12.3.138 a2
1-31-96

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 summery 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

USEPA SF
1256795

LFC000852

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,

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

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.

Seattle Office
777 108th Avenue NE, Bellevue, WA 98004-5118
P.O. Box 91500, Bellevue, WA 98009-2050
206 453-5000
Fax No. 206 462-5957

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 ND	<4(a) <3(a)
Diesel	250	413(b) ND	280,000(c) 23,500
Oil	750	221(d) ND	15,000(c) 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.

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

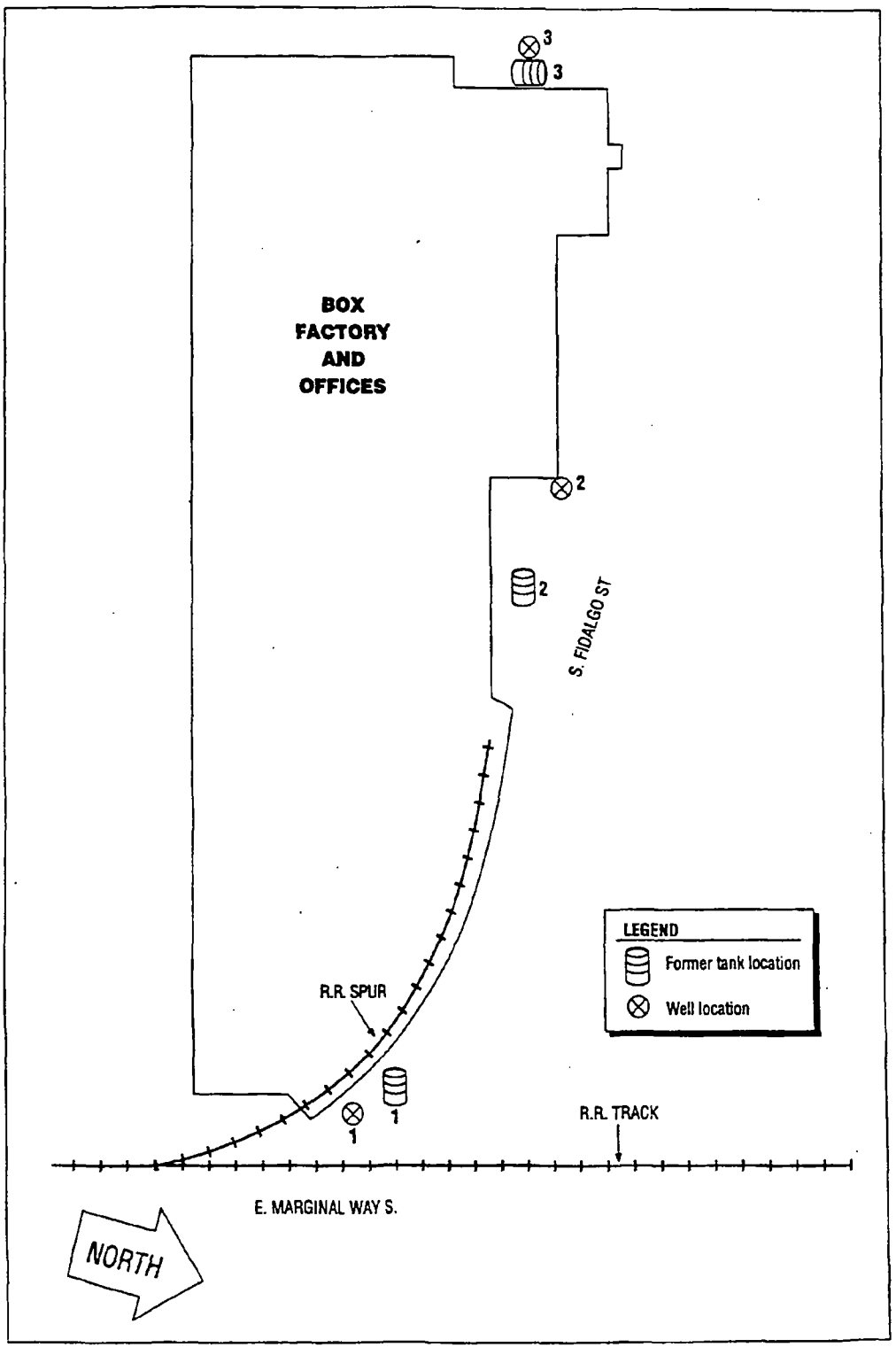

FIGURE 1
Plant Map
LONGVIEW FIBRE COMPANY
SEATTLE, WASHINGTON

Appendix A

Field Sampling Memoranda

MEMORANDUM CH2M HILL

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 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.

