

DEPARTMENT OF ECOLOGY

April 12, 1996

TO: Louise Bardy, SIS
Toxics Cleanup Program, NWRO

FROM: Dan Cargill *DC*
Toxics Cleanup Program

SUBJECT: Longview Fibre Co.
Seattle Plant

Site Address: 5901 E.Marginal Way, South, Seattle, 98134

Contaminants: Petroleum - Tank

Media: S, GW

Report: Interim

Title of Report:

Groundwater Monitoring Results from LFC Seattle Plant
(received by Ecology on 2/5/96)

Summary: Sampling in November 1995 shows petroleum is still present in groundwater above MTCA standards. Company will continue to monitor.

RECEIVED

#7348

FEB - 5 1996

DEPT. OF ECOLOGY

Site Reg.
4/96

LONGVIEW FIBRE COMPANY

MAIN OFFICE AND MILLS • LONGVIEW, WASHINGTON 98632
1-360-425-1550



January 31, 1996

Mr. Dan Cargill
Northwest Regional Office
Washington Department of Ecology
3190 160th Ave. S.E.
Bellevue, Washington 98008

Dear Mr. Cargill:

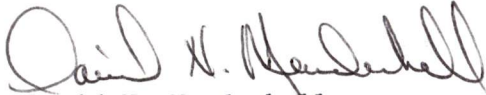
Enclosed you will find a report on the "Groundwater Monitoring Results from the LFC Seattle Plant". This report was prepared for Longview Fibre Company by CH2M Hill of Bellevue, Washington.

The report was written as a summary of the latest two rounds of groundwater samples taken from two groundwater monitoring wells at our Seattle box plant. This is a follow up report from the report and letter sent to you in October of 1995. In that report it was recommended by CH2M Hill that we perform two sampling events to determine the status of the groundwater at this facility. We now have the results of the samples taken in September and November of 1995. The sample results show that there is still some residual hydrocarbon product beneath the west end of the plant site. This is material left from the original underground storage tank removal project back in 1987. Our course of action at this time is to continue to monitor the wells on a weekly basis until six months have passed without a noticeable "sheen" on the surface of the water. Whenever it is determined that this period of time has passed we will contact a consultant and have them sample the groundwater from both wells to determine if the water will pass the Department of Ecology set limits for groundwater in this

area. If the groundwater is found to be below the DOE set limits then the wells will be abandoned in place per Ecology instructions.

If you have any comments or questions please call either Jeff Randall of CH2M Hill (206) 453-5000 or me.

Sincerely,

A handwritten signature in cursive script that reads "David N. Mendenhall". The signature is written in dark ink and is positioned above the typed name.

David N. Mendenhall
Water Quality Engineer
(360) 425-1550 X 2990

Copies: Tom Craig - LFCo Seattle
Sonny Bivins - LFCo Seattle
Jeff Randall - CH2M Hill
RGG/ WJD/ ADW/ DNM



Engineers
Planners
Economists
Scientists

RECEIVED

FEB - 5 1996

DEPT. OF ECOLOGY

January 25, 1996

117627.A0.ZZ

Mr. David N. Mendenhall
Longview Fibre Company
PO Box 639
Longview, WA 98692

Dear Dave:

Subject: Groundwater Monitoring Results from the LFC Seattle Plant

This letter report has been prepared in accordance with Purchase Order #LV147539-L.

CH2M HILL sampled monitoring wells MW-2 and MW-3 at the LFC Seattle Plant on September 26, 1995 and November 28, 1995. The wells are located at the west end of the facility as shown in Figure 1. Please note: MW-1 had been removed during previous excavation and was not sampled by CH2M HILL.

At each well, water level was measured first then the well was purged three well casing volumes prior to sampling with a PVC bailer. Purge water was placed in a 55 gallon drum for disposal by LFC staff. During purging, the temperature, pH, and conductivity of each purge volume was measured. Field measurements and the sampling methodology for each sampling event are presented in Appendix A

Each sample was analyzed for benzene, ethylbenzene, toluene, xylene, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and total fuel hydrocarbons (diesel) at Columbia Analytical Services, Inc. using EPA method 8020 (for BETX etal.) and WTPHd-- (for total fuel hydrocarbons/diesel). Table 1 summarizes the laboratory analytical results. Laboratory data sheets and Chain-of-Custody forms are presented in Appendix B.

