91 10:20	SAMPLE SHIPPED VIA: UPS BUS (FED-EX) HAND OTHER	AIR BILL#

HAZWRAP/NEESA Y N

QC LEVEL 1 2 3

COC | ICE

ANA REQ | TEMP

CUST SEAL | Ph

SAMPLE COND.

REMARKS: SEND ANALYSIS RESULTS TO: CH2M HILL P.O. Box 91500 Bellevue, WA 98009-2050 ATTN: Steve Trudell

ENTERED INTO LIMS _____ COC REVIEWED _____

Rec'd by Bensano 4/4/91 16:30 Rel. by: Bensano 4/4/91 1725

REV 6/89 FORM 340

EUREKA LABORATORIES, INC.

Corporate Office:
6790 FLORIN PERKINS ROAD
SACRAMENTO, CA 95828
TEL: (916) 381-7953
FAX: (916) 381-4013

Branch Office:
12121 NORTHUP WAY, SUITE 2
BELLEVUE, WA 98005
TEL: (206) 885-0284
FAX: (206) 885-6162

Air Pollution
Chemical Analysis,
Research & Testing
Environmental Studies
Robotics
Toxicology

April 19, 1991

Mr. Steve Trudell
CH2M HILL NORTHWEST, INC.
777 108th Ave. NE
Bellevue, WA 98009-2050

Reference - Project: KEYES FIBRE (WENATCHEE)
Project #: SEA 31436.A0
ELI Order #: 91-04-113

Dear Mr. Trudell:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for two (2) soil samples -EMERGENCY SERVICE- for the following analyses:

ANALYSIS	METHOD	SAMPLE ID.
Semi-Volatile Compound	EPA 8270	KF-001-SO-10191-XX, KF-002-SO-10191-XX
Volatile Compound	EPA 8240	same as above
Metals	EPA 6010	same as above
Thallium	EPA 7841	same as above
Lead	EPA 7421	same as above
Mercury	EPA 7471	same as above
Arsenic	EPA 7060	same as above
Selenium	EPA 7740	same as above
Organochlorine Pesticides and PCBs	EPA 8080	same as above

Sincerely,
EUREKA LABORATORIES, INC.

By: Shao-Lin Yo, Ph.D.
Laboratory Director

SPY/mc
Attachment

ORGANIC ANALYSIS REPORT
Semi-Volatile Compund, EPA Method 8270

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-01A
FILE ID: BD004
SAMPLE ID: KF-001-SO-10191-XX

DATE SAMPLED: 04/11/91
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 04/12/91
DATE ANALYZED: 04/13/91
INSTRUMENT ID: bna2
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20G
DILUTION FACTOR: 5.00

CAS#	COMPOUND	CONCENTRATION ppb (ug/Kg)	DETECTION LIMIT ppb (ug/Kg)
I. PRIORITY POLLUTANT ACID COMPOUNDS			
108-95-2	Phenol	<750	750
95-57-8	2-Chlorophenol	<750	750
88-75-5	2-Nitrophenol	<750	750
105-67-9	2,4-Dimethylphenol	<750	750
120-83-2	2,4-Dichlorophenol	<750	750
59-50-7	4-Choro-3-methylphenol	<750	750
88-06-2	2,4,6-Trichlorophenol	<750	750
51-28-5	2,4-Dinitrophenol	<4000	4000
100-02-7	4-Nitrophenol	<4000	4000
534-52-1	2-Methyl-4,6-Dinitrophenol	<4000	4000
87-86-5	Pentachlorophenol	<750	750
II. PRIORITY POLLUTANT BASE/NEUTRAL COMPOUNDS			
62-75-9	N-Nitrosodimethylamine	<750	750
111-44-4	Bis(2-Chloroethyl)ether	<750	750
541-73-1	1,3-Dichlorobenzene	<750	750
95-50-1	1,2-Dichlorobenzene	<750	750
106-46-7	1,4-Dichlorobenzene	<750	750
118-74-1	Hexachlorobenzene	<750	750
67-72-1	Hexachloroethane	<750	750
621-64-7	N-Nitrosodi-n-propylamine	<750	750
98-95-3	Nitrobenzene	<750	750
117-84-0	Di-n-octyl phthalate	<750	750
120-82-1	1,2,4-Trichlorobenzene	<750	750
91-20-3	Naphthalene	<750	750
87-68-3	Hexachlorobutadiene	<750	750
91-57-6	2-Methylnaphthalene	<750	750

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

Order No.: 91-04-113 SAMPLE ID: KF-001-SO-10191-XX
CLIENT: CH2MHILL

77-47-4	Hexachlorocyclopentadiene	<750	750
91-58-7	2-Chloronaphthalene	<750	750
131-11-3	Dimethyl phthalate	<750	750
208-96-8	Acenaphthylene	<750	750
83-32-9	Acenaphthene	<750	750
121-14-2	2,4-Dinitrotoluene	<1500	1500
606-20-2	2,6-Dinitrotoluene	<1500	1500
86-73-7	Fluorene	<750	750
84-66-2	Diethyl phthalate	<750	750
7005-72-3	4-Chlorophenyl phenyl ether	<750	750
86-30-6	N-Nitrosodiphenylamine	<1500	1500
101-55-3	4-Bromophenyl phenyl ether	<750	750
39638-32-9	Bis(2-Chloroisopropyl)ether	<750	750
85-01-8	Phenanthrene	1170	750
120-12-7	Anthracene	<750	750
84-74-2	Di-n-butyl phthalate	<750	750
206-44-0	Fluoranthene	<750	750
92-87-5	Benzidine	<6000	6000
111-91-1	Bis(2-Chloroethoxy)methane	<1500	1500
129-00-0	Pyrene	1370	750
85-68-7	Butyl benzyl phthalate	<750	750
91-94-1	3,3-Dichlorobenzidine	<1500	1500
218-01-9	Chrysene	<750	750
56-55-3	Benzo(a)anthracene	<750	750
117-81-7	Bis(2-Ethylhexyl)phthalate	7290	5000
207-08-9	Benzo(k)fluoranthene	<750	750
205-99-2	Benzo(b)fluoranthene	<750	750
50-32-8	Benzo(a)pyrene	<750	750
193-39-5	Indeno(1,2,3-cd)pyrene	<750	750
53-70-3	Dibenzo(a,h)anthracene	<750	750
191-24-2	Benzo(g,h,i)perylene	<750	750
78-59-1	Isophorone	<750	750

III. PESTICIDES

319-84-6	a-BHC	<2500	2500
58-89-9	g-BHC	<2500	2500
319-85-7	b-BHC	<2500	2500
319-86-8	d-BHC	<2500	2500
76-44-8	Heptachlor	<2500	2500
309-00-2	Aldrin	<2500	2500
1024-57-3	Heptachlor epoxide	<2500	2500
60-57-1	Dieldrin	<2500	2500
72-55-9	4,4'-DDE	<2500	2500

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

Order No.: 91-04-113 SAMPLE ID: KF-001-SO-10191-XX
CLIENT: CH2MHILL

959-98-8	Endosulfan I	<5000	5000
33213-65-9	Endosulfan II	<5000	5000
72-20-8	Endrin	<5000	5000
72-54-8	4,4'-DDD	<2500	2500
50-29-3	4,4'-DDT	<2500	2500
1031-07-8	Endosulfan sulfate	<5000	5000
57-74-9	Chlorodane	<25000	25000
8001-35-2	Toxaphene	<50000	50000
	PCB	<50000	50000

IV. HAZARDOUS SUBSTANCES LIST

62-53-3	Aniline	<750	750
100-51-6	Benzyl alcohol	<750	750
95-48-7	o-Cresol	<750	750
106-44-5	p-Cresol	<750	750
65-85-0	Benzoic acid	<4000	4000
106-47-8	4-Chloroaniline	<750	750
95-95-4	2,4,5-Trichlorophenol	<4000	4000
88-74-4	2-Nitroaniline	<4000	4000
99-09-2	3-Nitroaniline	<4000	4000
132-64-9	Dibenzofuran	<750	750
100-01-6	4-Nitroaniline	<4000	4000

Higher detection limit is due to matrix interference.

Chemist Kuen Lee 04/15/91
Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT
NA=NOT AVAILABLE

ORGANIC ANALYSIS REPORT
Semi-Volatile Compund, EPA Method 8270

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-02A
FILE ID: BD005
SAMPLE ID: KF-002-SO-10191-XX

DATE SAMPLED: NA
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 04/12/91
DATE ANALYZED: 04/13/91
INSTRUMENT ID: bna2
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20G
DILUTION FACTOR: 2.00

CAS#	COMPOUND	CONCENTRATION ppb (ug/Kg)	DETECTION LIMIT ppb (ug/Kg)
I. PRIORITY POLLUTANT ACID COMPOUNDS			
108-95-2	Phenol	<300	300
95-57-8	2-Chlorophenol	<300	300
88-75-5	2-Nitrophenol	<300	300
105-67-9	2,4-Dimethylphenol	<300	300
120-83-2	2,4-Dichlorophenol	<300	300
59-50-7	4-Choro-3-methylphenol	<300	300
88-06-2	2,4,6-Trichlorophenol	<300	300
51-28-5	2,4-Dinitrophenol	<1600	1600
100-02-7	4-Nitrophenol	<1600	1600
534-52-1	2-Methyl-4,6-Dinitrophenol	<1600	1600
87-86-5	Pentachlorophenol	<300	300
II. PRIORITY POLLUTANT BASE/NEUTRAL COMPOUNDS			
62-75-9	N-Nitrosodimethylamine	<300	300
111-44-4	Bis(2-Chloroethyl)ether	<300	300
541-73-1	1,3-Dichlorobenzene	<300	300
95-50-1	1,2-Dichlorobenzene	<300	300
106-46-7	1,4-Dichlorobenzene	<300	300
118-74-1	Hexachlorobenzene	<300	300
67-72-1	Hexachloroethane	<300	300
621-64-7	N-Nitrosodi-n-propylamine	<300	300
98-95-3	Nitrobenzene	<300	300
117-84-0	Di-n-octyl phthalate	<300	300
120-82-1	1,2,4-Trichlorobenzene	<300	300
91-20-3	Naphthalene	<300	300
87-68-3	Hexachlorobutadiene	<300	300
91-57-6	2-Methylnaphthalene	<300	300

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

Order No.: 91-04-113
CLIENT: CH2MHILL
SAMPLE ID: KF-002-SO-10191-XX

77-47-4	Hexachlorocyclopentadiene	<300	300
91-58-7	2-Chloronaphthalene	<300	300
131-11-3	Dimethyl phthalate	<300	300
208-96-8	Acenaphthylene	<300	300
83-32-9	Acenaphthene	<300	300
121-14-2	2,4-Dinitrotoluene	<600	600
606-20-2	2,6-Dinitrotoluene	<600	600
86-73-7	Fluorene	<300	300
84-66-2	Diethyl phthalate	<300	300
7005-72-3	4-Chlorophenyl phenyl ether	<300	300
86-30-6	N-Nitrosodiphenylamine	<600	600
101-55-3	4-Bromophenyl phenyl ether	<300	300
39638-32-9	Bis(2-Chloroisopropyl)ether	<300	300
85-01-8	Phenanthrene	<300	300
120-12-7	Anthracene	<300	300
84-74-2	Di-n-butyl phthalate	<300	300
206-44-0	Fluoranthene	<300	300
92-87-5	Benzidine	<2400	2400
111-91-1	Bis(2-Chloroethoxy)methane	<600	600
129-00-0	Pyrene	588	300
85-68-7	Butyl benzyl phthalate	<300	300
91-94-1	3,3-Dichlorobenzidine	<600	600
218-01-9	Chrysene	<300	300
56-55-3	Benzo(a)anthracene	<300	300
117-81-7	Bis(2-Ethylhexyl)phthalate	29400	2000
207-08-9	Benzo(k)fluoranthene	<300	300
205-99-2	Benzo(b)fluoranthene	<300	300
50-32-8	Benzo(a)pyrene	<300	300
193-39-5	Indeno(1,2,3-cd)pyrene	<300	300
53-70-3	Dibenzo(a,h)anthracene	<300	300
191-24-2	Benzo(g,h,i)perylene	<300	300
78-59-1	Isophorone	<300	300
III. PESTICIDES			
319-84-6	a-BHC	<1000	1000
58-89-9	g-BHC	<1000	1000
319-85-7	b-BHC	<1000	1000
319-86-8	d-BHC	<1000	1000
76-44-8	Heptachlor	<1000	1000
309-00-2	Aldrin	<1000	1000
1024-57-3	Heptachlor epoxide	<1000	1000
60-57-1	Dieldrin	<1000	1000
72-55-9	4,4'-DDE	<1000	1000

METALS
EPA METHOD 6010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
PROJECT#: SEA31436.A0
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA
ELI SAMPLE ID: 9104113-05A
CLIENT SAMPLE ID: * MATRIX SPIKE RECOVERY DUP.

DATE SAMPLED: NA
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: ICAP 9000
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: NA
DILUTION FACTOR: NA

METALS	SPIKE RECOVERY %
Silver	80
Beryllium	91
Cadmium	85
Chromium	86
Copper	91
Nickel	85
Antimony	85
Zinc	84

* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Josie Quiambao — April 17, 1991
Josie Quiambao — Date
Chemist

THALLIUM, LEAD
EPA METHOD 7841, 7421

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
PROJECT#: SEA31436.A0
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA

DATE SAMPLED: 04/11/1991
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/15/1991
INSTRUMENT ID: V 400
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 50ml
DILUTION FACTOR: 100

ELI SAMPLE ID	CLIENT SAMPLE ID	UNITS [mg/Kg (ppm)] Tl	Pb
9104113-01A	KF-001-SO-10191-XX	<0.4	3.7
9104113-02A	KF-002-SO-10191-XX	<0.4	4.0
9104113-03A	METHOD BLANK	<0.4	<0.3
DETECTION LIMIT [mg/Kg (ppm)] :		0.4	0.3
9104113-04A	* REAGENT SPIKE RECOVERY		100%
9104113-05A	* REAGENT SPIKE RECOVERY DUP.		99%
9104113-04A	KF-001-SO-10191-XX MATRIX SPIKE RECOVERY	88%	
9104113-05A	KF-001-SO-10191-XX MATRIX SPIKE RECOVERY DUP.	85%	

* Reagent spike set is used due to matrix interference.

Robert M. Ciampi — April 17, 1991
Robert M. Ciampi — Date
Chemist

MERCURY
EPA METHOD 7471

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
PROJECT#: SEA31436.A0
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA

DATE SAMPLED: 04/11/1991
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/15/1991
INSTRUMENT ID: V 30
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 50ml
DILUTION FACTOR: 50

ELI SAMPLE ID	CLIENT SAMPLE ID	UNITS [mg/Kg (ppm)]
9104113-01A	KF-001-SO-10191-XX	0.06
9104113-02A	KF-002-SO-10191-XX	0.03
9104113-03A	METHOD BLANK	<0.01
DETECTION LIMIT [mg/Kg (ppm)] :		0.01
9104113-04A	* REAGENT SPIKE RECOVERY	86%
9104113-05A	* REAGENT SPIKE RECOVERY DUP.	88%

* Reagent spike set is used due to matrix interference.

Robert M. Ciampi April 17, 1991
Robert M. Ciampi Date
Chemist

ARSENIC
EPA METHOD 7060

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
PROJECT#: SEA31436.A0
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA

DATE SAMPLED: 04/11/1991
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/15/1991
INSTRUMENT ID: PE 5100
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 50ml
DILUTION FACTOR: 100

ELI SAMPLE ID	CLIENT SAMPLE ID	UNITS [mg/Kg (ppm)]
9104113-01A	KF-001-SO-10191-XX	4.7
9104113-02A	KF-002-SO-10191-XX	4.3
9104113-03A	METHOD BLANK	<0.4
DETECTION LIMIT [mg/Kg (ppm)] :		0.4
9104113-04A	* REAGENT SPIKE RECOVERY	77%
9104113-05A	* REAGENT SPIKE RECOVERY DUP.	77%

* Reagent spike set is used due to matrix interference.

Robert M. Ciampi April 17, 1991
Robert M. Ciampi Date
Chemist

SELENIUM
EPA METHOD 7740

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
PROJECT#: SEA31436.A0
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA

DATE SAMPLED: 04/11/1991
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: V 400
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 50ml
DILUTION FACTOR: 100

ELI SAMPLE ID	CLIENT SAMPLE ID	UNITS [mg/Kg (ppm)]
9104113-01A	KF-001-SO-10191-XX	<0.3
9104113-02A	KF-002-SO-10191-XX	<0.3
9104113-03A	METHOD BLANK	<0.3
DETECTION LIMIT [mg/Kg (ppm)] :		0.3
9104113-04A	KF-001-SO-10191-XX MATRIX SPIKE RECOVERY	83%
9104113-05A	KF-002-SO-10191-XX MATRIX SPIKE RECOVERY DUP.	82%

Robert M. Ciampi April 17, 1991
Robert M. Ciampi Date
Chemist

ORGANOCHLORINE PESTICIDES and PCBs
EPA METHOD 8080

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA

ELI SAMPLE ID: 9104113-01A
CLIENT SAMPLE ID: KF-001-SO-10191-XX

DATE SAMPLED: 04/11/1991
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: SVG 6
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 30g
DILUTION FACTOR: 5

COMPOUND	CONCENTRATION ug/Kg (ppb)	DETECTION LIMIT * ug/Kg (ppb)
Aldrin	<2.5	2.5
a-BHC	<2.5	2.5
b-BHC	<7.5	7.5
d-BHC	<2.5	2.5
g-BHC(Lindane)	<2.5	2.5
Chlordane	<85	85
p,p'-DDD	34.4	7.5
p,p'-DDE	23.8	5.0
o,p'-DDT	<7.5	7.5
p,p'-DDT	<7.5	7.5
Dieldrin	<4.0	4.0
Endosulfan I	<2.0	2.0
Endosulfan II	<2.5	2.5
Endosulfan sulfate	<7.5	7.5
Endrin	<7.5	7.5
Endrin aldehyde	<7.5	7.5
Heptachlor	<2.5	2.5
Heptachlor epoxide	<2.5	2.5
Kepone	<13.5	13.5
Methoxychlor	<25	25
Toxaphene	<335	335
PCB	<165	165

* Higher detection limit is due to analyte concentration.