Well	Time	DTW	TD
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.

Well	Purge Vol.	Temp. (C)	pH	Conductivity	Appearance
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.

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 place on the cooler such that they would be broken should the cooler be opened.

MEMORANDUM CH2M HILL

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 µmho 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.

Well	Time	DTW	TD
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.

Well	Purge Vol.	Temp. (C)	pH	Conductivity	Appearance
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

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 place on the cooler such that they would be broken should the cooler be opened.

Appendix B

Laboratory Data Sheets &
Chain-of-Custody Forms

Columbia Analytical Services inc.

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.

Howard Boorse
Project Chemist

HB/td

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1068

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.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	CH2M Hill	**Service Request:**	K9506070
Project:	Longview Fibre/#117627.A0.22	**Date Collected:**	9/26/95
Sample Matrix:	Water	**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

3S22/102094
06070PHC LL1 - BTXw 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: 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

3S22/102094
06070FHC.LL1 - BTXw (2) 10/17/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	CH2M Hill	**Service Request:**	K9506070
Project:	Longview Fibre/#117627.A0.22	**Date Collected:**	9/26/95
Sample Matrix:	Water	**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**		
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: Vandaue Date: 10/17/95

2A/102094
06070PHC.VN1 - TPHw 10/17/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	CH2M Hill	**Service Request:**	K9506070
Project:	Longview Fibre/#117627.A0.22	**Date Collected:**	9/26/95
Sample Matrix:	Water	**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 Bank	K9501007-MB	95

CAS Acceptance Limits: 69-114

Approved By: _____ Date: 10/18/95

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

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: 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: Vandane Date: 10/17/95

SUR1/111594
06070PHC.VN1 - TPHwSUR 10/17/95

CH2M HILL

APPLIED SCIENCES LABORATORY

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M Hill Project #: 117627 . A0.ZZ

Purchase Order #: 147539

Project Name: Longview Fibre

Company Name/CH2M HILL Office: CH2M Hill Seattle

Project Manager & Phone #: 453-5000 Mr. [ ] Ms. [ ] Dr. [X] Jeff Randall

Report Copy to: Jeff Randall

Requested Completion Date: As per contract

Sampling Requirements: SDWA [ ] NPDES [ ] RCRA [ ] OTHER ____

Sample Disposal: Dispose [X] Return [ ]

LAB TEST CODES

ANALYSES REQUESTED

Sampling Date (1995)	Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	Matrix AIR	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	BTEX 8020, chlorobenzene, 1,3 Dichlorobenzene, 1,4 Dichlorobenzene	WTPH-d
9/26	1445		X	X			LF-MW-3	3	X	X
9/26	1530		X	X			LF-MW-2	3	X	X
~~9/26~~							DOK 9/26	2	X	
9/31	—	1	X	X			TRIP	2	X	

Remarks: Trip Blank

Doug 9/26/95

SHADED AREA-- FOR LAB USE ONLY: Lab 1 # / Lab 2 # / Quote # / Kit Request # / Project # / No. of Samples / Page of / Login / LIMS Ver

REMARKS	LAB 1 ID	LAB 2 ID

Sampled By & Title (Please sign and print name): Doug Kunkel Doug Kunkel Hy03	Date/Time 9/26/95 1600	Relinquished By (Please sign and print name): Doug Kunkel Doug Kunkel	Date/Time 9/26/95 1600
Received By (Please sign and print name): Bonny Sekiguchi	Date/Time 9/26/95 1600	Relinquished By (Please sign and print name):	Date/Time
Received By (Please sign and print name):	Date/Time	Relinquished By (Please sign and print name):	Date/Time
Received By (Please sign and print name): Ruth Higley Ruth Higley	Date/Time 9/27/95	Shipped Via: UPS BUS Fed-Ex Hand Other ____	Shipping #
Work Authorized By (Please sign and print name): Doug Kunkel Doug Kunkel 9/26/95		Remarks: BTEX 8020, chlorobenzene, 1,2 Dichlorobenzene, 1,3 Dichlorobenzene, 1,4 Dichlorobenzene ON 40ML VOA'S	

QC Level: 1 2 3 Other: ____

COC Rec	ICE
Ana Req	TEMP
Cust Seal	Ph

00005

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: Original - LAB, Yellow - LAB, Pink - Client

REV 3/94 FORM 340

Columbia Analytical Services inc.