Table 1 -- Summary of Analytical Results at the LFC Seattle Plant (Sept 95/Dec 95)			
Analyte	MRL (ug/L)	MW-2 (ug/L)	MW-3 (ug/L)
Benzene	0.5	ND	ND
		ND	ND
Toluene	1	ND	ND
		ND	ND
Chlorobenzene	0.5	ND	ND
		ND	ND
Ethylbenzene	1	ND	ND
		ND	ND
m-,p-Xylene	1	ND	ND
		ND	ND
o-Xylene	0.5	ND	ND
		ND	ND
1,3-Dichlorobenzene	1	ND	ND
		ND	ND
1,4-Dichlorobenzene	1	ND	ND
		ND	ND
1,2-Dichlorobenzene	1	ND	<4(a)
		ND	<3(a)
Diesel	250	413(b)	280,000(c)
		ND	23,500
Oil	750	221(d)	15,000(c)
		ND	1,880

(a) MRL elevated because of matrix interferences
(b) Chromatogram did not match the typical diesel fingerprint
(c) Diluted sample
(d) Chromatogram did not match the typical oil fingerprint

Based on these results, it appears that there is still some residual hydrocarbon product beneath the west end of the site from the 1987 tank leak. We recommend that LFC continue to monitor the situation.

Mr. David N. Mendenhall
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January 25, 1996
117627.A0.ZZ

Please call me if you have any questions or comments. I'm am looking forward to continue our service to Longview Fibre.