Jeannette Chen April 18, 1991
Jeanette Chen Date
Chemist

ORGANOCHLORINE PESTICIDES and PCBs
EPA METHOD 8080

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA

ELI SAMPLE ID: 9104113-02A
CLIENT SAMPLE ID: KF-002-SO-10191-XX

DATE SAMPLED: 04/11/1991
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: SVG 6
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 30g
DILUTION FACTOR: 5

COMPOUND	CONCENTRATION ug/Kg (ppb)	DETECTION LIMIT * ug/Kg (ppb)
Aldrin	<2.5	2.5
a-BHC	<2.5	2.5
b-BHC	<7.5	7.5
d-BHC	<2.5	2.5
g-BHC(Lindane)	<2.5	2.5
Chlordane	<85	85
p,p'-DDD	42.3	7.5
p,p'-DDE	7.6	5.0
o,p'-DDT	<7.5	7.5
p,p'-DDT	<7.5	7.5
Dieldrin	<4.0	4.0
Endosulfan I	<2.0	2.0
Endosulfan II	<2.5	2.5
Endosulfan sulfate	<7.5	7.5
Endrin	<7.5	7.5
Endrin aldehyde	<7.5	7.5
Heptachlor	<2.5	2.5
Heptachlor epoxide	<2.5	2.5
Kepone	<13.5	13.5
Methoxychlor	<25	25
Toxaphene	<335	335
PCB	<165	165

* Higher detection limit is due to high analyte concentration.

Jeanette Chen
Chemist

April 18, 1991
Date

ORGANOCHLORINE PESTICIDES and PCBs
EPA METHOD 8080

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA

ELI SAMPLE ID: 9104113-03A
CLIENT SAMPLE ID: METHOD BLANK

DATE SAMPLED: NA
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: SVG 6
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: NA
DILUTION FACTOR: 1

COMPOUND	CONCENTRATION ug/Kg (ppb)	DETECTION LIMIT ug/Kg (ppb)
Aldrin	<0.5	0.5
a-BHC	<0.5	0.5
b-BHC	<1.5	1.5
d-BHC	<0.5	0.5
g-BHC(Lindane)	<0.5	0.5
Chlordane	<17	17
p,p'-DDD	<1.5	1.5
p,p'-DDE	<1.0	1.0
o,p'-DDT	<1.5	1.5
p,p'-DDT	<1.5	1.5
Dieldrin	<0.8	0.8
Endosulfan I	<0.4	0.4
Endosulfan II	<0.5	0.5
Endosulfan sulfate	<1.5	1.5
Endrin	<1.5	1.5
Endrin aldehyde	<1.5	1.5
Heptachlor	<0.5	0.5
Heptachlor epoxide	<0.5	0.5
Kepone	<2.7	2.7
Methoxychlor	<5	5
Toxaphene	<67	67
PCB	<33	33

Jeanette Chen
Chemist

April 18, 1991
Date

ORGANOCHLORINE PESTICIDES and PCBs
EPA METHOD 8080

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA

ELI SAMPLE ID: 9104113-04A
CLIENT SAMPLE ID: * REAGENT SPIKE RECOVERY

DATE SAMPLED: NA
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: SVG 6
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: NA
DILUTION FACTOR: NA

COMPOUND	SPIKE RECOVERY (%)
Aldrin	68
a-BHC	-
b-BHC	-
d-BHC	-
g-BHC(Lindane)	77
Chlordane	-
p,p'-DDD	-
p,p'-DDE	-
o,p'-DDT	-
p,p'-DDT	77
Dieldrin	81
Endosulfan I	-
Endosulfan II	-
Endosulfan sulfate	-
Endrin	-
Endrin aldehyde	-
Heptachlor	98
Heptachlor epoxide	-
Kepone	-
Methoxychlor	-
Toxaphene	-
PCB	-

* Reagent spike set is used due to matrix interference.

Jeannette Chen April 18, 1991
Jeanette Chen Date
Chemist

ORGANOCHLORINE PESTICIDES and PCBs
EPA METHOD 8080

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA

ELI SAMPLE ID: 9104113-05A
CLIENT SAMPLE ID: * REAGENT SPIKE RECOVERY DUP.

DATE SAMPLED: NA
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: SVG 6
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: NA
DILUTION FACTOR: NA

COMPOUND	SPIKE RECOVERY (%)
Aldrin	68
a-BHC	-
b-BHC	-
d-BHC	-
g-BHC(Lindane)	72
Chlordane	-
p,p'-DDD	-
p,p'-DDE	-
o,p'-DDT	-
p,p'-DDT	61
Dieldrin	62
Endosulfan I	-
Endosulfan II	-
Endosulfan sulfate	-
Endrin	-
Endrin aldehyde	-
Heptachlor	83
Heptachlor epoxide	-
Kepone	-
Methoxychlor	-
Toxaphene	-
PCB	-

* Reagent spike set is used due to matrix interference.

Jeannette Chen April 18, 1991
Jeanette Chen Date
Chemist

AA-99
91-04-113

CH2M HILL QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME	CLIENT ADDRESS AND PHONE NUMBER
SEA31436.A0	Keyes Fibre (Wenatchee)	777 108th Ave N.E. Bellevue Wa. 98004

CLIENT NAME: CH2M HILL

PROJECT MANAGER: Steve Trudell

COPY TO:

REQUESTED COMP. DATE: 4/15/91

SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

ANALYSES REQUESTED: Priority Pollutants Scan

FOR LAB USE ONLY: LAB# / LAB# / PROJECT NO. / ACK / VERIFIED / QUOTE# / BS / NO. OF SAMP / PG / OF

STA NO.	DATE	TIME	COMP	GRAB	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	Priority Pollutants Scan	LAB ID	REMARKS
LD	4/11/91	8:47		X		KF-001-50-10191-XX	2			16 oz, clear glass
LD	"	8:59		X		" -002- " " "	2			4 oz, clear glass

See letter for specific tests!

RUSH 48 hrs

SAMPLED BY AND TITLE	DATE/TIME	RELINQUISHED BY	DATE/TIME
Brett M. Nunn Geologist	4/11/91 10:04	Brett M. Nunn	4/11/91 14:00
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY LAB: [signature]	4/12/91 10:00	SAMPLE SHIPPED VIA: UPS BUS FED-EX (circled) HAND OTHER ____	AIR BILL#

HAZWRAP/NEESA Y N
QC LEVEL 1 2 3
COC / ICE
ANA REQ / TEMP
CUST SEAL / Ph
SAMPLE COND.

REMARKS

ENTERED INTO LIMS ____ COC REVIEWED ____

REV 6/89 FORM 340

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

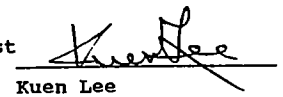
Order No.: 91-04-113 SAMPLE ID: KF-002-SO-10191-XX
CLIENT: CH2MHILL

959-98-8	Endosulfan I	<2000	2000
33213-65-9	Endosulfan II	<2000	2000
72-20-8	Endrin	<2000	2000
72-54-8	4,4'-DDD	<1000	1000
50-29-3	4,4'-DDT	<1000	1000
1031-07-8	Endosulfan sulfate	<2000	2000
57-74-9	Chlorodane	<10000	10000
8001-35-2	Toxaphene	<20000	20000
	PCB	<20000	20000

IV. HAZARDOUS SUBSTANCES LIST

62-53-3	Aniline	<300	300
100-51-6	Benzyl alcohol	<300	300
95-48-7	o-Cresol	<300	300
106-44-5	p-Cresol	<300	300
65-85-0	Benzoic acid	<1600	1600
106-47-8	4-Chloroaniline	<300	300
95-95-4	2,4,5-Trichlorophenol	<1600	1600
88-74-4	2-Nitroaniline	<1600	1600
99-09-2	3-Nitroaniline	<1600	1600
132-64-9	Dibenzofuran	<300	300
100-01-6	4-Nitroaniline	<1600	1600

Higher detection limit is due to matrix interference.

Chemist  04/15/91
Kuen Lee Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT
NA=NOT AVAILABLE

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-03A
FILE ID: BD003
SAMPLE ID: METHOD BLANK

DATE SAMPLED: NA
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 04/12/91
DATE ANALYZED: 04/13/91
INSTRUMENT ID: bna2
MATRIX: NA
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20G
DILUTION FACTOR: 1.00

CAS#	COMPOUND	CONCENTRATION ppb (ug/Kg)	DETECTION LIMIT ppb (ug/Kg)
I. PRIORITY POLLUTANT ACID COMPOUNDS			
108-95-2	Phenol	<150	150
95-57-8	2-Chlorophenol	<150	150
88-75-5	2-Nitrophenol	<150	150
105-67-9	2,4-Dimethylphenol	<150	150
120-83-2	2,4-Dichlorophenol	<150	150
59-50-7	4-Choro-3-methylphenol	<150	150
88-06-2	2,4,6-Trichlorophenol	<150	150
51-28-5	2,4-Dinitrophenol	<800	800
100-02-7	4-Nitrophenol	<800	800
534-52-1	2-Methyl-4,6-Dinitrophenol	<800	800
87-86-5	Pentachlorophenol	<150	150
II. PRIORITY POLLUTANT BASE/NEUTRAL COMPOUNDS			
62-75-9	N-Nitrosodimethylamine	<150	150
111-44-4	Bis(2-Chloroethyl)ether	<150	150
541-73-1	1,3-Dichlorobenzene	<150	150
95-50-1	1,2-Dichlorobenzene	<150	150
106-46-7	1,4-Dichlorobenzene	<150	150
118-74-1	Hexachlorobenzene	<150	150
67-72-1	Hexachloroethane	<150	150
621-64-7	N-Nitrosodi-n-propylamine	<150	150
98-95-3	Nitrobenzene	<150	150
117-84-0	Di-n-octyl phthalate	<150	150
120-82-1	1,2,4-Trichlorobenzene	<150	150
91-20-3	Naphthalene	<150	150
87-68-3	Hexachlorobutadiene	<150	150
91-57-6	2-Methylnaphthalene	<150	150

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

Order No.: 91-04-113 SAMPLE ID: METHOD BLANK
CLIENT: CH2MHILL

77-47-4	Hexachlorocyclopentadiene	<150	150
91-58-7	2-Chloronaphthalene	<150	150
131-11-3	Dimethyl phthalate	<150	150
208-96-8	Acenaphthylene	<150	150
83-32-9	Acenaphthene	<150	150
121-14-2	2,4-Dinitrotoluene	<300	300
606-20-2	2,6-Dinitrotoluene	<300	300
86-73-7	Fluorene	<150	150
84-66-2	Diethyl phthalate	<150	150
7005-72-3	4-Chlorophenyl phenyl ether	<150	150
86-30-6	N-Nitrosodiphenylamine	<300	300
101-55-3	4-Bromophenyl phenyl ether	<150	150
39638-32-9	Bis(2-Chloroisopropyl)ether	<150	150
85-01-8	Phenanthrene	<150	150
120-12-7	Anthracene	<150	150
84-74-2	Di-n-butyl phthalate	<150	150
206-44-0	Fluoranthene	<150	150
92-87-5	Benzidine	<1200	1200
111-91-1	Bis(2-Chloroethoxy)methane	<300	300
129-00-0	Pyrene	<150	150
85-68-7	Butyl benzyl phthalate	<150	150
91-94-1	3,3-Dichlorobenzidine	<300	300
218-01-9	Chrysene	<150	150
56-55-3	Benzo(a)anthracene	<150	150
117-81-7	Bis(2-Ethylhexyl)phthalate	* 1580	1000
207-08-9	Benzo(k)fluoranthene	<150	150
205-99-2	Benzo(b)fluoranthene	<150	150
50-32-8	Benzo(a)pyrene	<150	150
193-39-5	Indeno(1,2,3-cd)pyrene	<150	150
53-70-3	Dibenzo(a,h)anthracene	<150	150
191-24-2	Benzo(g,h,i)perylene	<150	150
78-59-1	Isophorone	<150	150

III. PESTICIDES

319-84-6	a-BHC	<500	500
58-89-9	g-BHC	<500	500
319-85-7	b-BHC	<500	500
319-86-8	d-BHC	<500	500
76-44-8	Heptachlor	<500	500
309-00-2	Aldrin	<500	500
1024-57-3	Heptachlor epoxide	<500	500
60-57-i	Dieldrin	<500	500
72-55-9	4,4'-DDE	<500	500

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

Order No.: 91-04-113 SAMPLE ID: METHOD BLANK
CLIENT: CH2MHILL

959-98-8	Endosulfan I	<1000	1000
33213-65-9	Endosulfan II	<1000	1000
72-20-8	Endrin	<1000	1000
72-54-8	4,4'-DDD	<500	500
50-29-3	4,4'-DDT	<500	500
1031-07-8	Endosulfan sulfate	<1000	1000
57-74-9	Chlorodane	<5000	5000
8001-35-2	Toxaphene	<10000	10000
	PCB	<10000	10000

IV. HAZARDOUS SUBSTANCES LIST

62-53-3	Aniline	<150	150
100-51-6	Benzyl alcohol	<150	150
95-48-7	o-Cresol	<150	150
106-44-5	p-Cresol	<150	150
65-85-0	Benzoic acid	<800	800
106-47-8	4-Chloroaniline	<150	150
95-95-4	2,4,5-Trichlorophenol	<800	800
88-74-4	2-Nitroaniline	<800	800
99-09-2	3-Nitroaniline	<800	800
132-64-9	Dibenzofuran	<150	150
100-01-6	4-Nitroaniline	<800	800

* Due to the contamination of water which was used in blank sample preparation.

Chemist Kuen Lee 04/15/91
Kuen Lee Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT
NA=NOT AVAILABLE

ORGANIC ANALYSIS REPORT
Semi-Volatile Compund, EPA Method 8270

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-04A
FILE ID: BD001
SAMPLE ID: MATRIX SPIKE RECOVERY
KF-001-SO-10191-XX

DATE SAMPLED: NA
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 04/12/91
DATE ANALYZED: 04/13/91
INSTRUMENT ID: bna2
MATRIX: NA
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20G

CAS#	COMPOUND	CONCENTRATION %
I. PRIORITY POLLUTANT ACID COMPOUNDS		
108-95-2	Phenol	89%
95-57-8	2-Chlorophenol	49%
88-75-5	2-Nitrophenol	NA
105-67-9	2,4-Dimethylphenol	NA
120-83-2	2,4-Dichlorophenol	NA
59-50-7	4-Choro-3-methylphenol	78%
88-06-2	2,4,6-Trichlorophenol	NA
51-28-5	2,4-Dinitrophenol	NA
100-02-7	4-Nitrophenol	92%
534-52-1	2-Methyl-4,6-Dinitrophenol	NA
87-86-5	Pentachlorophenol	65%
II. PRIORITY POLLUTANT BASE/NEUTRAL COMPOUNDS		
62-75-9	N-Nitrosodimethylamine	NA
111-44-4	Bis(2-Chloroethyl)ether	NA
541-73-1	1,3-Dichlorobenzene	NA
95-50-1	1,2-Dichlorobenzene	NA
106-46-7	1,4-Dichlorobenzene	46%
118-74-1	Hexachlorobenzene	NA
67-72-1	Hexachloroethane	NA
621-64-7	N-Nitrosodi-n-propylamine	90%
98-95-3	Nitrobenzene	NA
117-84-0	Di-n-octyl phthalate	NA
120-82-1	1,2,4-Trichlorobenzene	75%
91-20-3	Naphthalene	NA
87-68-3	Hexachlorobutadiene	NA
91-57-6	2-Methylnaphthalene	NA

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

Order No.: 91-04-113
CLIENT: CH2MHILL

SAMPLE ID: MATRIX SPIKE RECOVERY
KF-001-SO-10191-XX

77-47-4	Hexachlorocyclopentadiene	NA
91-58-7	2-Chloronaphthalene	NA
131-11-3	Dimethyl phthalate	NA
208-96-8	Acenaphthylene	NA
83-32-9	Acenaphthene	59%
121-14-2	2,4-Dinitrotoluene	64%
606-20-2	2,6-Dinitrotoluene	NA
86-73-7	Fluorene	NA
84-66-2	Diethyl phthalate	NA
7005-72-3	4-Chlorophenyl phenyl ether	NA
86-30-6	N-Nitrosodiphenylamine	NA
101-55-3	4-Bromophenyl phenyl ether	NA
39638-32-9	Bis(2-Chloroisopropyl)ether	NA
85-01-8	Phenanthrene	NA
120-12-7	Anthracene	NA
84-74-2	Di-n-butyl phthalate	NA
206-44-0	Fluoranthene	NA
92-87-5	Benzidine	NA
111-91-1	Bis(2-Chloroethoxy)methane	NA
129-00-0	Pyrene	53%
85-68-7	Butyl benzyl phthalate	NA
91-94-1	3,3-Dichlorobenzidine	NA
218-01-9	Chrysene	NA
56-55-3	Benzo(a)anthracene	NA
117-81-7	Bis(2-Ethylhexyl)phthalate	NA
207-08-9	Benzo(k)fluoranthene	NA
205-99-2	Benzo(b)fluoranthene	NA
50-32-8	Benzo(a)pyrene	NA
193-39-5	Indeno(1,2,3-cd)pyrene	NA
53-70-3	Dibenzo(a,h)anthracene	NA
191-24-2	Benzo(g,h,i)perylene	NA
78-59-1	Isophorone	NA
III. PESTICIDES		
319-84-6	a-BHC	NA
58-89-9	g-BHC	NA
319-85-7	b-BHC	NA
319-86-8	d-BHC	NA
76-44-8	Heptachlor	NA
309-00-2	Aldrin	NA
1024-57-3	Heptachlor epoxide	NA
60-57-1	Dieldrin	NA
72-55-9	4,4'-DDE	NA

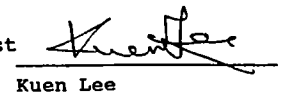
ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