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 Boorse
Project Chemist

HB/td

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1068

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.

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**			
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

3S22/102094
K9507421.XLS - BTXw 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

3S22/102094
K9507421.XLS - BTXw (2) 12/13/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	CH2M Hill Corporation	**Service Request:**	K9507421
Project:	Longview Fibre/#117627.A0.ZZ	**Date Collected:**	11/28/95
Sample Matrix:	Water	**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

2A/102094
K9507421.XLS - TPHw 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

SUR1/111594
K9507421.XLS - BTXwSUR 12/13/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	CH2M Hill Corporation	**Service Request:**	K9507421
Project:	Longview Fibre/#117627.A0.ZZ	**Date Collected:**	11/28/95
Sample Matrix:	Water	**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

SUR1/111594
K9507421.XLS - TPHwSUR 12/13/95

CH2M HILL

APPLIED SCIENCES LABORATORY

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M Hill Project #: 117627 A0ZZ
Purchase Order #: 147539
Project Name: Longview Fibre
Company Name/CH2M HILL Office: CH2M Hill Seattle
Project Manager & Phone #: (206) 453-5000 Mr. [ ] Ms. [ ] Dr. [X] Jeff Randall
Report Copy to: Jeff Randall
Requested Completion Date: As per contract
Sampling Requirements: SDWA [ ] NPDES [ ] RCRA [ ] OTHER ____
Sample Disposal: Discard [X] Return [ ]

LAB TEST CODES

ANALYSES REQUESTED

SHADED AREA-- FOR LAB USE ONLY: Lab 1 # K95-7421; Lab 2 #; Quote #; Kit Request #; Project #; No. of Samples; Page of; Login; LIMS Ver

Sampling Date	Sampling Time	Type COMP	Type GRAB	Matrix WATER	Matrix SOIL	Matrix AIR	CLIENT SAMPLE ID (9 CHARACTERS)	# OF CONTAINERS	BTEX 8020, Chlorobenzene, 1,2 Dichlorobenzene, 1,3 Dichlorobenzene, 1,4 Dichlorobenzene	NTPH-D	REMARKS	LAB 1 ID	LAB 2 ID
11/28	1050		X	X			LF-MW-2	4	X	X	3 VOAs 1 1l Ag		
11/28	1200		X	X			LF-MW-3	4	X	X	3 VOAs 1 1l Ag		
—			X	X			TRIP BLANK	2	X		Trip Blank		

Sampled By & Title (Please sign and print name): Doug Kunkel Doug Kunkel H403 — Date/Time: 11/28/95 1245 1300 1330

Relinquished By (Please sign and print name): Douglas Kunkel Douglas Kunkel — Date/Time: 11/28/95 1245

Received By (Please sign and print name): Lori K. Haan Lori K. Haan — Date/Time: 11 29 95 1030

Relinquished By (Please sign and print name): — Date/Time:

Received By (Please sign and print name): — Date/Time:

Relinquished By (Please sign and print name): — Date/Time:

Received By (Please sign and print name): — Date/Time:

Shipped Via: UPS BUS Fed-Ex Hand Other Client Shipped — Shipping #:

Work Authorized By (Please sign and print name): Doug Kunkel Doug Kunkel 11/28/95

Remarks: BTEX 8020 Chlorobenzene 1,2 dichlorobenzene 1,3 dichlorobenzene 1,4 dichlorobenzene ON VOAs

QC Level: 1 2 3 Other: ____

COC Rec	ICE
Ana Req	TEMP
Cust Seal	Ph

Instructions and Agreement Provisions on Reverse Side

DISTRIBUTION: Original - LAB, Yellow - LAB, Pink - Client

REV 3/94 FORM 340

00000

LFC000882