Sincerely,

CH2MHILL


Jeffery H. Randall, PhD, PG
Senior Project Manager

SEA/gwm_rpt.doc
Enclosure

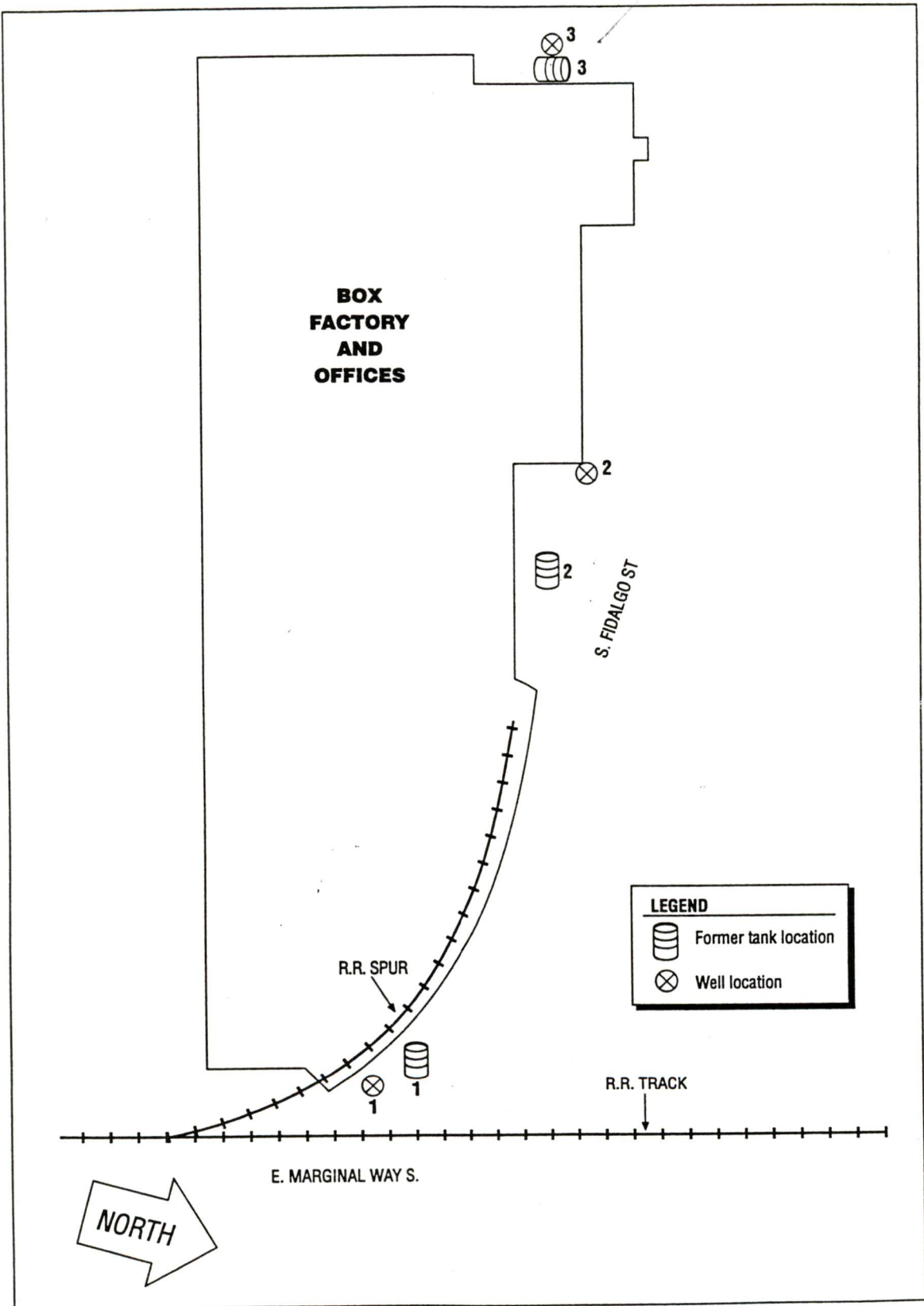


FIGURE 1
 Plant Map
 LONGVIEW FIBRE COMPANY
 SEATTLE, WASHINGTON

Appendix A
Field Sampling Memoranda

TO: File

COPIES: Jeff Randall/CH2M HILL

FROM: Douglas Kunkel/CH2M HILL

DATE: September 27, 1995

SUBJECT: Longview Fibre Groundwater Sampling

PROJECT: 117627.A0.ZZ

Introduction

This memorandum summarizes the field work associated with groundwater sampling at the Longview Fibre Company Seattle Plant on September 26, 1995. The 10-acre plant is located at 5901 East Marginal Way, Seattle Washington. Two shallow aquifer monitoring wells were sampled for BTEX, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and WTPHd.

CH2M HILL sampling personnel arrived at the plant and checked in with Sonny Bivins, the client contact person. The CH2M HILL personnel and Mr. Bivins discussed the removal of MW-1 at the east end of the building and walked to the former location of this well and the two remaining groundwater monitoring wells at the site.

Instrument Calibration

After the site walk was completed CH2M HILL personnel calibrated health and safety and water-quality equipment. A MiniRAE photoionization detector (PID) serial number 000637 was used as for health and safety monitoring of the breathing zone. The PID was calibrated to 100 ppm isobutylene calibration gas (Hazco lot number 41925A) using a 1.5 liter per minute regulator and T-tubing. The MiniRAE read 100 ppm using the calibration gas, background at the site was zero ppm.

Two water-quality instruments were used; an Orion model SA230 pH meter, and a YSI model 33 SCT meter. The pH meter was calibrated to pH 4 and pH 7 buffer solutions and read 4.01 and 7.00 respectively. The YSI was checked against a 1,000 μmho standard solution and read 96×10 at 24° C.

Water Level Measurements

Depth to water (DTW) and total depths (TD) were measured to determine purge volumes for the two monitoring wells. A Solinst electronic water level indicator was used for this task. The water level indicator was decontaminated between measurements by washing the probe and the portion of the tape that was used in a solution of tap water and Liquinox then rinsing with distilled water. Water level and total depth data are presented below.

MEMORANDUM

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September 27, 1995

117627.A0.ZZ

<u>Well</u>	<u>Time</u>	<u>DTW</u>	<u>TD</u>
MW-3	1400	5.80	15.36
MW-2	1501	5.20	14.38

Purge volumes were then calculated from these data. One casing volume for well MW-3 is 1.6 gallons, three casing volumes is 4.78 gallons. For MW-2, one casing volume is 1.53 gallons and three casing volumes is 4.59 gallons.

Well Purging

Prior to purging, a disposable translucent plastic bailer was slowly lowered halfway into the water in each well to evaluate if there were any product layers floating on the water surface. A sheen was noted at both well locations but neither well had a measurable layer of floating product.

Both wells were purged using single-use disposable bailers. Bailers were lowered and raised in the wells using a plastic cord reel and 100-lb test monofilament fishing line. The bailer and fishing line were discarded between wells. The cord reel was decontaminated by washing in a solution of tap water and Liquinox followed by a distilled water rinse.

Purge volumes were monitored using a 5-gallon bucket marked at gallon increments. The field parameters pH, temperature, conductivity, and the appearance of the water were noted after each casing volume was removed. Field parameter data for each well are presented below.

<u>Well</u>	<u>Purge Vol.</u>	<u>Temp. (C)</u>	<u>pH</u>	<u>Conductivity</u>	<u>Appearance</u>
MW-3	1	22.7	6.98	80 x 10	slightly turbid, gray, sheen
MW-3	2	22.9	6.89	78 x 10	slightly turbid, gray, sheen
MW-3	3	22.8	6.83	78 x 10	turbid, gray, sheen, fine debris
MW-2	1	23.0	7.19	80 x 10	yellow-brown, turbid, sheen
MW-2	2	20.6	7.40	88 x 10	same as above
MW-2	3	19.9	7.45	88 x 10	less turbid, otherwise same

Sample Collection

After purging, groundwater samples were obtained from wells MW-3 and MW-2 using the same disposable bailers that were used to purge each well. Sample number LF-MW-3 was obtained from well MW-3 at 1445. Three pre-labeled sample bottles were filled, (2) 40-ml VOAs for BTEX, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene, and (1) 1-liter amber glass bottle for WTPHd.

MEMORANDUM

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September 27, 1995

117627.A0.ZZ

Sample number LF-MW-2 was obtained from well MW-2 at 1530. Three pre-labeled sample bottles were filled, (2) 40-ml VOAs for BTEX, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene, and (1) 1-liter amber glass bottle for WTPHd.