Order No.: 91-04-113 SAMPLE ID: MATRIX SPIKE RECOVERY
CLIENT: CH2MHILL KF-001-SO-10191-XX

959-98-8	Endosulfan I	NA
33213-65-9	Endosulfan II	NA
72-20-8	Endrin	NA
72-54-8	4,4'-DDD	NA
50-29-3	4,4'-DDT	NA
1031-07-8	Endosulfan sulfate	NA
57-74-9	Chlorodane	NA
8001-35-2	Toxaphene	NA
	PCB	NA

IV. HAZARDOUS SUBSTANCES LIST

62-53-3	Aniline	NA
100-51-6	Benzyl alcohol	NA
95-48-7	o-Cresol	NA
106-44-5	p-Cresol	NA
65-85-0	Benzoic acid	NA
106-47-8	4-Chloroaniline	NA
95-95-4	2,4,5-Trichlorophenol	NA
88-74-4	2-Nitroaniline	NA
99-09-2	3-Nitroaniline	NA
132-64-9	Dibenzofuran	NA
100-01-6	4-Nitroaniline	NA

Chemist  04/15/91

Kuen Lee Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT
NA=NOT AVAILABLE

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-05A
FILE ID: BD002
SAMPLE ID: MATRIX SPIKE RECOVERY DUP
KF-001-SO-10191-XX

DATE SAMPLED: NA
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 04/12/91
DATE ANALYZED: 04/13/91
INSTRUMENT ID: bna2
MATRIX: NA
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20G

CAS#	COMPOUND	CONCENTRATION %
I. PRIORITY POLLUTANT ACID COMPOUNDS		
108-95-2	Phenol	92%
95-57-8	2-Chlorophenol	54%
88-75-5	2-Nitrophenol	NA
105-67-9	2,4-Dimethylphenol	NA
120-83-2	2,4-Dichlorophenol	NA
59-50-7	4-Choro-3-methylphenol	69%
88-06-2	2,4,6-Trichlorophenol	NA
51-28-5	2,4-Dinitrophenol	NA
100-02-7	4-Nitrophenol	89%
534-52-1	2-Methyl-4,6-Dinitrophenol	NA
87-86-5	Pentachlorophenol	67%
II. PRIORITY POLLUTANT BASE/NEUTRAL COMPOUNDS		
62-75-9	N-Nitrosodimethylamine	NA
111-44-4	Bis(2-Chloroethyl)ether	NA
541-73-1	1,3-Dichlorobenzene	NA
95-50-1	1,2-Dichlorobenzene	NA
106-46-7	1,4-Dichlorobenzene	55%
118-74-1	Hexachlorobenzene	NA
67-72-1	Hexachloroethane	NA
621-64-7	N-Nitrosodi-n-propylamine	91%
98-95-3	Nitrobenzene	NA
117-84-0	Di-n-octyl phthalate	NA
120-82-1	1,2,4-Trichlorobenzene	72%
91-20-3	Naphthalene	NA
87-68-3	Hexachlorobutadiene	NA
91-57-6	2-Methylnaphthalene	NA

ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

Order No.: 91-04-113 SAMPLE ID: MATRIX SPIKE RECOVERY DUP
CLIENT: CH2MHILL KF-001-SO-10191-XX

77-47-4	Hexachlorocyclopentadiene	NA
91-58-7	2-Chloronaphthalene	NA
131-11-3	Dimethyl phthalate	NA
208-96-8	Acenaphthylene	NA
83-32-9	Acenaphthene	66%
121-14-2	2,4-Dinitrotoluene	68%
606-20-2	2,6-Dinitrotoluene	NA
86-73-7	Fluorene	NA
84-66-2	Diethyl phthalate	NA
7005-72-3	4-Chlorophenyl phenyl ether	NA
86-30-6	N-Nitrosodiphenylamine	NA
101-55-3	4-Bromophenyl phenyl ether	NA
39638-32-9	Bis(2-Chloroisopropyl)ether	NA
85-01-8	Phenanthrene	NA
120-12-7	Anthracene	NA
84-74-2	Di-n-butyl phthalate	NA
206-44-0	Fluoranthene	NA
92-87-5	Benzidine	NA
111-91-1	Bis(2-Chloroethoxy)methane	NA
129-00-0	Pyrene	44%
85-68-7	Butyl benzyl phthalate	NA
91-94-1	3,3-Dichlorobenzidine	NA
218-01-9	Chrysene	NA
56-55-3	Benzo(a)anthracene	NA
117-81-7	Bis(2-Ethylhexyl)phthalate	NA
207-08-9	Benzo(k)fluoranthene	NA
205-99-2	Benzo(b)fluoranthene	NA
50-32-8	Benzo(a)pyrene	NA
193-39-5	Indeno(1,2,3-cd)pyrene	NA
53-70-3	Dibenzo(a,h)anthracene	NA
191-24-2	Benzo(g,h,i)perylene	NA
78-59-1	Isophorone	NA

III. PESTICIDES

319-84-6	a-BHC	NA
58-89-9	g-BHC	NA
319-85-7	b-BHC	NA
319-86-8	d-BHC	NA
76-44-8	Heptachlor	NA
309-00-2	Aldrin	NA
1024-57-3	Heptachlor epoxide	NA
60-57-1	Dieldrin	NA
72-55-9	4,4'-DDE	NA

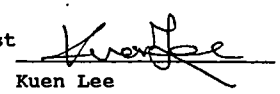
ORGANIC ANALYSIS REPORT
Semi-Volatile Compound, EPA Method 8270

Order No.: 91-04-113 SAMPLE ID: MATRIX SPIKE RECOVERY DUP
CLIENT: CH2MHILL KF-001-SO-10191-XX

959-98-8	Endosulfan I	NA
33213-65-9	Endosulfan II	NA
72-20-8	Endrin	NA
72-54-8	4,4'-DDD	NA
50-29-3	4,4'-DDT	NA
1031-07-8	Endosulfan sulfate	NA
57-74-9	Chlorodane	NA
8001-35-2	Toxaphene	NA
	PCB	NA

IV. HAZARDOUS SUBSTANCES LIST

62-53-3	Aniline	NA
100-51-6	Benzyl alcohol	NA
95-48-7	o-Cresol	NA
106-44-5	p-Cresol	NA
65-85-0	Benzoic acid	NA
106-47-8	4-Chloroaniline	NA
95-95-4	2,4,5-Trichlorophenol	NA
88-74-4	2-Nitroaniline	NA
99-09-2	3-Nitroaniline	NA
132-64-9	Dibenzofuran	NA
100-01-6	4-Nitroaniline	NA

Chemist  04/15/91
Kuen Lee Date

ND=NOT DETECTED AT OR BELOW DETECTION LIMIT
NA=NOT AVAILABLE

ORGANGIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-01A
FILE ID: GD868
SAMPLE ID: KF-001-SO-10191-XX

DATE SAMPLED: 04/11/91
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 04/12/91
DATE ANALYZED: 04/13/91
INSTRUMENT ID: voa2
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 5G
DILUTION FACTOR: 1.00

CAS#	COMPOUND	CONCENTRATION ppb (ug/Kg)	DETECTION LIMIT ppb (ug/Kg)
74-87-3	Chloromethane	<10	10
74-83-9	Bromomethane	<10	10
75-01-4	Vinyl chloride	<10	10
75-00-3	Chloroethane	<10	10
75-09-2	Methylene chloride	<10	10
75-69-4	Trichlorofluoromethane	<5	5
75-35-4	1,1-Dichloroethene	<5	5
75-34-3	1,1-Dichloroethane	<5	5
156-60-5	trans-1,2-Dichloroethene	<5	5
67-66-3	Chloroform	<5	5
107-06-2	1,2-Dichloroethane	<5	5
71-55-6	1,1,1,-Trichloroethane	<5	5
56-23-5	Carbon tetrachloride	<5	5
75-27-4	Bromodichloromethane	<5	5
78-87-5	1,2-Dichloropropane	<5	5
10061-02-6	trans-1,3-Dichloropropene	<5	5
79-01-6	Trichloroethene	<5	5
71-43-2	Benzene	<5	5
124-48-1	Dibromochloromethane	<10	10
79-00-5	1,1,2-Trichloroethane	<5	5
10061-01-5	Cis-1,3-Dichloropropene	<5	5
110-75-8	2-Chloroethyl vinyl ether	<10	10
75-25-2	Bromoform	<5	5
79-34-5	1,1,2,2,-Tetrachloroethane	<5	5
127-18-4	Tetrachloroethene	<5	5
108-88-3	Toluene	<5	5
108-90-7	Chorobenzene	<5	5
100-41-4	Ethylbenzene	<5	5
	Total Xylenes	<5	5
75-15-0	Carbon Disulfide	<5	5

ORGANGIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

Order No.: 91-04-113
CLIENT: CH2MHILL

SAMPLE ID: KF-001-SO-10191-XX

67-64-1	Acetone	13	10
78-93-3	2-Butanone	<5	5
56-23-5	Vinyl Acetate	<5	5
591-78-6	2-Hexanone	<5	5
108-10-1	4-Methyl-2-pentanone	<5	5
100-42-5	Styrene	<5	5
	Total Dichlorobenzene	<5	5

Chemist _____ 04/16/91
Harlan Loui Date

ND=NOT DETECTED AT OR ABOVE DETECTION LIMIT
NA=NOT AVAILABLE

ORGANIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-02A
FILE ID: GD869
SAMPLE ID: KF-002-SO-10191-XX

DATE SAMPLED: 04/11/91
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 04/12/91
DATE ANALYZED: 04/13/91
INSTRUMENT ID: voa2
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 5G
DILUTION FACTOR: 1.00

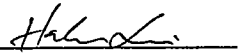
CAS#	COMPOUND	CONCENTRATION ppb (ug/Kg)	DETECTION LIMIT ppb (ug/Kg)
74-87-3	Chloromethane	<10	10
74-83-9	Bromomethane	<10	10
75-01-4	Vinyl chloride	<10	10
75-00-3	Chloroethane	<10	10
75-09-2	Methylene chloride	<10	10
75-69-4	Trichlorofluoromethane	65	5
75-35-4	1,1-Dichloroethene	<5	5
75-34-3	1,1-Dichloroethane	<5	5
156-60-5	trans-1,2-Dichloroethene	<5	5
67-66-3	Chloroform	<5	5
107-06-2	1,2-Dichloroethane	<5	5
71-55-6	1,1,1,-Trichloroethane	<5	5
56-23-5	Carbon tetrachloride	<5	5
75-27-4	Bromodichloromethane	<5	5
78-87-5	1,2-Dichloropropane	<5	5
10061-02-6	trans-1,3-Dichloropropene	<5	5
79-01-6	Trichloroethene	<5	5
71-43-2	Benzene	<5	5
124-48-1	Dibromochloromethane	<10	10
79-00-5	1,1,2-Trichloroethane	<5	5
10061-01-5	Cis-1,3-Dichloropropene	<5	5
110-75-8	2-Chloroethyl vinyl ether	<10	10
75-25-2	Bromoform	<5	5
79-34-5	1,1,2,2,-Tetrachloroethane	<5	5
127-18-4	Tetrachloroethene	<5	5
108-88-3	Toluene	<5	5
108-90-7	Chorobenzene	<5	5
100-41-4	Ethylbenzene	<5	5
	Total Xylenes	<5	5
75-15-0	Carbon Disulfide	<5	5

ORGANIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

Order No.: 91-04-113
CLIENT: CH2MHILL

SAMPLE ID: KF-002-SO-10191-XX

67-64-1	Acetone	<10	10
78-93-3	2-Butanone	<5	5
56-23-5	Vinyl Acetate	<5	5
591-78-6	2-Hexanone	<5	5
108-10-1	4-Methyl-2-pentanone	<5	5
100-42-5	Styrene	<5	5
	Total Dichlorobenzene	<5	5

Chemist  04/16/91

Harlan Loui Date

ND=NOT DETECTED AT OR ABOVE DETECTION LIMIT
NA=NOT AVAILABLE

ORGANGIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-03A
FILE ID: GD848
SAMPLE ID: METHOD BLANK

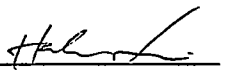
DATE SAMPLED: NA
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 4/12/91
DATE ANALYZED: 04/12/91
INSTRUMENT ID: voa2
MATRIX: NA
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 5G
DILUTION FACTOR: 1.00

CAS#	COMPOUND	CONCENTRATION ppb (ug/Kg)	DETECTION LIMIT ppb (ug/Kg)
74-87-3	Chloromethane	<10	10
74-83-9	Bromomethane	<10	10
75-01-4	Vinyl chloride	<10	10
75-00-3	Chloroethane	<10	10
75-09-2	Methylene chloride	<10	10
75-69-4	Trichlorofluoromethane	<5	5
75-35-4	1,1-Dichloroethene	<5	5
75-34-3	1,1-Dichloroethane	<5	5
156-60-5	trans-1,2-Dichloroethene	<5	5
67-66-3	Chloroform	<5	5
107-06-2	1,2-Dichloroethane	<5	5
71-55-6	1,1,1,-Trichloroethane	<5	5
56-23-5	Carbon tetrachloride	<5	5
75-27-4	Bromodichloromethane	<5	5
78-87-5	1,2-Dichloropropane	<5	5
10061-02-6	trans-1,3-Dichloropropene	<5	5
79-01-6	Trichloroethene	<5	5
71-43-2	Benzene	<5	5
124-48-1	Dibromochloromethane	<10	10
79-00-5	1,1,2-Trichloroethane	<5	5
10061-01-5	Cis-1,3-Dichloropropene	<5	5
110-75-8	2-Chloroethyl vinyl ether	<10	10
75-25-2	Bromoform	<5	5
79-34-5	1,1,2,2,-Tetrachloroethane	<5	5
127-18-4	Tetrachloroethene	<5	5
108-88-3	Toluene	<5	5
108-90-7	Chorobenzene	<5	5
100-41-4	Ethylbenzene	<5	5
	Total Xylenes	<5	5
75-15-0	Carbon Disulfide	<5	5

ORGANGIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

Order No.: 91-04-113 SAMPLE ID: METHOD BLANK
CLIENT: CH2MHILL

67-64-1	Acetone	<10	10
78-93-3	2-Butanone	<5	5
56-23-5	Vinyl Acetate	<5	5
591-78-6	2-Hexanone	<5	5
108-10-1	4-Methyl-2-pentanone	<5	5
100-42-5	Styrene	<5	5
	Total Dichlorobenzene	<5	5

Chemist  04/16/91
Harlan Loui Date

ND=NOT DETECTED AT OR ABOVE DETECTION LIMIT
NA=NOT AVAILABLE

ORGANIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-04A
FILE ID: GD866
SAMPLE ID: MATRIX SPIKE RECOVERY
KF-002-SO-10191-XX

DATE SAMPLED: NA
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 4/12/91
DATE ANALYZED: 04/13/91
INSTRUMENT ID: voa2
MATRIX: NA
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 5G

CAS#	COMPOUND	CONCENTRATION %
74-87-3	Chloromethane	NA
74-83-9	Bromomethane	NA
75-01-4	Vinyl chloride	NA
75-00-3	Chloroethane	NA
75-09-2	Methylene chloride	NA
75-69-4	Trichlorofluoromethane	NA
75-35-4	1,1-Dichloroethene	95%
75-34-3	1,1-Dichloroethane	NA
156-60-5	trans-1,2-Dichloroethene	NA
67-66-3	Chloroform	NA
107-06-2	1,2-Dichloroethane	NA
71-55-6	1,1,1,-Trichloroethane	NA
56-23-5	Carbon tetrachloride	NA
75-27-4	Bromodichloromethane	NA
78-87-5	1,2-Dichloropropane	NA
10061-02-6	trans-1,3-Dichloropropene	NA
79-01-6	Trichloroethene	100%
71-43-2	Benzene	98%
124-48-1	Dibromochloromethane	NA
79-00-5	1,1,2-Trichloroethane	NA
10061-01-5	Cis-1,3-Dichloropropene	NA
110-75-8	2-Chloroethyl vinyl ether	NA
75-25-2	Bromoform	NA
79-34-5	1,1,2,2,-Tetrachloroethane	NA
127-18-4	Tetrachloroethene	NA
108-88-3	Toluene	98%
108-90-7	Chorobenzene	106%
100-41-4	Ethylbenzene	NA
	Total Xylenes	NA
75-15-0	Carbon Disulfide	NA

ORGANIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

Order No.: 91-04-113
CLIENT: CH2MHILL

SAMPLE ID: MATRIX SPIKE RECOVERY
KF-002-SO-10191-XX

67-64-1	Acetone	NA
78-93-3	2-Butanone	NA
56-23-5	Vinyl Acetate	NA
591-78-6	2-Hexanone	NA
108-10-1	4-Methyl-2-pentanone	NA
100-42-5	Styrene	NA
	Total Dichlorobenzene	NA

Chemist  04/16/91

Harlan Loui Date

ND=NOT DETECTED AT OR ABOVE DETECTION LIMIT
NA=NOT AVAILABLE

ORGANGIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-04-113
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9104113-05A
FILE ID: GD867
SAMPLE ID: MATRIX SPIKE RECOVERY DUP
KF-002-SO-10191-XX

DATE SAMPLED: NA
DATE RECEIVED: 04/12/91
DATE EXTRACTED: 4/12/91
DATE ANALYZED: 04/13/91
INSTRUMENT ID: voa2
MATRIX: NA
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 5G

CAS#	COMPOUND	CONCENTRATION %
74-87-3	Chloromethane	NA
74-83-9	Bromomethane	NA
75-01-4	Vinyl chloride	NA
75-00-3	Chloroethane	NA
75-09-2	Methylene chloride	NA
75-69-4	Trichlorofluoromethane	NA
75-35-4	1,1-Dichloroethene	100%
75-34-3	1,1-Dichloroethane	NA
156-60-5	trans-1,2-Dichloroethene	NA
67-66-3	Chloroform	NA
107-06-2	1,2-Dichloroethane	NA
71-55-6	1,1,1,-Trichloroethane	NA
56-23-5	Carbon tetrachloride	NA
75-27-4	Bromodichloromethane	NA
78-87-5	1,2-Dichloropropane	NA
10061-02-6	trans-1,3-Dichloropropene	NA
79-01-6	Trichloroethene	97%
71-43-2	Benzene	101%
124-48-1	Dibromochloromethane	NA
79-00-5	1,1,2-Trichloroethane	NA
10061-01-5	Cis-1,3-Dichloropropene	NA
110-75-8	2-Chloroethyl vinyl ether	NA
75-25-2	Bromoform	NA
79-34-5	1,1,2,2,-Tetrachloroethane	NA
127-18-4	Tetrachloroethene	NA
108-88-3	Toluene	100%
108-90-7	Chorobenzene	102%
100-41-4	Ethylbenzene	NA
	Total Xylenes	NA
75-15-0	Carbon Disulfide	NA

ORGANGIC ANALYSIS REPORT
Volatile Compound, EPA Method 8240

Order No.: 91-04-113
CLIENT: CH2MHILL

SAMPLE ID: MATRIX SPIKE RECOVERY DUP
KF-002-SO-10191-XX

67-64-1	Acetone	NA
78-93-3	2-Butanone	NA
56-23-5	Vinyl Acetate	NA
591-78-6	2-Hexanone	NA
108-10-1	4-Methyl-2-pentanone	NA
100-42-5	Styrene	NA
	Total Dichlorobenzene	NA

Chemist _____ 04/16/91
Harlan Loui Date

ND=NOT DETECTED AT OR ABOVE DETECTION LIMIT
NA=NOT AVAILABLE

METALS
EPA METHOD 6010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
PROJECT#: SEA31436.A0
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA
ELI SAMPLE ID: 9104113-01A
CLIENT SAMPLE ID: KF-001-SO-10191-XX

DATE SAMPLED: 04/11/1991
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: ICAP 9000
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 1g
DILUTION FACTOR: 50

METALS	RESULT [mg/Kg (ppm)]	D/L [mg/Kg (ppm)]
Silver	<0.5	0.5
Beryllium	<0.5	0.5
Cadmium	<1.0	1.0
Chromium	7.4	0.5
Copper	13.7	0.5
Nickel	6.7	1.0
Antimony	<3.0	3.0
Zinc	34.8	0.5

Josie Quiambao April 17, 1991
Josie Quiambao Date
Chemist

METALS
EPA METHOD 6010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
PROJECT#: SEA31436.A0
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA
ELI SAMPLE ID: 9104113-02A
CLIENT SAMPLE ID: KF-002-SO-10191-XX

DATE SAMPLED: 04/11/1991
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: ICAP 9000
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 1g
DILUTION FACTOR: 50

METALS	RESULT [mg/Kg (ppm)]	D/L [mg/Kg (ppm)]
Silver	<0.5	0.5
Beryllium	<0.5	0.5
Cadmium	<1.0	1.0
Chromium	9.5	0.5
Copper	23.3	0.5
Nickel	10.6	1.0
Antimony	<3.0	3.0
Zinc	33.5	0.5

Josie Quiambao April 17, 1991
Josie Quiambao Date
Chemist

METALS
EPA METHOD 6010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
PROJECT#: SEA31436.A0
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA
ELI SAMPLE ID: 9104113-03A
CLIENT SAMPLE ID: METHOD BLANK

DATE SAMPLED: NA
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: ICAP 9000
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 1g
DILUTION FACTOR: 50

METALS	RESULT [mg/Kg (ppm)]	D/L [mg/Kg (ppm)]
Silver	<0.5	0.5
Beryllium	<0.5	0.5
Cadmium	<1.0	1.0
Chromium	<0.5	0.5
Copper	<0.5	0.5
Nickel	<1.0	1.0
Antimony	<3.0	3.0
Zinc	<0.5	0.5

Josie Quiambao — April 17, 1991
Josie Quiambao — Date
Chemist

METALS
EPA METHOD 6010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-04-113
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES FIBRE (WENATCHEE)
PROJECT#: SEA31436.A0
TASK #: NA
P.O. #: NA
SAMPLE LOCATION: NA
FILE ID: NA
ELI SAMPLE ID: 9104113-04A
CLIENT SAMPLE ID: * MATRIX SPIKE RECOVERY

DATE SAMPLED: NA
DATE RECEIVED: 04/12/1991
DATE EXTRACTED: 04/12/1991
DATE ANALYZED: 04/12/1991
INSTRUMENT ID: ICAP 9000
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: NA
DILUTION FACTOR: NA

METALS	SPIKE RECOVERY %
Silver	79
Beryllium	92
Cadmium	84
Chromium	86
Copper	90
Nickel	84
Antimony	86
Zinc	89

* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Josie Quiambao — April 17, 1991
Josie Quiambao — Date
Chemist

EUREKA LABORATORIES, INC.

Corporate Office:
6790 FLORIN PERKINS ROAD
SACRAMENTO, CA 95828
TEL: (916) 381-7953
FAX: (916) 381-4013

Branch Office:
12121 NORTHUP WAY, SUITE 212
BELLEVUE, WA 98005
TEL: (206) 885-0284
FAX: (206) 885-6162

Air Pollution
Chemical Analysis,
Research & Testing
Environmental Studies
Robotics
Toxicology

April 22, 1991

Mr. Steve Trudell
CH2M HILL NORTHWEST, INC.
777 108th Ave. NE, PO Box 91500
Bellevue, WA 98004 (98009-2050)

Reference - Project: KEYES RAILROAD SPUR
Project #: SEA 31436.A0
ELI Order #: W1-04-003

Dear Mr. Trudell:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for nine (9) soil samples for the following analyses:

ANALYSIS	METHOD	SAMPLE ID.
PCB	EPA 8080	KF-014-SO-09391-XX THRU KF-019-SO-09391-XX, KF-025-SO-09391-XX, KF-026-SO-09391-XX, KF-027-SO-09391-DU
Total Recoverable Petroleum Hydrocarbons	EPA 418.1	same as above
TCLP/Metals	EPA 6010	same as above
Ignitability	EPA 1010	same as above
Mercury	EPA 7470	same as above
Arsenic	EPA 7060	same as above
Selenium	EPA 7740	same as above
Purgeable Aromatics	EPA 8020	same as above

Sincerely,
EUREKA LABORATORIES, INC.

By: Shao-Pin Yo
Shao-Pin Yo, Ph.D.
Laboratory Director

SPY/mc
Attachment

PCB
EPA METHOD 8080

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/11/1991
INSTRUMENT ID: SVG 6
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 10g
DILUTION FACTOR: 1

ELI SAMPLE ID	CLIENT SAMPLE ID	CONTENT [mg/Kg (ppm)]	AROCHLOR TYPE
W104003-01A	KF-014-SO-09391-XX	<0.1	
W104003-02A	KF-015-SO-09391-XX	<0.1	
W104003-03A	KF-016-SO-09391-XX	<0.1	
W104003-04A	KF-017-SO-09391-XX	<0.1	
W104003-05A	KF-018-SO-09391-XX	<0.1	
W104003-06A	KF-019-SO-09391-XX	<0.1	
W104003-07A	KF-025-SO-09391-XX	<0.1	
W104003-09A	KF-026-SO-09391-XX	<0.1	
W104003-10A	KF-027-SO-09391-DU	<0.1	
W104003-11A	METHOD BLANK	<0.1	
DETECTION LIMIT [mg/Kg (ppm)] :		0.1	
W104003-12A	KF-017-SO-09391-XX MATRIX SPIKE RECOVERY	95%	AR1260
W104003-13A	KF-017-SO-09391-XX MATRIX SPIKE RECOVERY DUP.	92%	AR1260

Jeanette Chen
Jeanette Chen
Chemist

April 19, 1991
Date

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
EPA METHOD 418.1

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/09/1991
INSTRUMENT ID: FTIR-1
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 25g
DILUTION FACTOR: below

ELI SAMPLE ID	CLIENT SAMPLE ID	CONCENTRATION [mg/Kg (ppm)]	D/L [mg/Kg (ppm)]	DILUTION FACTOR
W104003-01A	KF-014-SO-09391-XX	23600	500 *	125
W104003-02A	KF-015-SO-09391-XX	39700	500 *	125
W104003-03A	KF-016-SO-09391-XX	26100	1000 *	250
W104003-04A	KF-017-SO-09391-XX	9360	500 *	125
W104003-05A	KF-018-SO-09391-XX	31700	1000 *	250
W104003-06A	KF-019-SO-09391-XX	44400	1000 *	250
W104003-07A	KF-025-SO-09391-XX	23800	1000 *	250
W104003-09A	KF-026-SO-09391-XX	15500	1000 *	250
W104003-10A	KF-027-SO-09391-DU	13200	1000 *	250
W104003-11A	METHOD BLANK	<4	4	1.0
W104003-12A	** REAGENT SPIKE RECOVERY	100%		
W104003-13A	** REAGENT SPIKE RECOVERY DUP.	101%		

* Higher detection limit is due to high analyte concentration.
** Reagent spike set is used due to high analyte concentration.

Mark Jefcoat — April 19, 1991
Mark Jefcoat — Date
Chemist

TCLP/METALS
EPA METHOD 6010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-01A
CLIENT SAMPLE ID: KF-014-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/11/1991
INSTRUMENT ID: ICAP 9000
MATRIX: TCLP
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 5ml
DILUTION FACTOR: 10

METALS	RESULT [mg/L (ppm)]	D/L [mg/L (ppm)]
Silver	<0.1	0.1
Barium	0.5	0.2
Cadmium	<0.2	0.2
Chromium	<0.2	0.2
Lead	<0.5	0.5

Josie Quiambao — April 19, 1991
Josie Quiambao — Date
Chemist

TCLP/METALS
EPA METHOD 6010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-02A
CLIENT SAMPLE ID: KF-015-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/11/1991
INSTRUMENT ID: ICAP 9000
MATRIX: TCLP
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 5ml
DILUTION FACTOR: 10

METALS	RESULT [mg/L (ppm)]	D/L [mg/L (ppm)]
Silver	<0.1	0.1
Barium	0.3	0.2
Cadmium	<0.2	0.2
Chromium	<0.2	0.2
Lead	<0.5	0.5

Josie Quiambao April 19, 1991
Chemist Date

TCLP/METALS
EPA METHOD 6010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-03A
CLIENT SAMPLE ID: KF-016-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/11/1991
INSTRUMENT ID: ICAP 9000
MATRIX: TCLP
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 5ml
DILUTION FACTOR: 10

METALS	RESULT [mg/L (ppm)]	D/L [mg/L (ppm)]
Silver	<0.1	0.1
Barium	0.4	0.2
Cadmium	<0.2	0.2
Chromium	<0.2	0.2
Lead	<0.5	0.5

Josie Quiambao April 19, 1991
Chemist Date

TCLP/METALS
EPA METHOD 6010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-13A
CLIENT SAMPLE ID: KF-027-SO-09391-DU MATRIX SPIKE RECOVERY DUP.

DATE SAMPLED: NA
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/11/1991
INSTRUMENT ID: ICAP 9000
MATRIX: TCLP
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: NA
DILUTION FACTOR: NA

METALS	SPIKE RECOVERY %
Silver	86
Barium	88
Cadmium	89
Chromium	82
Lead	90

Josie Quiambao for — April 19, 1991
Josie Quiambao — Date
Chemist

IGNITABILITY
EPA METHOD 1010

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: NA
DATE ANALYZED: 04/09/1991
INSTRUMENT ID: Pensky Marrtens Flash Tester
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 100g
DILUTION FACTOR: 1

ELI SAMPLE ID	CLIENT SAMPLE ID	RESULT TEMP (°F)
W104003-01A	KF-014-SO-09391-XX	120
W104003-01A	KF-014-SO-09391-XX DUP.	123
W104003-02A	KF-015-SO-09391-XX	135
W104003-03A	KF-016-SO-09391-XX	128
W104003-04A	KF-017-SO-09391-XX	130
W104003-05A	KF-018-SO-09391-XX	130
W104003-06A	KF-019-SO-09391-XX	130
W104003-07A	KF-025-SO-09391-XX	135
W104003-09A	KF-026-SO-09391-XX	135
W104003-10A	KF-027-SO-09391-DU	130

April 19, 1991
Ming-Hwa Hwang, Ph.D. — Date
Chemist

MERCURY
EPA METHOD 7470

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/11/1991
INSTRUMENT ID: V 30
MATRIX: TCLP
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 50ml
DILUTION FACTOR: 10

ELI SAMPLE ID	CLIENT SAMPLE ID	UNITS [mg/L (ppm)]
W104003-01A	KF-014-SO-09391-XX	<0.01
W104003-02A	KF-015-SO-09391-XX	<0.01
W104003-03A	KF-016-SO-09391-XX	<0.01
W104003-04A	KF-017-SO-09391-XX	<0.01
W104003-05A	KF-018-SO-09391-XX	<0.01
W104003-06A	KF-019-SO-09391-XX	<0.01
W104003-07A	KF-025-SO-09391-XX	<0.01
W104003-09A	KF-026-SO-09391-XX	<0.01
W104003-10A	KF-027-SO-09391-DU	<0.01
W104003-11A	METHOD BLANK	<0.01
DETECTION LIMIT [mg/L (ppm)] :		0.01
W104003-12A	KF-027-SO-09391-DU MATRIX SPIKE RECOVERY	90%
W104003-13A	KF-027-SO-09391-DU MATRIX SPIKE RECOVERY DUP.	80%

Robert M. Ciampi April 19, 1991
Robert M. Ciampi Date
Chemist

ARSENIC
EPA METHOD 7060

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/09/1991
INSTRUMENT ID: PE 5100
MATRIX: TCLP
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 50ml
DILUTION FACTOR: 10

ELI SAMPLE ID	CLIENT SAMPLE ID	UNITS [mg/L (ppm)]
W104003-01A	KF-014-SO-09391-XX	<0.04
W104003-02A	KF-015-SO-09391-XX	<0.04
W104003-03A	KF-016-SO-09391-XX	<0.04
W104003-04A	KF-017-SO-09391-XX	<0.04
W104003-05A	KF-018-SO-09391-XX	<0.04
W104003-06A	KF-019-SO-09391-XX	<0.04
W104003-07A	KF-025-SO-09391-XX	<0.04
W104003-09A	KF-026-SO-09391-XX	<0.04
W104003-10A	KF-027-SO-09391-DU	<0.04
W104003-11A	METHOD BLANK	<0.04
DETECTION LIMIT [mg/L (ppm)] :		0.04
W104003-12A	* MATRIX SPIKE RECOVERY	83%
W104003-13A	* MATRIX SPIKE RECOVERY DUP.	86%

* This set of matrix spike is from another sample of the same matrix and of the same analytical batch.

Robert M Ciampi April 19, 1991
Robert M. Ciampi Date
Chemist

SELENIUM
EPA METHOD 7740

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/10/1991
INSTRUMENT ID: PE 5100
MATRIX: TCLP
% MOISTURE: NA
REPORT WT: NA
SAMPLE VOL./WT.: 50ml
DILUTION FACTOR: 10

ELI SAMPLE ID	CLIENT SAMPLE ID	UNITS [mg/L (ppm)]
W104003-01A	KF-014-SO-09391-XX	<0.03
W104003-02A	KF-015-SO-09391-XX	<0.03
W104003-03A	KF-016-SO-09391-XX	<0.03
W104003-04A	KF-017-SO-09391-XX	<0.03
W104003-05A	KF-018-SO-09391-XX	<0.03
W104003-06A	KF-019-SO-09391-XX	<0.03
W104003-07A	KF-025-SO-09391-XX	<0.03
W104003-09A	KF-026-SO-09391-XX	<0.03
W104003-10A	KF-027-SO-09391-DU	<0.03
W104003-11A	METHOD BLANK	<0.03
DETECTION LIMIT [mg/L (ppm)] :		0.03
W104003-12A	* REAGENT SPIKE RECOVERY	82%
W104003-13A	* REAGENT SPIKE RECOVERY DUP.	81%

* Reagent spike set is used due to matrix interference.

Robert M. Ciampi April 19, 1991
Robert M. Ciampi Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-11A
CLIENT SAMPLE ID: METHOD BLANK

DATE SAMPLED: NA
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: NA
DILUTION FACTOR: 1

COMP NO.	Compound	ug/Kg (ppb)	D/L
V1	Benzene	< 1	1
V2	Chlorobenzene	< 1	1
V3	1,2-Dichlorobenzene	< 1	1
V4	1,3-Dichlorobenzene	< 1	1
V5	1,4-Dichlorobenzene	< 1	1
V6	Ethyl benzene	< 1	1
V7	Toluene	< 1	1
V8	Xylenes (Dimethyl benzenes)	< 1	1

Lisa Kirkbride for April 19, 1991
Lisa Kirkbride Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-01A
CLIENT SAMPLE ID: KF-014-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20g
DILUTION FACTOR: 1

COMP NO.	Compound	ug/Kg (ppb)	D/L
V1	Benzene	< 1	1
V2	Chlorobenzene	< 1	1
V3	1,2-Dichlorobenzene	< 1	1
V4	1,3-Dichlorobenzene	< 1	1
V5	1,4-Dichlorobenzene	< 1	1
V6	Ethyl benzene	930	1
V7	Toluene	< 1	1
V8	Xylenes (Dimethyl benzenes)	800	1

Note : All positively identified compounds were second column confirmed.

April 19, 1991
Lisa Kirkbride Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-02A
CLIENT SAMPLE ID: KF-015-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20g
DILUTION FACTOR: 1

COMP NO.	Compound	ug/Kg (ppb)	D/L
V1	Benzene	< 1	1
V2	Chlorobenzene	< 1	1
V3	1,2-Dichlorobenzene	< 1	1
V4	1,3-Dichlorobenzene	< 1	1
V5	1,4-Dichlorobenzene	< 1	1
V6	Ethyl benzene	1240	1
V7	Toluene	< 1	1
V8	Xylenes (Dimethyl benzenes)	1170	1

Note : All positively identified compounds were second column confirmed.

April 19, 1991
Lisa Kirkbride Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-03A
CLIENT SAMPLE ID: KF-016-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20g
DILUTION FACTOR: 1

COMP NO.	Compound	ug/Kg (ppb)	D/L
V1	Benzene	< 1	1
V2	Chlorobenzene	< 1	1
V3	1,2-Dichlorobenzene	< 1	1
V4	1,3-Dichlorobenzene	< 1	1
V5	1,4-Dichlorobenzene	< 1	1
V6	Ethyl benzene	1040	1
V7	Toluene	< 1	1
V8	Xylenes (Dimethyl benzenes)	1380	1

Note : All positively identified compounds were second column confirmed.