Filled sample bottles were placed in a cooler with four gallon-size Ziplock bags filled with ice. In addition, (2) 40-ml VOAs (filled with water at the laboratory) were placed in the cooler as trip blanks. The bottles were wiped to remove any sample or preservative that could have spilled on the outside and then were packed in shock-absorbing material for transport.

A CH2M HILL chain of custody (COC) form was filled out for the samples. The samples were relinquished to Sonny Bivins at 1600. This transfer of custody is reflected on the COC form. The COC was then placed in a plastic bag and taped to the inside lid of the sample cooler. Signed and dated custody seals were placed on the cooler such that they would be broken should the cooler be opened.

TO: File

COPIES: Jeff Randall/CH2M HILL

FROM: Douglas Kunkel/CH2M HILL

DATE: December 7, 1995

SUBJECT: Longview Fibre Groundwater Sampling, November 28, 1995

PROJECT: 117627.A0.ZZ

Introduction

This memorandum summarizes the field work associated with groundwater sampling at the Longview Fibre Company Seattle Plant on November 28, 1995. The 10-acre plant is located at 5901 East Marginal Way, Seattle Washington. Two shallow aquifer monitoring wells were sampled for BTEX, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and WTPH-d.

CH2M HILL sampling personnel arrived at the plant and checked in with Sonny Bivins, the client contact person. The CH2M HILL personnel and Mr. Bivins discussed drums for handling purge water and access to the wells which were blocked by cars at the time of the site visit.

Instrument Calibration

After the site walk was completed CH2M HILL personnel calibrated health and safety and water-quality equipment. A MiniRAE photoionization detector (PID) serial number 10341 was used as for health and safety monitoring of the breathing zone. The PID was calibrated to 100 ppm isobutylene calibration gas (Hazco lot number 43329 using a 0.5 liter per minute regulator and direct tubing. The MiniRAE read 100 ppm using the calibration gas, background at the site was zero ppm.

Two water-quality instruments were used; an Orion model SA230A pH meter (CH2M HILL serial number 3082), and a YSI model 33 SCT meter (CH2M HILL serial number 3011). The pH meter was calibrated to pH 4 and pH 7 buffer solutions and read 4.01 and 7.00 respectively. The YSI was checked against a 1,000 μ mho standard solution and read 96 x 10 at 24° C.

Water Level Measurements

Depth to water (DTW) and total depths (TD) were measured to determine purge volumes for the two monitoring wells. A Solinst electronic water level indicator was used for this task. The water level indicator was decontaminated between measurements by washing the probe and the portion of the tape that was used in a solution of tap water and Liquinox then rinsing with distilled water. Water level and total depth data are presented below.

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December 7, 1995

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<u>Well</u>	<u>Time</u>	<u>DTW</u>	<u>TD</u>
MW-3	1130	4.74	15.38
MW-2	1020	4.74	14.48

Purge volumes were then calculated from these data. One casing volume for well MW-3 is 1.77 gallons, three casing volumes is 5.32 gallons. For MW-2, one casing volume is 1.62 gallons and three casing volumes is 4.87 gallons.

Well Purging

Prior to purging, a disposable translucent plastic bailer was slowly lowered halfway into the water in each well to evaluate if there were any product layers floating on the water surface. A sheen was noted at both wells but neither well had a measurable layer of floating product.

Both wells were purged using single-use disposable bailers. Bailers were lowered and raised in the wells using a plastic cord reel and 100-lb test monofilament fishing line. The bailer and fishing line were discarded between wells. The cord reel was decontaminated by washing in a solution of tap water and Liquinox followed by a distilled water rinse.

Purge volumes were monitored using a 5-gallon bucket marked at gallon increments. The field parameters pH, temperature, conductivity, and the appearance of the water were noted after each casing volume was removed. Field parameter data for each well are presented below.

<u>Well</u>	<u>Purge Vol.</u>	<u>Temp. (C)</u>	<u>pH</u>	<u>Conductivity</u>	<u>Appearance</u>
MW-2	1	15.5	6.72	68 x 10	yellow-brown, slightly turbid, slight sheen, some small maggots
MW-2	2	15.4	6.74	55 x 10	same as above, less turbid
MW-2	3	15.4	6.71	55 x 10	same as above
MW-3	1	15.8	6.54	255 x 10	slightly turbid, gray, heavy sheen product odor noted
MW-3	2	16.1	6.46	290 x 10	same as above, small pieces of debris in water
MW-3	3	15.9	6.42	300 x 10	same as above

Sample Collection

After purging, groundwater samples were obtained from wells MW-2 and MW-3 using the same disposable bailers that were used to purge each well. Sample number LF-MW-2 was obtained from well MW-2 at 1050. Three pre-labeled sample bottles were filled, (2) 40-ml

MEMORANDUM

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December 7, 1995

117627.A0.ZZ

VOAs for BTEX, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene, and (1) 1-liter amber glass bottle for WTPH-d.