April 19, 1991
Lisa Kirkbride Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-04A
CLIENT SAMPLE ID: KF-017-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20g
DILUTION FACTOR: 1

COMP NO.	Compound	ug/Kg (ppb)	D/L
V1	Benzene	< 1	1
V2	Chlorobenzene	< 1	1
V3	1,2-Dichlorobenzene	< 1	1
V4	1,3-Dichlorobenzene	< 1	1
V5	1,4-Dichlorobenzene	< 1	1
V6	Ethyl benzene	4	1
V7	Toluene	< 1	1
V8	Xylenes (Dimethyl benzenes)	6	1

Note : All positively identified compounds were second column confirmed.

April 19, 1991
Lisa Kirkbride Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-05A
CLIENT SAMPLE ID: KF-018-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20g
DILUTION FACTOR: 1

COMP NO.	Compound	ug/Kg (ppb)	D/L
V1	Benzene	< 1	1
V2	Chlorobenzene	< 1	1
V3	1,2-Dichlorobenzene	< 1	1
V4	1,3-Dichlorobenzene	< 1	1
V5	1,4-Dichlorobenzene	< 1	1
V6	Ethyl benzene	37	1
V7	Toluene	< 1	1
V8	Xylenes (Dimethyl benzenes)	82	1

Note : All positively identified compounds were second column confirmed.

Lisa Kirkbride for April 19, 1991
Chemist Date

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-06A
CLIENT SAMPLE ID: KF-019-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20g
DILUTION FACTOR: 1

COMP NO.	Compound	ug/Kg (ppb)	D/L
V1	Benzene	< 1	1
V2	Chlorobenzene	< 1	1
V3	1,2-Dichlorobenzene	< 1	1
V4	1,3-Dichlorobenzene	< 1	1
V5	1,4-Dichlorobenzene	< 1	1
V6	Ethyl benzene	15	1
V7	Toluene	< 1	1
V8	Xylenes (Dimethyl benzenes)	37	1

Note : All positively identified compounds were second column confirmed.

Lisa Kirkbride for April 19, 1991
Chemist Date

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-07A
CLIENT SAMPLE ID: KF-025-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 2g
DILUTION FACTOR: 10

COMP NO.	Compound	ug/Kg (ppb)	D/L *
V1	Benzene	< 10	10
V2	Chlorobenzene	< 10	10
V3	1,2-Dichlorobenzene	< 10	10
V4	1,3-Dichlorobenzene	< 10	10
V5	1,4-Dichlorobenzene	< 10	10
V6	Ethyl benzene	1720	10
V7	Toluene	< 10	10
V8	Xylenes (Dimethyl benzenes)	2000	10

Note : All positively identified compounds were second column confirmed.

* Higher detection limit is due to matrix interference.

April 19, 1991
Lisa Kirkbride Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-09A
CLIENT SAMPLE ID: KF-026-SO-09391-XX

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20g
DILUTION FACTOR: 1

COMP NO.	Compound	ug/Kg (ppb)	D/L
V1	Benzene	< 1	1
V2	Chlorobenzene	< 1	1
V3	1,2-Dichlorobenzene	< 1	1
V4	1,3-Dichlorobenzene	< 1	1
V5	1,4-Dichlorobenzene	< 1	1
V6	Ethyl benzene	11	1
V7	Toluene	< 1	1
V8	Xylenes (Dimethyl benzenes)	27	1

Note : All positively identified compounds were second column confirmed.

April 19, 1991
Lisa Kirkbride Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-10A
CLIENT SAMPLE ID: KF-027-SO-09391-DU

DATE SAMPLED: 04/03/1991
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 20g
DILUTION FACTOR: 1

COMP NO.	Compound	ug/Kg (ppb)	D/L
V1	Benzene	< 1	1
V2	Chlorobenzene	< 1	1
V3	1,2-Dichlorobenzene	< 1	1
V4	1,3-Dichlorobenzene	< 1	1
V5	1,4-Dichlorobenzene	< 1	1
V6	Ethyl benzene	8	1
V7	Toluene	< 1	1
V8	Xylenes (Dimethyl benzenes)	22	1

Note : All positively identified compounds were second column confirmed.

April 19, 1991
Lisa Kirkbride Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL
CONTRACT #: NA
PROJECT: KEYES RAILROAD SPUR
PROJECT #: SEA 31436.A0
TASK #: NA
P.O. #: NA
FILE ID: NA
SAMPLE LOCATION: NA
ELI SAMPLE ID: W104003-12A
CLIENT SAMPLE ID: * REAGENT SPIKE RECOVERY

DATE SAMPLED: NA
DATE RECEIVED: 04/04/1991
DATE EXTRACTED: 04/08/1991
DATE ANALYZED: 04/08/1991
INSTRUMENT ID: VG 4
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: NA
DILUTION FACTOR: NA

COMP NO.	Compound	Spike Recovery %
V1	Benzene	86
V2	Chlorobenzene	89
V3	1,2-Dichlorobenzene	108
V4	1,3-Dichlorobenzene	88
V5	1,4-Dichlorobenzene	96
V6	Ethyl benzene	87
V7	Toluene	91
V8	Xylenes (Dimethyl benzenes)	94

* Reagent spike set is used due to matrix interference.

April 19, 1991
Lisa Kirkbride Date
Chemist

PURGEABLE AROMATICS
EPA METHOD 8020

EUREKA LABORATORIES, INC
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: W1-04-003
Hazardous Waste Testing
Certification: E765

CLIENT: CH2M HILL	DATE SAMPLED: NA
CONTRACT #: NA	DATE RECEIVED: 04/04/1991
PROJECT: KEYES RAILROAD SPUR	DATE EXTRACTED: 04/08/1991
PROJECT #: SEA 31436.A0	DATE ANALYZED: 04/08/1991
TASK #: NA	INSTRUMENT ID: VG 4
P.O. #: NA	MATRIX: SOIL
FILE ID: NA	% MOISTURE: NA
SAMPLE LOCATION: NA	REPORT WT: WET
ELI SAMPLE ID: W104003-13A	SAMPLE VOL./WT.: NA
CLIENT SAMPLE ID: * REAGENT SPIKE RECOVERY DUP.	DILUTION FACTOR: NA

COMP NO.	Compound	Spike Recovery %
V1	Benzene	78
V2	Chlorobenzene	82
V3	1,2-Dichlorobenzene	103
V4	1,3-Dichlorobenzene	82
V5	1,4-Dichlorobenzene	89
V6	Ethyl benzene	81
V7	Toluene	92
V8	Xylenes (Dimethyl benzenes)	89

* Reagent spike set is used due to matrix interference.

Lisa Kirkbride April 19, 1991
Lisa Kirkbride Date
Chemist

CHAIN OF CUSTODY RECORD

PROJECT NUMBER: SEA 31436.A0 | PROJECT NAME: Railroad Spur
CLIENT NAME: Keyes Fibre
PROJECT MANAGER: Steve Trudell | COPY TO: Brett Nunn
REQUESTED COMP. DATE: 4/17/91 | SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ☐

CLIENT ADDRESS AND PHONE NUMBER: Keyes Fibre Wilmington
ANALYSES REQUESTED: TPH 418.1 / BTEX / PCB 8082 / TCLP Metals / Flash Point

FOR LAB USE ONLY: LAB# 91-04-005

STA NO.	DATE	TIME	GRAB	COMP	# OF CONTAINERS	SAMPLE DESCRIPTIONS (12 CHARACTERS)	LAB ID	REMARKS
S.P.	4/3/91	0943	X		1	KF-04-SO-04341-XX	#1	
		1351	X		1	KF-05-SO-04341-XX	#2	
		1355	X		1	KF-06-SO-04341-XX	#3	
		1359	X		1	KF-02-SO-04341-XX	#4	
		1409	X		1	KF-018-SO-04341-XX	#5	
		1411	X		1	KF-04-SO-04341-XX	#6	
		1415	X		1	KF-025-SO-04341-XX	#7	
		1427	X		1	KF-026-SO-04341-XX	#8	
↓	↓	1472	X		1	KF-027-SO-04341-DU	#9	Please Bill Directly To Keyes Fibre P.O.#
								N.T.A.T.

SAMPLED BY AND TITLE: Joseph A. Bansemer | DATE/TIME: 4/3/91 / 1440 | RELINQUISHED BY: Joseph A. Bansemer | DATE/TIME: 4/4/91 / 1450
RECEIVED BY: | DATE/TIME: | RELINQUISHED BY: | DATE/TIME: 4/4/91 / 1445
RECEIVED BY: | DATE/TIME: 4/4/91 / 1450 | RELINQUISHED BY: | DATE/TIME:
RECEIVED BY LAB: | DATE/TIME: 4/4/91 10:20 | SAMPLE SHIPPED VIA: UPS BUS FEED-EX HAND OTHER | AIR BILL#
REMARKS: SOIL ANALYSIS RESULTS | TO: CH2M HILL P.O. Box 91500 Bellevue, WA 98009-2050 ATTN: STEVE TRUDELL

HAZWRAP/NEESA Y N | QC LEVEL 1 2 3 | COC | ANA REQ | CUST SEAL | SAMPLE COND. | ICE | TEMP | Ph
ENTERED INTO LIMS | COC REVIEWED

REV 6/89 FORM 340

APPENDIX E
Sampling and Analysis Plan
May 1991 Sampling Event

SAMPLING AND ANALYSIS PLAN FOR RAILROAD/LOADING DOCK AND FORMER OIL SHED AREAS

Prepared for

KEYES FIBRE COMPANY
WENATCHEE, WASHINGTON

Prepared

by

CH2M HILL
May 1991

Section 1
INTRODUCTION

Keyes Fibre's Wenatchee plant, located north of Wenatchee on the east side of the Chelan Highway (Figure 1) processes used paper and manufactures it into packing trays for apples and other fruit. Keyes plans to expand the plant and this, in part, will involve the railroad spur/loading dock area at the rear (east side) of the main building. Soils in this area exhibit staining by oily substances. A second area of stained soils is present at the location of a former oil storage shed near the southeast corner of the main building.

Results of preliminary sampling and analysis indicated that the stained soils contain concentrations of petroleum hydrocarbons that are above those considered acceptable by the Washington State Department of Ecology (Ecology). Results for the flash point, metals (by the toxicity characteristic leaching procedure; TCLP), and polychlorinated biphenyls (PCBs) analyses were below regulatory limits.

Because of the presence of the oily substances, Keyes sought to remove and dispose of the stained soils prior to beginning sitework for the plant expansion. During initial cleanup efforts, it was discovered that the oil-stained soils extend an undetermined distance under the building, and so additional soil sampling and analysis is necessary to attempt to better define the extent of the oily soils. The information gained from these activities will be used to assess the need for, and scope of, possible further actions.

sea7910/026.51

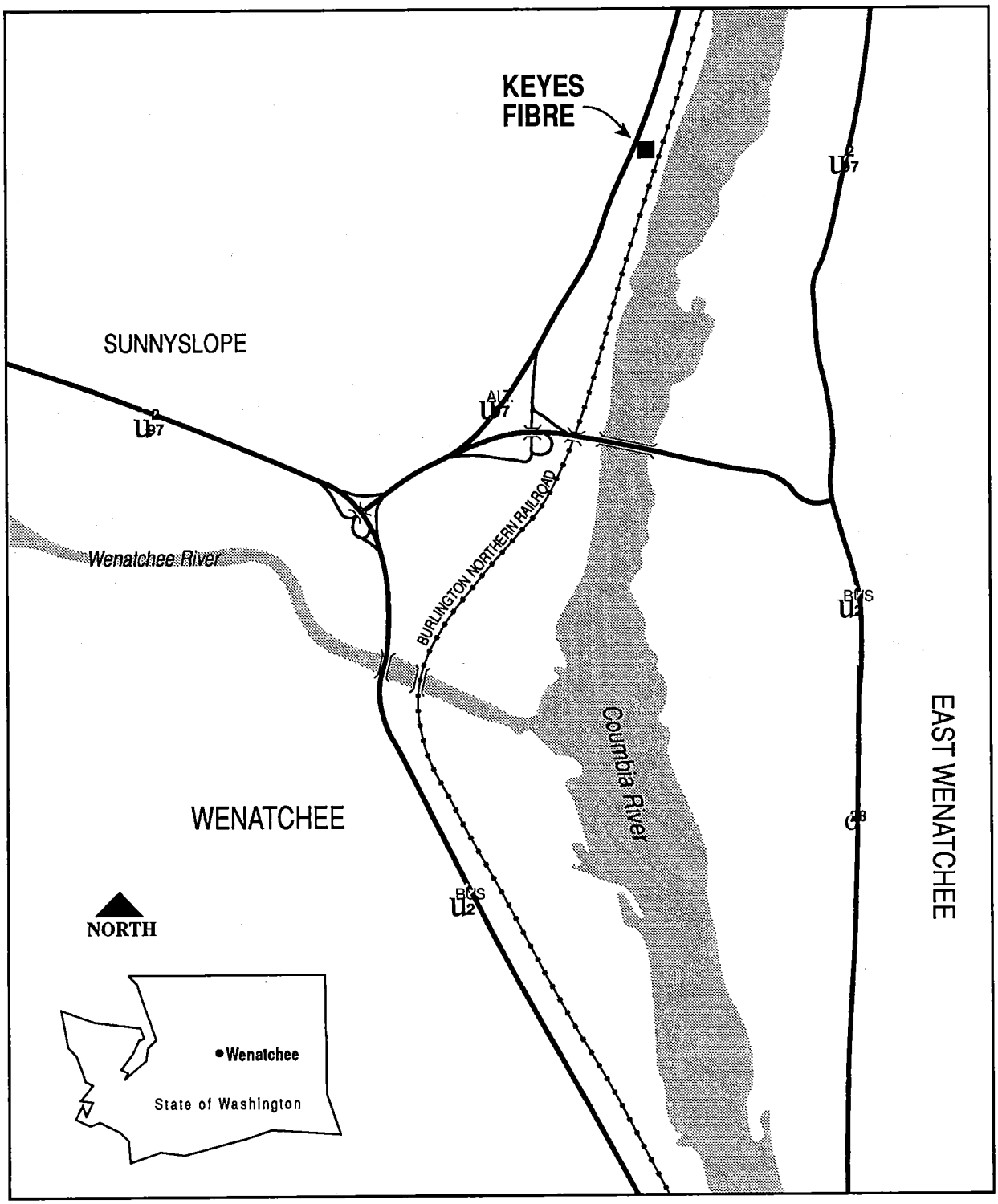


Figure 1
VICINITY MAP
Keyes Fibre Company
Wenatchee, Washington

Section 2
PROJECT ORGANIZATION

Keyes Fibre has retained several contractors to perform the sampling and analysis activities. CH2M HILL will provide technical guidance, overall coordination, sample handling, onsite chemical analysis, and documentation activities. Two drilling contractors will drill the borings and collect the downhole samples. They will report contractually to Keyes Fibre, but work under the technical guidance of CH2M HILL. A local contractor will provide concrete-cutting services in the same fashion. Offsite chemical analyses will be performed by commercial laboratories under contract to Keyes. Payne Riemer Group will provide an onsite observer on Keyes's behalf.

Prior to mobilizing for the work, a kickoff meeting will be held at the site to discuss the sampling program and resolve any outstanding issues. Topics at this meeting will include such things as:

- Project background
- Goals and objectives
- Reporting relationships and communication chain
- Coordination of sampling activities with ongoing plant operations
- Control of contacts with public or agency representatives
- Specific project procedures
- Environmental protection measures
- Site safety and security
- Estimated project time frame
- Site restoration

After the meeting, the drillers will mobilize and work will begin.

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Section 3
SAMPLING AND ANALYSIS

SAMPLING OBJECTIVE

The objective of the planned sampling and analysis program is to further delineate the extent of the oily soils in the railroad/loading dock and former oil shed areas. Particular attention will be paid to the area beneath the existing plant building.

SAMPLING SCHEME AND RATIONALE

Approximately 88 soil samples are planned to be collected from (tentatively) 11 borings drilled both inside (4 borings) and outside (7 borings) the plant building. Tentative locations for the borings are shown in Figure 2; actual numbers and locations will be determined in the field on the basis of access and evaluation of information obtained from each new boring as it is installed. For planning purposes, it has been assumed that the borings would extend to depths of approximately 20 feet below ground surface. In practice, they will be terminated after a continuous 2-foot interval of soil with TPH level less than 200 mg/kg has been encountered, at the depth of refusal, or at the effective limit of the rig. Soil samples will be collected at approximately 2.5-foot intervals.

The soil samples will be analyzed for TPH content in an onsite laboratory set up for this project. After onsite analysis, approximately 10 percent of the samples will be sent to an offsite commercial laboratory for further analysis. The results of the offsite analyses will be used in evaluating the results of the onsite analyses.

Locations of the borings will be recorded in the field logbook for future reference. They will also be documented with photographs.

SAMPLE DESIGNATION

Each sample collected will be designated by a unique alphanumeric identifier ("sample number") according to the following scheme:

KF-B12-345-67891-AB

where:

KF = Two-letter site code ("Keyes Fibre")

B12 = Boring number (use a zero as a placeholder where necessary, e.g., B01, B07)

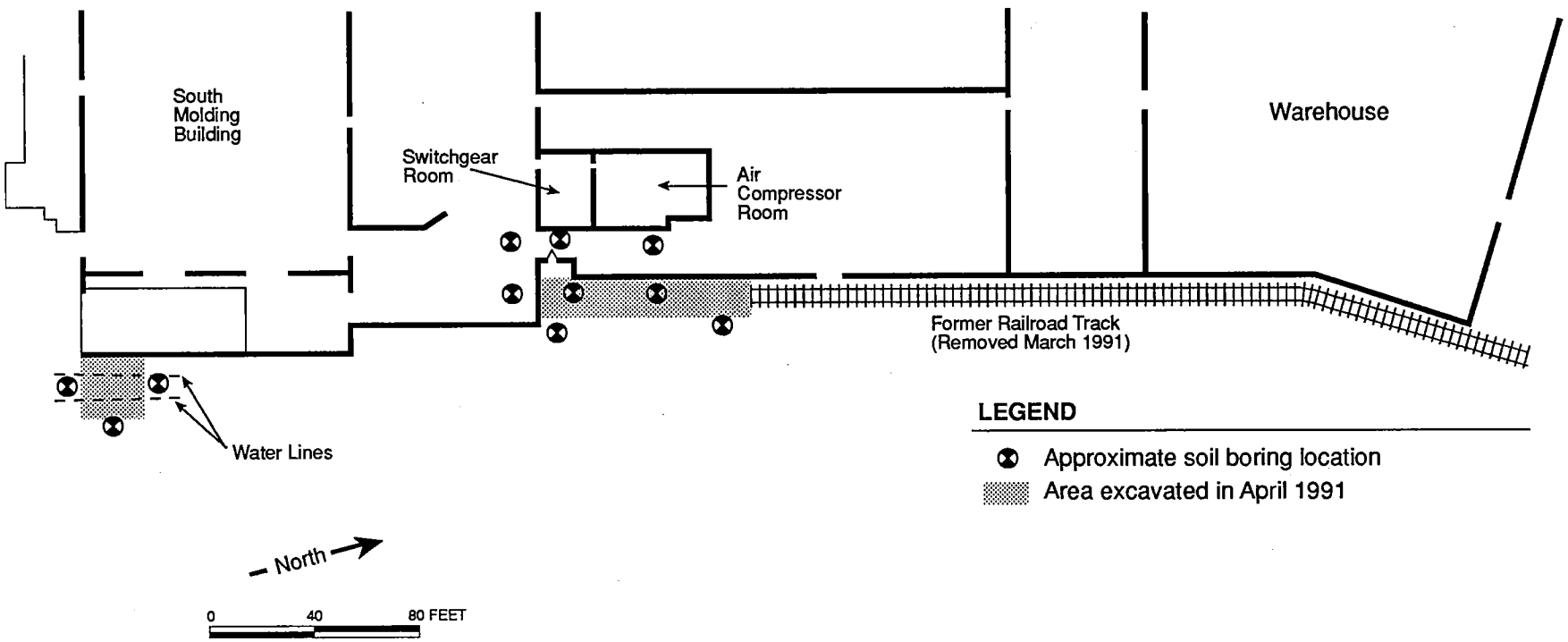

FIGURE 2
TENATIVE LOCATIONS FOR SOIL BORINGS
Keyes Fibre Company
Wenatchee, Washington

CH2MHILL

345 = Depth (in inches) of top of sample interval (use zeroes as placeholders where necessary)

67891 = Five-digit date where 678 represents the sequential number of the day of the year (001 through 366), and 91 represents the last two digits of the year

AB = Quality control or composite sample code, from the following:

TB	=	Trip blank (None planned)
FB	=	Field blank (None planned)
EB	=	Equipment blank
FS	=	Field spike (None planned)
DU	=	Duplicate
CO	=	Composite (None planned)
XX	=	Not QC or composite sample

SAMPLING PROCEDURES AND EQUIPMENT

Drilling

Borings will be drilled using hollow-stem auger rigs. A standard-sized rig will be used for the borings outside the plant. A smaller rig will be used inside because standard-sized rigs cannot enter and work within the building. After sampling has been completed, borings will be abandoned in accordance with state requirements.

Sample Collection

Samples will be collected using a split-spoon sampler driven ahead of the auger bit. After the sampler has been retrieved from the hole, it will be placed on a clean surface and opened by the CH2M HILL geologist or sampling assistant. If the material is relatively consolidated, it will be split lengthwise using a decontaminated stainless steel knife to facilitate observation for geologic description.

After the sample has been logged, some or all of the material will be placed into a sample container, depending on the volume of material obtained in the sample.

Decontamination Procedures

The following procedures will be used to restrict the movement of potentially contaminated materials into noncontaminated areas and to reduce the potential for the samples collected during this investigation to be exposed to contamination from other materials or the sampling equipment.

Drilling Equipment. The drill rigs will be steam cleaned or pressure washed upon entering the site, after each boring, and after completion of the work prior to leaving the site. Between borings, only those pieces of equipment or portions of the rig that could contact the borehole or the samples need be cleaned.

Sampling Equipment. Field equipment that could contact the samples or sample containers will be cleaned prior to each use and upon completion of sampling by:

1. Washing in a detergent solution (trisodium phosphate (TSP) or a comparable nonphosphate product) with an added wetting agent

2. Rinsing with tap water

3. Rinsing with deionized water

4. Spray rinsing with spectra-grade isopropyl alcohol

5. Final spray rinsing with deionized water

Rinsate will be retained, analyzed if necessary, and disposed of in an appropriate manner.

Sample Containers. All sample containers will be precleaned by the analytical laboratory or other commercial source from which they are obtained.

Workers and Personal Protective Equipment. It is anticipated that most or all of the work will be conducted in Level D protection (see Section 5). Level D includes tyvek or cotton coveralls, steel-toed neoprene boots or disposable boot covers, outer neoprene gloves, latex inner gloves, hardhat, and safety glasses. Personnel decontamination procedures for Level D includes the following steps:

1. Remove disposable boot covers (if worn) and place in a plastic bag or 55-gallon drum for later disposal

2. Wash visible soil from neoprene boots, using tap water and TSP; rinse boots with tap water

3. Remove boots

4. Remove outer gloves and discard in plastic bag or drum

5. Remove disposable coveralls and place in plastic bag or drum

6. Remove disposable inner gloves and discard in plastic bag or drum

7. Wash hands thoroughly with soap and water and then wash face

SAMPLE HANDLING AND ANALYSIS

1. The collected samples will be observed visually for obvious indications of contamination and any such indications will be recorded in the field notebook.

2. A volume of soil sufficient for analytical and, where appropriate, QA purposes will be placed in a precleaned sample jar (following compositing where applicable) using a precleaned stainless steel scoop or spoon.

3. The sample jar will be checked to be sure that the liner is in place. The cap will be tightened and a sample label will be filled out with waterproof ink, firmly affixed to the sample bottle, and then covered with clear plastic tape.

4. The sample label will include the site name, sample number, date and time (24-hour clock) collected, name of sample collector, and analyses requested. The label will be filled out prior to collection to reduce handling of the sample jar.

5. For each sample, the following information will be recorded in the field notebook: sample number, date and time of sample collection, type of sample, sampling method, description of noteworthy physical characteristics of the sample, field observations, and disposition of the sample.

6. Immediately after collection and labelling, the samples for chemical analysis will be placed in a refrigerator to await analysis.

WASTE HANDLING

Soil Cuttings

The soil cuttings from the borings will be stockpiled on plastic sheeting at the site, and the pile will be covered with plastic sheeting and weights pending receipt of the analytical results. The pile will be surrounded with hay bales or berms for runoff control and temporary fencing or barricades to restrict access. After receipt of the analytical results, options for disposal of the materials will be evaluated.

Decontamination Fluids

Fluids generated during decontamination of equipment and personnel will be retained at the site in plastic-lined steel drums pending receipt of the analytical results from the soil sampling. The drums will be clearly labelled to indicate their contents and the date

they were filled. After evaluation of the soil sampling results, the fluids will be analyzed, if necessary, and disposed of in the plant's wastewater treatment system or at an approved waste management facility, as appropriate.

Personal Protective Equipment

Disposable materials used during the sampling, such as coveralls, booties, and gloves, will be placed in double-lined plastic bags and retained in plastic-lined steel drums for disposal by Keyes. The drums will be clearly labelled to indicate their contents and the date they were filled.

FIELD DOCUMENTATION

A bound field logbook will be used to record sampling and site information pertinent to the investigation. Information to be recorded in the field logbook specific to the soil and waste sampling will include:

- Project name
- Date (start and finish) of sampling
- Sample number, location, depth, and time collected
- Sampling method
- Sample description
- Depth to water, if encountered
- Remarks on weather, site conditions, and daily activities

All logbook entries will be made with indelible ink. Any corrections will be made by striking out the incorrect entry with a single line such that the original entry is still legible. The person making the correction will also initial and date the crossed-out entry. The correct entry will then be made near the crossed-out entry.

Progress of the work, sampling locations, and other appropriate information will also be documented by photographs. These will be captioned directly and/or keyed to a log sheet to explain them.

CHAIN-OF CUSTODY PROCEDURES

The following chain-of-custody procedures will be used to maintain and document sample possession, handling, and shipping procedures and, in general, to identify and promote the traceability of the collected samples. Custody procedures will trace the samples from collection, through any custody transfers, and finally to the analytical laboratory where their internal procedures will take over until final disposition of the samples.

Custody

A sample will be considered under a person's custody if it is:

- In his/her possession
- In her/his view after being in her/his possession
- Locked up after being in his/her possession
- In a designated secure area

Field Custody Procedures

- To the extent possible, the types and numbers of samples to be collected and the sampling locations will be established prior to going to the field.

- As few persons as possible will handle the samples.

- The field sampler will retain personal custody of the samples until they are properly transferred or delivered.

- Sample labels will be filled out for each sample, using indelible ink.

Transfer of Custody and Shipment

- All samples will be accompanied by a chain-of-custody record from the time they are collected until they are received at the laboratory. When transferring possession of the samples, the individuals relinquishing and receiving them will sign, date, and note the time on the record.

- Each container of samples shipped offsite will have its own chain-of-custody record, and the containers will be sealed and, if transported by a commercial delivery service, padlocked. The original record will accompany the samples and the field team will retain a copy for the project files.

- If transferred to the offsite laboratory by a commercial delivery service, the freight bill will be retained for the files; if sent by mail, the shipment will be registered with return receipt requested. If delivered directly to the laboratory by the field team, this will be noted on the record.

- The analytical laboratory will have a designated sample custodian to implement a system for controlling samples. This will include accepting custody of arriving samples, verifying that the information on the sample labels matches that on the chain-of-custody record, assigning unique laboratory sample numbers, and distributing the samples to storage and the appropriate analysts.

- After sample analyses and necessary QC checks have been completed, the unused portions of the samples will be returned to Keyes or disposed of properly by the laboratory. All sample labels, data sheets, and laboratory records will be retained as part of the project documentation.

ANALYTICAL METHODS

EPA Method 418.1 (modified) will be used to analyze the samples for concentration of total petroleum hydrocarbons.

CALIBRATION PROCEDURES AND PREVENTIVE MAINTENANCE

All equipment will be maintained and calibrated according to manufacturers' instructions at the specified time intervals or more frequently if improper operation is suspected.

Calibrated equipment will be identified by means of an identification number such as the manufacturer's serial number. A label with the identification number and the date when the next calibration is due will be attached to the equipment. If this is not possible, records traceable to the particular equipment will be available in the packing case or box. The results of calibrations and records of repairs will be maintained in the field logbook.

Equipment that fails calibration or fails to operate properly will be removed from service, tagged to indicate its condition, and segregated from the operational equipment. Such equipment will be repaired and recalibrated if possible; if not, it will be replaced.

DATA REVIEW, REDUCTION, AND REPORTING

The analytical data will be reviewed to provide an objective assessment of the level of uncertainty associated with them. This will involve reviewing the results with respect to field and laboratory QC samples (blanks and duplicates), spike recoveries, detection limits achieved, holding times, and instrument calibrations.

After review, the data will be reduced to tabular and graphical formats, if necessary, for interpretation. After the data have been interpreted, a brief description of the sampling conducted and its results will be prepared and submitted to Keyes as part of the summary report.

INTERNAL QUALITY CONTROL

The following internal field and laboratory quality control methods will be implemented.

Field Activities

One duplicate sample will be collected for every 20 samples or each set less than 20 samples. The field identification numbers of the duplicate samples will include the appropriate QC code, but otherwise the duplicates will not be identified to the onsite or offsite laboratories as such.

Laboratory Activities

Calibration standards, solvent and reagent blanks, replicates, spikes, and control charts will be used as specified in the method description.

PERFORMANCE AND SYSTEMS AUDITS

If requested by Keyes, performance of QC procedures will be monitored and audited by a person not otherwise involved in the project. An audit of the field work in progress would evaluate the execution of sample identification, sample control, chain-of-custody procedures, field documentation, instrument calibration, and field measurement and sampling operations. The evaluation would be based on the extent to which the applicable procedures as set forth in the project plans are being followed.

Field documents pertaining to sample identification and control would be examined for completeness and accuracy, to see that all entries are dated and signed, and that the contents are legible, written in ink, and contain accurate and inclusive documentation of project activities. The auditor also would check to see that chain-of-custody procedures are being followed and that samples were being kept in custody at all times.

Sampling operations would be evaluated to assess whether they are being performed as stated in the SAP or as directed by the project manager. The auditor would check to see that the appropriate number of samples were being collected, samples were placed in proper containers, and proper preservation, packaging, and shipment protocols were being followed.

Field measurement activities would be evaluated to assess whether they were being performed according to SAP guidelines. The auditor would spot check various instruments for proper calibration procedures and frequency.

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Section 4
SCHEDULE

It is estimated that the work will take approximately 6 weeks to complete. The actual schedule could be different from that depending on how many borings ultimately are drilled, the depth to which the borings are advanced, how fast the borings can be advanced, and the ease with which samples can be collected.

The number and depth of borings eventually needed will be determined, in large part, by the information gleaned from the early borings and is likely to differ from the number and depth assumed for planning purposes. It is difficult to predict the ease and speed with which the borings can be completed. Based on our observation of abundant cobbles in the materials through which the drilling will be conducted and reports from plant personnel of past drilling difficulties onsite, it can be inferred that drilling will be difficult. This is more likely to be true for the smaller rig needed for access within the plant building because it has less power than a typical standard-sized rig.

The work will be expedited to the extent practicable and consistent with maintaining an appropriate level of quality to avoid delaying initiation of the plant expansion project.

sea7910/029.51

Section 5
SITE SAFETY CONSIDERATIONS

This section includes a general description of potential site hazards and some of the measures that could be used to protect onsite workers and the public from them. CH2M HILL will provide a site safety plan for its personnel; the safety of other persons onsite will be their own responsibility or that of their employer.

POTENTIAL SITE HAZARDS

Currently available information about the site indicates that there is potential for physical and chemical hazards to exist. Although the potential risks from these hazards appear to be relatively low, the site has not been well characterized and so a conservative approach to health and safety considerations should be taken. This will involve assuming that hazards exist, being prepared to mitigate them, and monitoring conditions during the work to allow timely implementation of mitigative measures should the monitoring indicate they are necessary.

The types of hazards that could be present at the waste disposal site during the remedial action include:

- Physical hazards: An open excavation, heavy construction equipment and vehicles, possible cold weather
- Chemical hazards: Petroleum-contaminated soils, petroleum fuels for construction equipment, solvents for decontamination of sampling equipment, laboratory reagents

GENERAL SAFETY CONSIDERATIONS

- Start at Level D personal protection
- Use proper decontamination procedures (see Section 3)
- Use proper personal hygiene procedures
- Use water sprays if necessary to reduce dust
- Use equipment such as an Hnu or OVA for monitoring for the possible presence of organic compounds
- Keep stockpiled cuttings covered and fenced or cordoned off

- Provide warning signs
- Restrict public access

sea7910/030.51

APPENDIX F
Description of CH2M HILL Close Support Laboratory Analytical Method for TPH

CSL METHOD: TPH/SOIL/FREON EXT/IR

CLOSE SUPPORT LABORATORY (CSL) METHOD FOR ANALYSIS OF TOTAL PETROLEUM HYDROCARBONS (TPH)

TARGET CONSTITUENTS

Petroleum Hydrocarbons

SAMPLE MATRIX

Soil or Sediments

SAMPLE PREPARATION

Acidification, Chemical Drying, Freon Extraction

INSTRUMENTAL METHOD

Infrared Spectrophotometry

DETECTION LEVEL

The method detection limit (MDL) for total petroleum hydrocarbons are estimated to be 25.0 mg/kg (ppm). In general, the detection level of any method is a function of sample matrix, sample preparation, and instrument performance, and can vary significantly from the stated MDL.

COMMENTS

It is recommended that conditions of sampling, sample pretreatment, and analysis be standardized to ensure comparability of the final results.

sea7911/038.51

CSL METHOD: TPH/SOIL/FREON EXT/IR

CLOSE SUPPORT LABORATORY (CSL) METHOD FOR ANALYSIS OF TOTAL PETROLEUM HYDROCARBONS (TPH) IN SOIL

1 SCOPE AND APPLICATION

1.1 This method is used for field analysis of soils and sediments for total petroleum hydrocarbons, such as fuels and oils. It is presented as a means to rapidly characterize contamination in site investigation-derived samples. The method is sensitive to petroleum-based hydrocarbons and can be cross sensitive to other hydrocarbons.

Target Contaminants

Gasoline
Diesel
Fuel Oil
Stoddard Solvent
Mineral Spirits

1.2 Application of this method is limited to the analysis of soil and sediments for TPH. Results are reported as TPH in milligrams per kilogram (ppm) based on quantification against a reference oil. When a scanning IR instrument is used, the infrared spectra plot produced gives one the ability to examine the relative characteristics of the contamination.

1.3 This TPH method utilizes a silica gel cleanup of the sample extract. Silica gel removes constituents such as animal greases and vegetable oils.

1.4 Preliminary method validation indicates recoveries of upwards of 80 percent for TPH spikes are achievable by this method.

1.5 The method detection limit (MDL) for TPH is estimated to be 25.0 mg/kg (ppm). This estimate is the result of previous method development work and may vary in response to the complexity of the sample matrix.

2 SUMMARY OF METHOD

2.1 The method presented here is a modification of EPA Method 418.1, "Petroleum Hydrocarbons, Total Recoverable," found in EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes. A modification of Method 418.1 is required to process soil samples. Specifically the sample extraction steps described by Method 418.1 are appropriate for water samples; this method requires modification for processing of soil samples. Sample extraction by sonification has been chosen for extraction of soils. The sonification extraction method included herein in is based on method 3550 (EPA SW846 3rd ED.) In brief, an aliquot of sample is acidified to pH less than 2, immersed with freon, chemically dried with Na_2SO_4, extracted by sonification, and a portion of the extract is passed through silica gel and then analyzed by infrared spectrophotometry.