Sample number LF-MW-3 was obtained from well MW-3 at 1200. Three pre-labeled sample bottles were filled, (2) 40-ml VOAs for BTEX, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene, and (1) 1-liter amber glass bottle for WTPH-d.

Filled sample bottles were placed in a cooler with four gallon-size Ziplock bags filled with ice. In addition, (2) 40-ml VOAs (filled with water at the laboratory) were placed in the cooler as trip blanks. The bottles were wiped to remove any sample or preservative that could have spilled on the outside and then were packed in shock-absorbing material for transport.

A CH2M HILL chain of custody (COC) form was filled out for the samples. The samples were relinquished to Sonny Bivins at 1250. This transfer of custody is reflected on the COC form. The COC was then placed in a plastic bag and taped to the inside lid of the sample cooler. Signed and dated custody seals were placed on the cooler such that they would be broken should the cooler be opened.

Appendix B
Laboratory Data Sheets &
Chain-of-Custody Forms



October 23, 1995

Service Request No.: K9506070

Jeff Randall
CH2M Hill
777 108th Ave. NE
Bellevue, WA 98004

Re: **Longview Fibre/Project #117627.A0.22**

Dear Jeff:

Enclosed are the results of the sample(s) submitted to our laboratory on september 28, 1995. For your reference, these analyses have been assigned our service request number K9506070.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 239.

Respectfully submitted,

Columbia Analytical Services, Inc.

A handwritten signature in black ink, appearing to read "Howard Boorse", is written over a faint, larger version of the signature.

Howard Boorse
Project Chemist

HB/td

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COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

00002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: CH2M Hill
Project: Longview Fibre/#117627.A0.22
Sample Matrix: Water

Service Request: K9506070
Date Collected: 9/26/95
Date Received: 9/28/95
Date Extracted: NA

Aromatic Volatile Organic Compounds
EPA Methods 5030A/8020
Units: µg/L (ppb)

Sample Name:	LF-MW-3	LF-MW-2	Trip Blank
Lab Code:	K9506070-001	K9506070-002	K9506070-003
Date Analyzed:	10/7/95	10/6/95	10/6/95

Analyte	MRL			
Benzene	0.5	ND	ND	ND
Toluene	1	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
m-,p-Xylenes	1	ND	ND	ND
o-Xylene	0.5	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	<4(a)	ND	ND

a The MRL is elevated because of matrix interferences.

Approved By: 

Date: 10/19/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

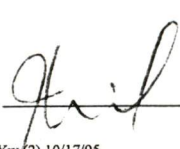
Client: CH2M Hill
Project: Longview Fibre/#117627.A0.22
Sample Matrix: Water

Service Request: K9506070
Date Collected: 9/26/95
Date Received: 9/28/95
Date Extracted: NA

Aromatic Volatile Organic Compounds
EPA Methods 5030A/8020
Units: µg/L (ppb)

Sample Name: Method Blank
Lab Code: K9506070-MB
Date Analyzed: 10/6/95

Analyte	MRL	
Benzene	0.5	ND
Toluene	1	ND
Chlorobenzene	0.5	ND
Ethylbenzene	1	ND
m-,p-Xylenes	1	ND
o-Xylene	0.5	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND

Approved By: 

Date: 10/18/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: CH2M Hill
Project: Longview Fibre/#117627.A0.22
Sample Matrix: Water

Service Request: K9506070
Date Collected: 9/26/95
Date Received: 9/28/95
Date Extracted: 10/2/95
Date Analyzed: 10/12-15/95

Total Petroleum Hydrocarbon as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Analyte:	Diesel	Oil*
Method Reporting Limit:	250	750

Sample Name	Lab Code	Diesel	Oil*
LF-MW-3	K9506070-001	280000(a)	15000(a)
LF-MW-2	K9506070-002	413(b)	221(c)
Method Blank	K951002-MB	ND	ND

* Quantified using 30 weight motor oil as a standard.
a Result is from the analysis of a diluted sample.
b(c) Quantified as diesel(oil). The sample contained components that eluted in the diesel(oil) range, but the chromatogram did not match the typical diesel(oil) fingerprint.

Approved By: Wandauer Date: 10/17/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CH2M Hill
Project: Longview Fibre/#117627.A0.22
Sample Matrix: Water

Service Request: K9506070
Date Collected: 9/26/95
Date Received: 9/28/95
Date Extracted: NA
Date Analyzed: 10/6,7/95

Surrogate Recovery Summary
Aromatic Volatile Organic Compounds
EPA Methods 5030A/8020

Sample Name	Lab Code	Percent Recovery
		4-Bromofluorobenzene
LF-MW-3	K9506070-001	100
LF-MW-2	K9506070-002	96
Trip Blank	K9506070-003	94
Method Blank	K9501007-MB	95

CAS Acceptance Limits: 69-114

Approved By: 

Date: 10/18/95

SUR1/111594
06070PHC.LL1 - BTXwSUR 10/16/95

Page No.:

00006

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CH2M Hill
Project: Longview Fibre/#117627.A0.22
Sample Matrix: Water

Service Request: K9506070
Date Collected: 9/26/95
Date Received: 9/28/95
Date Extracted: 10/2/95
Date Analyzed: 10/12-15/95

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
LF-MW-3	K9506070-001	NA
LF-MW-2	K9506070-002	63
Method Blank	K951002-MB	70

CAS Acceptance Limits: 59-110

NA Not Applicable because of the sample matrix. Analysis of this sample required a dilution such that the surrogate concentration was diluted below the method reporting limit.