3 INTERFERENCES AND LIMITATIONS

3.1 This method will measure only freon extractables.

3.2 Impurities present in the freon solvent can adversely affect the measurement of low-level TPH. Use redistilled freon if necessary.

3.3 Heavy molecular weight petroleum hydrocarbons, such as asphalt oils, are not reliably extracted by freon and, therefore, will not be reliably quantified by the TPH analysis.

3.4 To the extent possible, sampling techniques, sample pretreatment, and analysis should be standardized to ensure comparability in the final results.

4 SAFETY

4.1 Samples contaminated with TPH constituents may be hazardous. Samples may include flammables, explosives, and potentially carcinogenic compounds. All samples are assumed to be hazardous and should be handled as such. All stock and working calibration standards, as well as all samples, shall be handled with the utmost care using good laboratory techniques in order to avoid harmful exposures.

4.2 Lab analysts shall wear lab coats, safety glasses, and surgical gloves at all times when preparing and handling standards and samples.

4.3 Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane) is regulated by OSHA. The permissible exposure level is 1,000 ppm. Primary routes of exposure

are: inhalation, skin or eye contact, and oral. Effects of short-term exposure are light-headedness, giddiness, shortness of breath, and may lead to narcosis and cardiac irregularities.

First Aid Measures

If inhaled: Remove to fresh air.

In case of eye contact: Immediately flush eye with copious quantities of water for 15 minutes.

In case of skin contact: Immediately wash skin with copious quantities of soap and water.

4.4 Sample extracts and standards prepared in flammable solvents shall be stored in an explosion-proof refrigerator or a cooler, preferably outside the laboratory.

4.5 Sample preparation should be performed with adequate skin, eye, and hearing protection provided for and used by the analysts. Any situation creating odor levels should be immediately corrected.

4.6 All of the target compounds have "good warning properties." Any situation that leads to or causes noticeable odors or produces any physical symptoms in the workers shall be investigated immediately followed by appropriate corrective action.

4.7 The ultrasonic sonicator used for sample extractions emits a high-frequency sound. When in use, the sonicator horn shall be inside the sound chamber with the door closed, or another form of hearing protection shall be used.

4.8 Safety equipment, including a fire extinguisher, first aid kit, eye wash, and chemical spill cleanup kit shall be available for use at all times.

4.9 Lab wastes shall be separated and properly disposed of. The wastes include used and unused sample aliquots, chemical wastes generated in the analysis, and disposables used in the preparation of the samples. These wastes shall be collected and deposited in a drum clearly marked as "CSL Lab Wastes Only--Hazardous." Lab water used for final rinsing of glassware or instrument process water will be considered nonhazardous and released into a sanitary wastewater system or collected in a reservoir for eventual disposal.

5 APPARATUS AND MATERIALS

5.1 Soil sampling equipment--described in "Site Sampling Plan."

5.2 VOA sample vials--40-ml. capacity with septum screw caps; precleansed as purchased from I-Chem, or equal.

5.3 Balance--Sartorius; top-loading electronic with 1,500-gm capacity with 0.01-gm sensitivity, or equal.

5.4 Glassware--Class A volumetric pipets and flasks; beakers, vials, pasteur pipets, and miscellaneous glassware as necessary for preparation and handling of samples and standards.

5.5 Labware--Necessary for preparation and handling of samples and standards.

5.6 Sonifier--Heat Systems Ultrasonic Sonicator with variable control up to 375-watt output and water-cooled cup horn, or equal.

5.7 Lab space, lab trailer, or other space as needed to perform the analysis in a manner described herein.

5.8 Infrared spectrophotometer (IR), scanning wavelength, for measurement of absorbance at 2,930 cm-1. Complete with quartz cells of 10-0, 50-, and 100-mm cell pathlengths and appropriate cell holders.

6 CHEMICALS AND REAGENTS

6.1 Freon 113 (1,1,2-trichloro-1,2,2-trigluoroethane); redistill if necessary

6.2 Hydrochloric acid, 1:1, mix equal volumes of the concentrated acid and distilled water

6.3 Sodium sulfate, anhydrous crystal, powdered

6.4 Silica gel column, J.T. Baker disposable columns

6.5 n-Hexadecane, reagent grade

6.6 Isooctane, reagent grade

6.7 Chlorobenzene, reagent grade

7 CALIBRATION

7.1 Reference oil: Pipet 15.0 ml n-hexadecane, 15.0 ml isooctane, and 10.0 ml chlorobenzene into a 50-ml glass stoppered bottle. This reference oil mixture is considered as TPH at a neat concentration (pure form). Maintain the integrity of the mixture by keeping stoppered, except when withdrawing aliquots.

7.2 Stock standard: Pipet 1.0 ml referenced oil (7.1) into a tared 200-ml volumetric flask and immediately stopper. Weigh and dilute to volume with freon-113. Calculate TPH stock standard solution concentration as milligrams per liter (mg/l).

7.3 Working standards: Pipet appropriate volumes of stock standard (7.2) into 100-ml volumetric flasks according to the cell pathlength to be used. Dilute to volume with fluorocarbon-113. Calculate concentration of the TPH working standards from the stock standards, mg/l.

7.4 Plot the calibration, absorbance verses concentration (milligrams per liter), as shown in Figure 1.

8 SAMPLE PREPARATION AND EXTRACTION

8.1 In a labeled VOA vial, accurately weigh approximately 5 grams of sample. Acidify the sample aliquot with 1:1 HCl to pH 2 or less by mixing the vial contents with a spatula and dropwise addition of the acid.

8.2 To the sample vial, volumetrically pipet 10.0 ml of freon.

8.3 Sample treatment: To the sample vial, add about 2 gms of sodium sulfate and thoroughly mix with a spatula; avoid loss of freon during the mixing. For samples that are wet or highly consolidated such as clays, additional magnesium sulfate may be needed to thoroughly chemically dry the sample. The end result of this sample treatment step should be a sample having a dry, grainy appearance.

8.4 With the VOA vial cap tightly in place, set the vial in the sonifier cup horn. Sonify at an output setting of 30 percent for approximately 5 minutes. The cup horn must have cold water passing through it all times during the sonifying operation. If, after sonification, the sample isn't completely interdispersed with the freon or doesn't have a loose, grainy appearance, then additional sample treatment and sonification is required.

8.5 After sonification, let the VOA vial stand until the solids have settled. Using a pipet or syringe, transfer 1.0 ml, of the freon (extract) directly to a 25 ml volumetric flask. Bring the volumetric flask to its final volume with unused freon, stopper, and invert to mix. If the sample extract is clear, this step may not be needed. If it is not performed, the eg in 10.1 should read

$$\text{concentration in mg/kg} = \frac{\text{MxVxDF}}{\text{WS}}$$

8.6 Pretreat Baker column with 2 volumes of freon. Allow to drain until the liquid has dropped to the fritted disc, then pipette sample into the column. Discard the first half ml, then collect enough sample to fill IR cell.

8.7 Closely examine the extract for turbidity or the presence of suspended particulate. If turbidity or suspended particulates exist, go back to step 8.5 and filter the diluted extract through grease-free cotton wool or filter paper into a clean flask. Once again examine the extract for turbidity and suspended particles and if absent prepare the extract for analysis as described in 8.6.

9 ANALYSIS

9.1 Set up the IR analyzer in accordance with the manufacturer's specifications. Virgin freon should be used in the reference beam of dual-beam instruments or, similarly, in the sample cell to zero a single-beam instrument. For scanning instruments, set the scan range from 3,200 to 2,700 cm-1 and use the plotting features of the instrument to record the IR spectra. The maximum absorbance of the 2,930-cm-1 peak will be used in the TPH concentration calculations.

9.2 Calibrate the IR in accordance with the manufacturer's recommendations and by use of the calibration procedure described in Section 7, Calibration.

9.3 Deliver a suitable volume of the diluted extract to a quartz cell. Select a cell pathlength that, based on the analyst's judgement, will result in absorbance within the linear portion of the IR calibration curve for TPH. Dilute if required, or use a different cell and reanalyze extracts that fall outside the calibration range of the IR. Always zero the instrument with a cell of same pathlength used in the analysis.

9.4 Record the maximum absorbance of the extract at a wavelength or peak of 2,930 cm-1. Using the calibration curve, convert absorbance readings into milligrams per liter (mg/l) of TPH.

10 CALCULATIONS

10.1 Quantification of TPH is based on the maximum absorbance at 2,930 cm^{-1} as compared to external calibration of the IR using reference oil (see Section 7). A typical IR calibration curve is shown in Figure 1. Absorbance readings of sample extracts can be converted into milligrams per kilogram (ppm) of TPH in the original sample as follows:

$$\text{Concentration TPH, mg/kg} = \frac{M \times V \times DF}{WS} \times 25$$

Where:

M = Milligrams/liter (mg/l) of TPH from the calibration curve (see 9.5)

V = Original volume in mls, of freon added to VOA vial (see 8.2)

DF = Dilution factor, if required (see 9.3)

Ws = Weight, in grams, of the original sample added to the VOA vial (see 8.1)

25 = Correction factor for initial dilution of extract (see 8.5)

11 QUALITY ASSURANCE

11.1 Quality assurance measures shall include, as a minimum:

- Daily mid-range calibration checks performed prior to the analysis of each day's lot of samples or with each lot of 20 samples, whichever is more frequent.
- Analysis of field blank samples at a frequency of 1 in 20 samples analyzed or 1 per day, whichever is more frequent.
- Analysis of laboratory blank samples at the same frequency. Should the results of the laboratory blanks show contamination, the cause of the contamination should be investigated and corrective action taken.
- Analysis of field duplicate samples at a frequency of 1 in 20 samples or 1 per day, whichever is more frequent.
- Analysis of mid-range matrix spike samples and a matrix spike duplicate at a frequency of 1 in 20 samples analyzed or 1 per day, whichever is more frequent.

APPENDIX G
Close Support Laboratory Analytical Results
May 1991 Sampling Event

KEYES FIBRE WENATCHEE
CLOSE SUPPORT LAB TPH ANALYSES
May 9-11, 1991

SAMPLE IDENTITY	%T	ABS.	CURVE CONC. (ug/ml)	SOLVENT VOLUME (ml)	SAMPLE WEIGHT (gm)	DILUTION FACTOR	CONC. IN SOIL (mg/kg)	
9 MAY 1991								
KF-B01-060-12791-XX	90	0.046	26.52	10	5.09	10	521	
KF-B01-090-12791-XX	95	0.022	14.75	10	5.10	1	29	
KF-B01-120-12791-XX	80	0.097	52.16	10	4.88	1	107	
KF-B01-234-12791-XX	98	0.009	7.98	10	4.78	1	17	U
KF-B02-048-12791-XX	87	0.060	33.90	10	5.08	10	667	
KF-B02-048-12791-LD	76	0.119	63.33	10	5.09	10	1244	
KF-B02-048-12791-MS	79	0.102	54.90	10	5.06	10	1085	
KF-B02-078-12791-XX	77	0.114	60.48	10	4.78	10	1265	
KF-B02-087-12791-XX	62	0.208	107.65	10	4.98	10	2162	
Lab Blank	99	0.004	5.77	1	1	1	6	U
KF-B03-090-12891-XX	91	0.041	24.12	10	5.06	1	48	
KF-B03-120-12891-XX	98	0.009	7.98	10	5.21	1	15	U
KF-B03-240-12891-XX	99	0.004	5.77	10	5.22	1	11	U
KF-B06-048-12891-XX	98	0.009	7.98	10	5.11	1	16	U
KF-B06-084-12891-XX	97	0.013	10.22	10	5.01	1	20	U
KF-B06-092-12891-XX	99	0.004	5.77	10	4.95	1	12	U
KF-B05-030-12891-XX	92	0.036	21.74	10	5.33	10	408	
KF-B05-030-12891-DU	92	0.036	21.74	10	4.92	10	442	
KF-B05-060-12891-XX	51	0.292	150.17	10	5.02	10	2991	
KF-B05-090-12891-XX	91	0.041	24.12	10	5.03	10	479	
KF-B05-114-12891-XX	76	0.119	63.33	10	5.33	10	1188	
KF-B05-200-12891-XX	87	0.060	33.90	10	5.11	100	6634	
KF-B07-036-12891-XX	99	0.004	5.77	10	4.74	1	12	U
KF-B07-036-12891-MS	83	0.081	44.15	10	4.98	1	89	
KF-B07-036-12891-MSD	82	0.086	46.79	10	4.79	1	98	
KF-B07-034-12891-XX	91	0.041	24.12	10	5.23	1	46	
KF-B07-060-12891-XX	98	0.009	7.98	10	4.28	1	19	U
KF-B08-060-12991-XX	97	0.013	10.22	10	4.90	1	21	U
KF-B08-090-12991-XX	95	0.022	14.75	10	5.08	1	29	

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May 9-11, 1991

SAMPLE IDENTITY	%T	ABS.	CURVE CONC. (ug/ml)	SOLVENT VOLUME (ml)	SAMPLE WEIGHT (gm)	DILUTION FACTOR	CONC. IN SOIL (mg/kg)	
KF-B08-210-12991-XX	99	0.004	5.77	10	4.97	1	12	U
KF-B10-030-12991-XX	74	0.131	69.13	10	5.10	1	136	
Lab Blank	100	0.000	3.58	1	1	1	4	U
KF-B10-060-12991-XX	93	0.032	19.38	10	4.90	1	40	
KF-B10-120-12991-XX	99	0.004	5.77	10	4.91	1	12	U
KF-B11-048-12991-XX	84	0.076	41.54	10	4.90	1	85	
KF-B09-048-12991-XX	94	0.027	17.05	10	4.96	1	34	
KF-B09-072-12991-XX	98	0.009	7.98	10	5.21	1	15	U
KF-B13-240-12991-XX	100	0.000	3.58	10	4.74	1	8	U
Reagent Blank	99	0.004	5.77	1	1	1	6	U
Calibration Standard 76.6	71	0.149	78.14	1	1	1	78	
Reagent Blank	100	0.000	3.58	1	1	1	4	U
Calibration Standard 76.6	72	0.143	75.10	1	1	1	75	
Calibration Standard 76.7	72	0.143	75.10	1	1	1	75	
10 MAY 1991								
Calibration Standard	77	0.114	60.48	1	1	1	60	
KF-B12-048-12991-XX	73	0.137	72.10	10	5.02	1	144	
KF-B12-048-12991-DU	67	0.174	90.77	10	4.91	1	185	
KF-B12-066-12991-XX	83	0.081	44.15	10	5.21	10	847	
Reagent Blank	100	0.000	3.58	1	1	1	4	U
KF-B13-030-12991-XX	100	0.000	3.58	10	5.14	1	7	U
KF-B13-042-12991-XX	100	0.000	3.58	10	4.99	1	7	U
KF-B13-042-12991-DU	100	0.000	3.58	10	5.00	1	7	U
KF-B13-042-12991-MS	86	0.066	36.42	10	4.78	1	76	
KF-B13-042-12991-MSD	86	0.066	36.42	10	5.07	1	72	
KF-B13-120-12991-XX	100	0.000	3.58	10	5.20	1	7	U
KF-B14-150-13091-XX	83	0.081	44.15	10	5.13	100	8606	
KF-B14-210-13091-XX	87	0.060	33.90	10	4.90	50	3459	
KF-B15-036-13091-XX	100	0.000	3.58	10	5.03	1	7	U
KF-B15-060-13091-XX	95	0.022	14.75	10	5.20	1	28	

KEYES FIBRE WENATCHEE
CLOSE SUPPORT LAB TPH ANALYSES
May 9-11, 1991

SAMPLE IDENTITY	%T	ABS.	CURVE CONC. (ug/ml)	SOLVENT VOLUME (ml)	SAMPLE WEIGHT (gm)	DILUTION FACTOR	CONC. IN SOIL (mg/kg)	
KF-B15-036-13091-DU	94	0.027	17.05	10	5.13	1	33	
KF-B14-270-13091-XX	83	0.081	44.15	10	4.94	5	447	
KF-B14-300-13091-XX	91	0.041	24.12	10	5.22	1	46	
KF-B14-360-13091-XX	100	0.000	3.58	10	5.08	1	7	U
KF-B17-060-13091-XX	100	0.000	3.58	10	5.13	1	7	U
KF-B17-060-13091-DU	100	0.000	3.58	10	4.99	1	7	U
Calibration Standard 38.4	86	0.066	36.42	1	1	1	36	
Calibration Standard 191.8	44	0.357	182.31	1	1	1	182	
Calibration Standard 19.2	93	0.032	19.38	1	1	1	19	U
KF-B17-090-13091-XX	100	0.000	3.58	10	5.05	1	7	U
KF-B17-150-13091-XX	100	0.000	3.58	10	5.10	1	7	U
KF-B17-180-13091-XX	100	0.000	3.58	10	4.98	1	7	U
11 MAY 1991								
Reagent Blank	100	0.000	3.58	1	1	1	4	U
Calibration Standard 76.6	73	0.137	72.10	1	1	1	72	
KF-B17-342-13091-XX	100	0.000	3.58	10	4.92	1	7	U
KF-B18-120-13191-XX	100	0.000	3.58	10	5.09	1	7	U
KF-B18-174-13191-XX	75	0.125	66.21	10	4.85	5	683	
KF-B18-210-13191-XX	51	0.292	150.17	10	4.98	10	3015	
KF-B18-222-13191-XX	77	0.114	60.48	10	5.01	10	1207	
KF-B18-222-13191-MS	67	0.174	90.77	10	5	10	1815	
KF-B18-222-13191-MSD	71	0.149	78.14	10	4.97	10	1572	
Lab Blank	100	0.000	3.58	1	1	1	4	U
KF-B18-352-13191-XX	56	0.252	129.81	10	4.9	10	2649	
KF-B18-300-13191-XX	64	0.194	100.74	10	5.05	25	4987	
KF-B19-030-13191-XX	98	0.009	7.98	10	4.94	1	16	U
KF-B19-030-13191-MS	73	0.137	72.10	10	4.85	1	149	
KF-B19-240-13191-XX	100	0.000	3.58	10	5.2	1	7	U
KF-B20-180-13191-XX	100	0.000	3.58	10	5.26	1	7	U

KEYES FIBRE WENATCHEE
CLOSE SUPPORT LAB TPH ANALYSES
May 9-11, 1991

SAMPLE IDENTITY	%T	ABS.	CURVE CONC. (ug/ml)	SOLVENT VOLUME (ml)	SAMPLE WEIGHT (gm)	DILUTION FACTOR	CONC. IN SOIL (mg/kg)	
KF-B20-240-13191-XX	100	0.000	3.58	10	5.29	1	7	U
KF-B20-270-13191-XX	100	0.000	3.58	10	4.87	1	7	U
KF-B20-300-13191-XX	100	0.000	3.58	10	5.24	1	7	U
KF-B20-336-13191-XX	100	0.000	3.58	10	4.9	1	7	U
KF-B20-336-13191-DU	100	0.000	3.58	10	4.9	1	7	U
KF-B20-360-13191-XX	100	0.000	3.58	10	5.11	1	7	U
KF-B20-360-13191-DU	100	0.000	3.58	10	5.15	1	7	U
Calibration Standard 76.7	74	0.131	69.13	1	1	1	69	

%T = Percent transmittance.
Abs = Absorbance.
Conc = Concentration.