Approved By: Wandana Date: 10/17/95

11/10

CH2M Hill Project # 117627...A0.ZZ		Purchase Order # 147539		LAB TEST CODES										SHADED AREA-- FOR LAB USE ONLY									
Project Name Longview Fibre				# OF CONTAINERS	ANALYSES REQUESTED BTEX 8020 chlorobenzene 1,2 dichlorobenzene 1,4 dichlorobenzene 1,3 dichlorobenzene WTPHD										Lab 1 #		Lab 2 #						
Company Name/CH2M HILL Office CH2M Hill Seattle															Quote #		Kit Request #						
Project Manager & Phone # 453-5000 Mr. [] Ms. [] Jeff Randall Dr. [X]		Report Copy to: Jeff Randall													Project #						No. of Samples		Page of
Requested Completion Date: As per contract		Sampling Requirements SDWA NPDES RCRA OTHER <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>													Sample Disposal: Dispose <input checked="" type="checkbox"/> Return <input type="checkbox"/>		Login		LIMS Ver				
CLIENT SAMPLE ID (9 CHARACTERS)															REMARKS		LAB 1 ID	LAB 2 ID					
Sampling Date	Time	Type C O M P	Matrix G R A B W A T E R S O I L A I R																				
9/26	1445	X	X			LF - MW - 3		3	X	X													
9/26	1530	X	X			LF - MW - 2		3	X	X													
9/26						TRIP		2	X														
5/31		X	X			TRIP		2	X										Trip Blank				
Sampled By & Title Doug Kunkel Doug Kunkel Hy 03				Date/Time 9/26/95 1600		Relinquished By Doug Kunkel Doug Kunkel				Date/Time 9/26/95 1600		QC Level: 1 2 3 Other: _____											
Received By Doug Kunkel				Date/Time 9/26/95		Relinquished By				Date/Time		COC Rec		ICE									
Received By				Date/Time		Relinquished By				Date/Time		Ana Req		TEMP									
Received By Ruth Higley Ruth Higley				Date/Time 9/23/95		Shipped Via UPS BUS Fed-Ex Hand Other _____				Shipping #													
Work Authorized By Doug Kunkel Doug Kunkel 9/26/95				Remarks BTEX 8020, chlorobenzene, 1,2 Dichlorobenzene, 1,4 Dichlorobenzene, 1,3 Dichlorobenzene on 40ML VOA's																			

00000



December 13, 1995

Service Request No.: K9507421

Jeff Randall
CH2M Hill
777 108th Ave. NE
Bellevue, WA 98004

Re: **Longview Fibre/Project #117627.A0.ZZ**

Dear Jeff:


Enclosed are the results of the sample(s) submitted to our laboratory on November 29, 1995. For your reference, these analyses have been assigned our service request number K9507421.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions. My extension is 239.

Respectfully submitted,

Columbia Analytical Services, Inc.


Howard Boofse
Project Chemist

HB/td

Page 1 of 9

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
J	Estimated concentration. The value is less than the method reporting limit, but greater than the method detection limit.
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected at or above the MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

00002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: CH2M Hill Corporation
Project: Longview Fibre/#117627.A0.ZZ
Sample Matrix: Water


Service Request: K9507421
Date Collected: 11/28/95
Date Received: 11/29/95
Date Extracted: NA

Aromatic Volatile Organic Compounds
 EPA Methods 5030A/8020
 Units: µg/L (ppb)

Sample Name:	LF-MW-2	LF-MW-3	Trip Blank
Lab Code:	K9507421-001	K9507421-002	K9507421-003
Date Analyzed:	12/1/95	12/1/95	11/30/95

Analyte	MRL	LF-MW-2	LF-MW-3	Trip Blank
Benzene	0.5	ND	ND	ND
Toluene	1	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Ethylbenzene	1	ND	ND	ND
m-,p-Xylenes	1	ND	ND	ND
o-Xylene	0.5	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	<3(a)	ND

a The MRL is elevated because of matrix interferences.

Approved By:  Date: 12-13-95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: CH2M Hill Corporation
Project: Longview Fibre/#117627.A0.ZZ
Sample Matrix: Water

Service Request: K9507421
Date Collected: 11/28/95
Date Received: 11/29/95
Date Extracted: NA

Aromatic Volatile Organic Compounds
EPA Methods 5030A/8020
Units: µg/L (ppb)

Sample Name: Method Blank
Lab Code: K951130-MB
Date Analyzed: 11/30/95

Analyte	MRL	
Benzene	0.5	ND
Toluene	1	ND
Chlorobenzene	0.5	ND
Ethylbenzene	1	ND
m-,p-Xylenes	1	ND
o-Xylene	0.5	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND

Approved By: _____



Date: 12-13-95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: CH2M Hill Corporation
Project: Longview Fibre/#117627.A0.ZZ
Sample Matrix: Water

Service Request: K9507421
Date Collected: 11/28/95
Date Received: 11/29/95
Date Extracted: 12/4/95
Date Analyzed: 12/4,5/95

Total Petroleum Hydrocarbon as Diesel and Oil
Washington DOE Method WTPH-D
Units: µg/L (ppb)

Analyte:	Diesel	Oil*
Method Reporting Limit:	250	750

Sample Name	Lab Code		
LF-MW-2	K9507421-001	ND	ND
LF-MW-3	K9507421-002	23500	1880
Method Blank	K951204-MB	ND	ND

* Quantified using 30 weight motor oil as a standard.

Approved By:  Date: 12-13-95

APPENDIX A
LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CH2M Hill Corporation
Project: Longview Fibre/#117627.A0.ZZ
Sample Matrix: Water

Service Request: K9507421
Date Collected: 11/28/95
Date Received: 11/29/95
Date Extracted: NA
Date Analyzed: 11/30,12/1/95

Surrogate Recovery Summary
Aromatic Volatile Organic Compounds
EPA Methods 5030A/8020

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
LF-MW-2	K9507421-001	90
LF-MW-3	K9507421-002	93
Trip Blank	K9507421-003	90
Method Blank	K951130-MB	84

CAS Acceptance Limits: 69-114

Approved By: _____



Date: 12-13-95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CH2M Hill Corporation
Project: Longview Fibre/#117627.A0.ZZ
Sample Matrix: Water

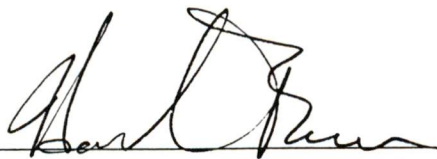
Service Request: K9507421
Date Collected: 11/28/95
Date Received: 11/29/95
Date Extracted: 12/4/95
Date Analyzed: 12/4,5/95

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel and Oil
Washington DOE Method WTPH-D

Sample Name	Lab Code	Percent Recovery o-Terphenyl
LF-MW-2	K9507421-001	80
LF-MW-3	K9507421-002	77
Method Blank	K951204-MB	82