APPENDIX H
Offsite Laboratory Analytical Results
May 1991 Sampling Event

91-05-070
@ site = (509) 663-8537

CH2M HILL QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	SEA31436.AO
PROJECT NAME	Keyes Fibre Co.
CLIENT NAME	~~Keyes Fibre~~ CH2M HILL
PROJECT MANAGER	Steve Trudell/SEA
COPY TO:	
REQUESTED COMP. DATE	SAME DAY
SAMPLING REQUIREMENTS	SDWA ☐ NPDES ☐ RCRA ☐ OTHER X
CLIENT ADDRESS AND PHONE NUMBER	P.O. BOX 91500 BELLEVUE, WA 98009 (206) 453-5000

FOR LAB USE ONLY

LAB#	
LAB#	
PROJECT NO.	
ACK	VERIFIED
QUOTE#	BS
NO. OF SAMP	PG OF

STA NO.	DATE	TIME	COMP	GRAB	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	ANALYSES REQUESTED: 418.1 Modified	LAB ID	REMARKS
BØ2	5/7/91	1520			X	KF-BØ2-Ø87-12791-XX	1	X	A1	PHONE RESULTS TO CH2M HILL C/O KEYES FIBRE (509) 663-8537 AND/OR FAX TO: (509) 662-1023
BØ6	5/8/91	1235			X	KF-BØ6-Ø92-12791-XX	1	X	A2	

RUSH

RUSH RUSH

SAMPLED BY AND TITLE: Scott M. Nunn Geologist	DATE/TIME: 5/8/91 12:00	RELINQUISHED BY: Scott M. Nunn	DATE/TIME: 5/8/91 14:27
RECEIVED BY: Debbie Longwill	DATE/TIME: 5/8/91 14:27	RELINQUISHED BY: Debbie Longwill	DATE/TIME: 5/8/91 3:04pm
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY LAB: Michele Hickson	DATE/TIME: 5/9/91 1:00 pm	SAMPLE SHIPPED VIA: UPS BUS (FED-EX) HAND OTHER ____	AIR BILL# 7367527075

HAZWRAP/NEESA	Y N
QC LEVEL	1 2 3
COC	ICE
ANA REQ	TEMP
CUST SEAL	Ph
SAMPLE COND.	

REMARKS

ENTERED INTO LIMS ______ COC REVIEWED ______

REV 6/89 FORM 340

EUREKA LABORATORIES, INC.

Corporate Office:
6790 FLORIN PERKINS ROAD
SACRAMENTO, CA 95828
TEL: (916) 381-7953
FAX: (916) 381-4013

Branch Office:
12121 NORTHUP WAY, SUITE 212
BELLEVUE, WA 98005
TEL: (206) 885-0284
FAX: (206) 885-6162

Air Pollution
Chemical Analysis,
Research & Testing
Environmental Studies
Robotics
Toxicology

May 15, 1991

Mr. Steve Buckley
KEYES FIBRE CO.
3715 Chelan Hwy.
Wenatchee, WA 98801

Reference: ELI No: 91-05-093
Project #: SEA31436.AO

Dear Mr. Buckley:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject task. This report presents analytical results for six (6) soil samples and two (2) water samples -EMERGENCY SERVICE- for the following analysis:

ANALYSIS	METHOD	SAMPLE ID.
Total Recoverable Hydrocarbons	EPA 418.1	KF-B02-048-12791-XX, KF-B05-200-12891-XX, KF-B07-034-12891-XX, KF-B14-150-13091-XX, KF-B14-210-13091-XX, KF-B30-000-12991-EB, KF-B17-150-13091-EB KF-B14-150-13091-DU

Sincerely,
EUREKA LABORATORIES, INC.

By: _____
Shao-Pin Yo, Ph.D.
Laboratory Director

SPY/pvc

Attachment

cc: Steve Trudell
CH2M HILL

TOTAL RECOVERABLE HYDROCARBONS
EPA 418.1

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-05-093
Hazardous Waste Testing
Certification: E765

CLIENT: KEYES FIBRE CO.	DATE SAMPLED: BELOW
CONTRACT #: NA	DATE RECEIVED: 05/11/1991
PROJECT: NA	DATE EXTRACTED: 05/13/1991
PROJECT #: SEA31436.AO	DATE ANALYZED: 05/14/1991
TASK #: NA	INSTRUMENT ID: FTIR 1
P.O. #: NA	MATRIX: WATER
SAMPLE LOCATION: NA	% MOISTURE: NA
ELI SAMPLE ID: BELOW	REPORT WT: NA
FILE ID: NA	SAMPLE VOL./WT.: 1L
SAMPLE ID: BELOW	DILUTION FACTOR: 1.0

ELI SAMPLE ID	CLIENT ID.	CONCENTRATION [mg/L (ppm)]	DATE SAMPLED
9105093-06A	KF-B30-000-12991-EB	<0.5	05/09/1991
9105093-07A	KF-B17-150-13091-EB	<0.5	05/10/1991
	METHOD BLANK	<0.5	
	REAGENT SPIKE RECOVERY * - 100%		
	REAGENT SPIKE RECOVERY DUP. * - 102%		

DETECTION LIMIT: 0.5 [mg/L (ppm)]

* Reagent spike set is used due to insufficient sample provided.

Mitra Rafiei
Chemist

May 15, 1991
Date

TOTAL RECOVERABLE HYDROCARBONS
EPA 418.1

EUREKA LABORATORIES, INC.
6790 Florin-Perkins Road
Sacramento, CA 95828
(916) 381-7953

Order No: 91-05-093
Hazardous Waste Testing
Certification: E765

CLIENT:	KEYES FIBRE CO.	DATE SAMPLED:	BELOW
CONTRACT #:	NA	DATE RECEIVED:	05/11/1991
PROJECT:	NA	DATE EXTRACTED:	05/13/1991
PROJECT #:	SEA31436.AO	DATE ANALYZED:	05/14/1991
TASK #:	NA	INSTRUMENT ID:	FTIR 1
P.O. #:	NA	MATRIX:	SOIL
SAMPLE LOCATION:	NA	% MOISTURE:	NA
ELI SAMPLE ID:	BELOW	REPORT WT:	WET
FILE ID:	NA	SAMPLE VOL./WT.:	25g
SAMPLE ID:	BELOW	DILUTION FACTOR:	BELOW

ELI SAMPLE ID/CLIENT ID.	CONCENTRATION [mg/Kg (ppm)]	D/F	D/L	DATE SAMPLED
9105093-01A/KF-B02-048-12791-XX	11000	40	160	05/07/1991
9105093-02A/KF-B05-200-12891-XX	11100	50	200	05/08/1991
9105093-03A/KF-B07-034-12891-XX	27	1.0	4	05/08/1991
9105093-04A/KF-B14-150-13091-XX	10900	50	200	05/10/1991
9105093-05A/KF-B14-210-13091-XX	4840	25	100	05/10/1991
9105093-08A/KF-B14-150-13091-DU	10400	50	200	05/10/1991
METHOD BLANK	<4	1.0	4	

KF-B07-034-12891-XX
MATRIX SPIKE RECOVERY - 108%

KF-B07-034-12891-XX
MATRIX SPIKE RECOVERY DUP. - 97%

REAGENT SPIKE RECOVERY - 97%
REAGENT SPIKE RECOVERY DUP. - 101%

Mitra Rafiei
Chemist

May 15, 1991
Date

91-05-093
13-3

CHEMTECH QUALITY ANALYTICS
CHAIN OF CUSTODY RECORD

PROJECT NUMBER: SEA31436.AO
PROJECT NAME: Keyes Fibre Co.
CLIENT NAME: Chem Hill
PROJECT MANAGER: Steve Trudell/SEA
COPY TO:
REQUESTED COMP. DATE: 48-HR TAT
SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ☒
OF CONTAINERS
ANALYSES REQUESTED: 418.1 (TPH) SOIL; 418.1 (TPH) WATER
CLIENT ADDRESS AND PHONE NUMBER: P.O. Box 91500 Bellevue, WA 98004 (206)453-5000
FOR LAB USE ONLY: LAB#; LAB#; PROJECT NO.; ACK; VERIFIED; QUOTE#; BS; NO. OF SAMP; PG; OF; REMARKS

STA NO.	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	418.1 (TPH) SOIL	418.1 (TPH) WATER	LAB ID	REMARKS
B02	5/7/91	1715		X	KF-B02-048-12791-XX	1	X		A1	
B05	5/8/91	1755		X	KF-B05-200-12891-XX	1	X		A2	PLEASE BILL TO KEYES FIBRE CO.-
B07	5/8/91	1510		X	KF-B07-034-12891-XX	1	X		A3	COPY OF INVOICE
B14	5/10/91	0900		X	KF-B14-150-13091-XX	1	X		A4	TO CHEM HILL
B14	5/10/91	0920		X	KF-B14-210-13091-XX	1	X		A5	(STEVE TRUDELL)
B30	5/9/91	1620			KF-B30-000-12591-GB	1		X	A6	
B17	5/10/91	1510			KF-B17-150-13091-GB	1		X	A7	CALL / FAX RESULTS TO STEVE TRUDELL, CHEM HILL (206)453-5000 462-5457
B14	5/10/91	0900		X	KF-B14-150-13091-DU	1	X		A8	

RUSH
Due Tues May 14th

SAMPLED BY AND TITLE: BRETT NUNN — DATE/TIME: 05/07-10/91
RELINQUISHED BY: [signature] — DATE/TIME: 05/10/91 1500
RECEIVED BY: — RELINQUISHED BY: — DATE/TIME: — DATE/TIME:
RECEIVED BY: — RELINQUISHED BY: — DATE/TIME: — DATE/TIME:
RECEIVED BY LAB: [signature] — DATE/TIME: 05/11/91
SAMPLE SHIPPED VIA: UPS BUS (FED-EX) HAND OTHER — AIR BILL: 736752771771
REMARKS

HAZWRAP/NEESA Y N; QC LEVEL 1 2 3; COC; ANA REQ; CUST SEAL; SAMPLE COND; ICE; TEMP; Ph
ENTERED INTO LIMS ____ COC REVIEWED ____

EUREKA LABORATORIES, INC.

Corporate Office:
6790 FLORIN PERKINS ROAD
SACRAMENTO, CA 95828
TEL: (916) 381-7953
FAX: (916) 381-4013

Branch Office:
12121 NORTHUP WAY, SUITE 212
BELLEVUE, WA 98005
TEL: (206) 885-0284
FAX: (206) 885-6162

Air Pollution
Chemical Analysis,
Research & Testing
Environmental Studies
Robotics
Toxicology

May 17, 1991

Mr. Steve Buckley
KEYES FIBRE CO.
3715 Chelan Hwy
Wenatchee, WA 98801

Reference - Project: SEA31436.AO Keyes Fibre Wenatchee Plant
ELI Order #: 91-05-122

Dear Mr. Buckley:

Eureka Laboratories, Inc. is pleased to submit a laboratory report for the subject project. This report presents analytical results for two (2) soil samples -EMERGENCY SERVICE- for the following analysis:

ANALYSIS	METHOD	SAMPLE ID
Total Petroleum Hydrocarbons	EPA 8015 (Modified)	KF-BO2-048-12791, KF-BO5-200-12891

Sincerely,
EUREKA LABORATORIES, INC.

By: Shao-Pin Yo, Ph.D.
Laboratory Director

SPY/mc
Attachment

cc: Steve Trudell
CH2M HILL

TOTAL PETROLEUM HYDROCARBONS
Modified EPA Method 8015(GC-FID)

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-05-122
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: SEA31436.AO KEYES FIBRE
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9105122-01A
FILE ID: NA
SAMPLE ID: KF-BO2-048-12791

DATE SAMPLED: 05/07/91
DATE RECEIVED: 05/15/91
DATE EXTRACTED: 05/15/91
DATE ANALYZED: 05/15/91
INSTRUMENT ID: SVG1
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 40g
DILUTION FACTOR: 1.00

PETROLEUM HYDROCARBONS	CONCENTRATION ppm (mg/Kg)	DETECTION LIMIT ppm (mg/Kg)
Gasoline Range	<5	5
Diesel Range	<10	10
Motor Oil Range	2120	25
Total Petroleum Hydrocarbons	2120	
CARBON NO. RANGE		
Gasoline Range	-	
Diesel Range	-	
Motor Oil Range	C18-C30	
PEAK CARBON NO.		
Gasoline Range	-	
Diesel Range	-	
Motor Oil Range	C24	

Chemist Mark Shih, Ph.D.

05/16/91
Date

TOTAL PETROLEUM HYDROCARBONS
Modified EPA Method 8015(GC-FID)

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-05-122
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: SEA31436.AO KEYES FIBRE
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9105122-02A
FILE ID: NA
SAMPLE ID: KF-BO5-200-12891

DATE SAMPLED: 05/08/91
DATE RECEIVED: 05/15/91
DATE EXTRACTED: 05/15/91
DATE ANALYZED: 05/15/91
INSTRUMENT ID: SVG1
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 40g
DILUTION FACTOR: 1.00

PETROLEUM HYDROCARBONS	CONCENTRATION ppm (mg/Kg)	DETECTION LIMIT ppm (mg/Kg)
Gasoline Range	<5	5
Diesel Range	<10	10
Motor Oil Range	842	25
Total Petroleum Hydrocarbons	842	
CARBON NO. RANGE		
Gasoline Range	-	
Diesel Range	-	
Motor Oil Range	C18-C30	
PEAK CARBON NO.		
Gasoline Range	-	
Diesel Range	-	
Motor Oil Range	C24	

Chemist Mark Shih
Mark Shih, Ph.D.

05/16/91
Date

TOTAL PETROLEUM HYDROCARBONS
Modified EPA Method 8015(GC-FID)

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-05-122
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: SEA31436.AO KEYES FIBRE
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9105122-03A
FILE ID: NA
SAMPLE ID: METHOD BLANK

DATE SAMPLED: NA
DATE RECEIVED: 05/15/91
DATE EXTRACTED: 05/15/91
DATE ANALYZED: 05/15/91
INSTRUMENT ID: SVG1
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: NA
DILUTION FACTOR: 1.00

PETROLEUM HYDROCARBONS	CONCENTRATION ppm (mg/Kg)	DETECTION LIMIT ppm (mg/Kg)
Gasoline Range	<5	5
Diesel Range	<10	10
Motor Oil Range	<25	25
Total Petroleum Hydrocarbons		
CARBON NO. RANGE		
Gasoline Range	-	
Diesel Range	-	
Motor Oil Range	-	
PEAK CARBON NO.		
Gasoline Range	-	
Diesel Range	-	
Motor Oil Range	-	

Chemist Mark Shih
Mark Shih, Ph.D.

05/16/91
Date

TOTAL PETROLEUM HYDROCARBONS
Modified EPA Method 8015(GC-FID)

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-05-122
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: SEA31436.AO KEYES FIBRE
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9105122-04A
FILE ID: NA
SAMPLE ID: SPIKE RECOVERY
KF-05-200-12891

DATE SAMPLED: NA
DATE RECEIVED: 05/15/91
DATE EXTRACTED: 05/15/91
DATE ANALYZED: 05/15/91
INSTRUMENT ID: SVG1
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 40g

PETROLEUM HYDROCARBONS	CONCENTRATION %
Gasoline Range	NA
Diesel Range	123%
Motor Oil Range	NA
Total Petroleum Hydrocarbons	
CARBON NO. RANGE	
Gasoline Range	-
Diesel Range	-
Motor Oil Range	-
PEAK CARBON NO.	
Gasoline Range	-
Diesel Range	-
Motor Oil Range	-

Chemist _____ 05/16/91
Mark Shih, Ph.D. Date

TOTAL PETROLEUM HYDROCARBONS
Modified EPA Method 8015(GC-FID)

EUREKA LABORATORIES, INC.
6790 Florin Perkins Road
Sacramento, CA 95828
(916)381-7953

Order No.: 91-05-122
Hazardous Waste Testing
Certification No.: E765

CLIENT: CH2MHILL
CONTRACT #: NA
PROJECT: SEA31436.AO KEYES FIBRE
TASK #: NA
P.O.#: NA
SAMPLE LOCATION:
ELI SAMPLE ID: 9105122-05A
FILE ID: NA
SAMPLE ID: SPIKE RECOVERY DUPLICATE
KF-05-200-12891

DATE SAMPLED: NA
DATE RECEIVED: 05/15/91
DATE EXTRACTED: 05/15/91
DATE ANALYZED: 05/15/91
INSTRUMENT ID: SVG1
MATRIX: SOIL
% MOISTURE: NA
REPORT WT: WET
SAMPLE VOL./WT.: 40g

PETROLEUM HYDROCARBONS	CONCENTRATION %
Gasoline Range	NA
Diesel Range	131%
Motor Oil Range	NA
Total Petroleum Hydrocarbons	
CARBON NO. RANGE	
Gasoline Range	-
Diesel Range	-
Motor Oil Range	-
PEAK CARBON NO.	
Gasoline Range	-
Diesel Range	-
Motor Oil Range	-

Chemist _____ 05/16/91
Mark Shih, Ph.D. Date