CAS Acceptance Limits: 59-110

Approved By: _____

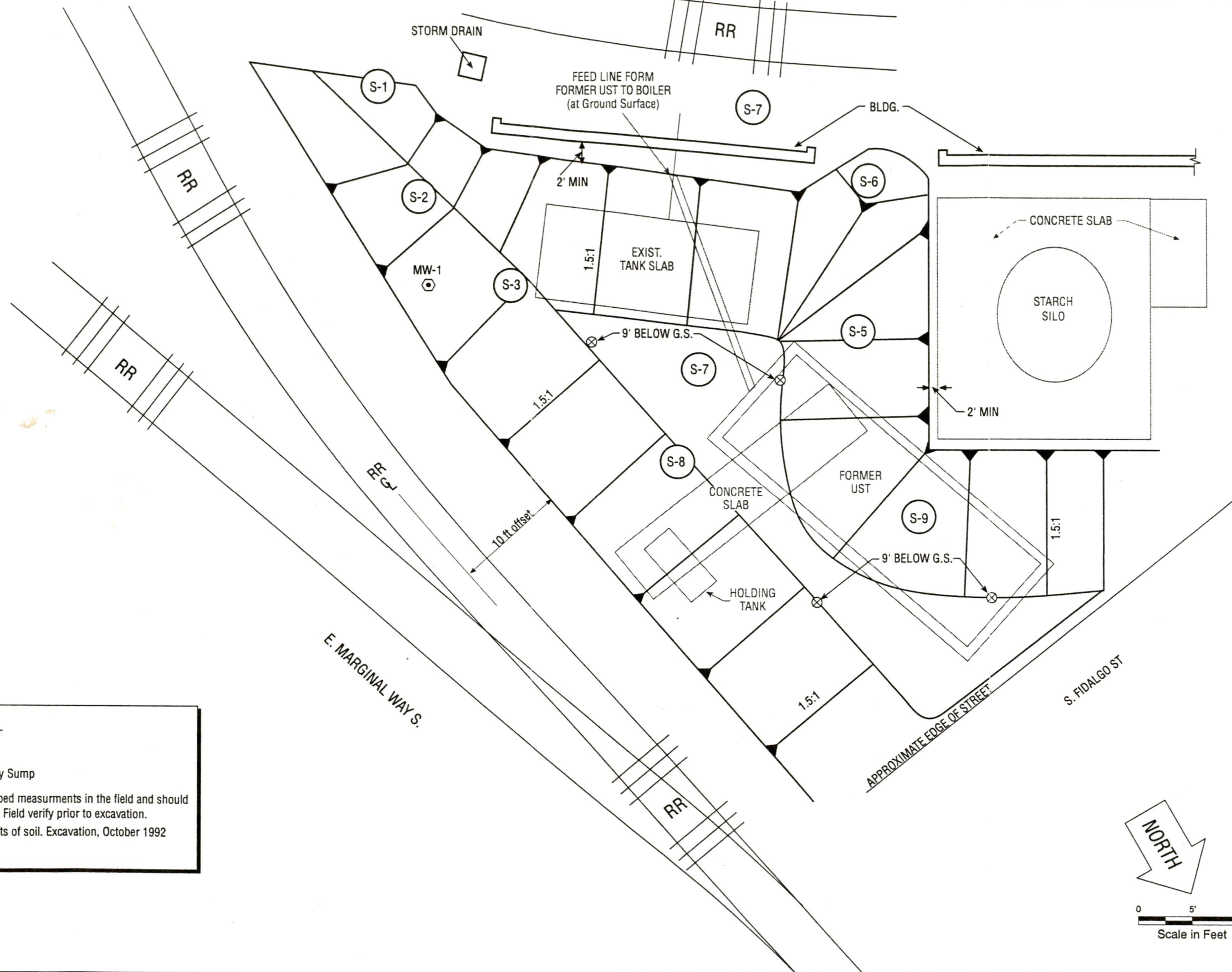


Date: 12-13-95





CH2M Hill Project # 117627		Purchase Order # 147539		LAB TEST CODES				SHADED AREA-- FOR LAB USE ONLY			
Project Name Longview Fibre		# O F C O N T A I N E R S		ANALYSES REQUESTED				Lab 1 # K95-7421		Lab 2 #	
Company Name/CH2M HILL Office CH2M Hill Seattle								Quote #		Kit Request #	
Project Manager & Phone # Mr. [] Jeff Randall (206) 453-5000 Ms. [] Jeff Randall Dr. []		Report Copy to: Jeff Randall		BTEX 8020, Chlorobenzene, 1,2 dichlorobenzene, 1,3 dichlorobenzene, 1,4 dichlorobenzene, WTPH-D				Project #			
Requested Completion Date: AS PER CONTRACT		Sampling Requirements SDWA <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER <input type="checkbox"/>						Sample Disposal: Dispose <input checked="" type="checkbox"/> Return <input type="checkbox"/>		No. of Samples	
Type C O M P G R A B W A T E R S O I L A I R		Matrix		CLIENT SAMPLE ID (9 CHARACTERS)				Login		LIMS Ver	
Date		Time						REMARKS		LAB 1 ID	
11/28/050		XX		LF-MW-2				4		XX	
11/28/200		XX		LF-MW-3				4		XX	
---		XX		TRIP BLANK				2		XX	
Sampled By & Title Doug Kunkel (Please sign and print name)		Date/Time 11/28/95 ^{12:45} _{12:30}		Relinquished By Douglas Kunkel (Please sign and print name)				Date/Time 11/28/95		QC Level: 1 2 3 Other: _____	
Received By Lori K. Hann (Please sign and print name)		Date/Time 11/29/95 1030		Relinquished By				Date/Time		COC Rec	
Received By		Date/Time		Relinquished By				Date/Time		ICE	
Received By		Date/Time		Relinquished By				Date/Time		Ana Req	
Received By		Date/Time		Relinquished By				Date/Time		Cust Seal	
Received By		Date/Time		Shipped Via UPS BUS Fed-Ex Hand <input checked="" type="radio"/> Other Client Shipped				Shipping #			
Work Authorized By Doug Kunkel (Please sign and print name)		Date/Time 11/28/95		Remarks BTEX 8020 chlorobenzene				1,2 dichlorobenzene 1,4 dichlorobenzene 1,3 dichlorobenzene ON UOAS			

60000

DRAFT



LEGEND AND NOTES

-  Monitoring Well
-  Product Recovery Sump
- 1. Plan view is based on taped measurements in the field and should be considered approximate. Field verify prior to excavation.
-  Approximate limits of soil. Excavation, October 1992
-  Spot Elevation

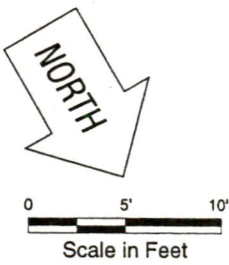


FIGURE 2
Site Map
LONGVIEW FIBRE COMPANY
SEATTLE, WASHINGTON