November 23, 2010
Project No. 0-915-17115-0

Longview Fibre, Inc.
5901 E. Marginal Way S.
Seattle, Washington 98134

Attention: John Morgan

Subject: Groundwater Sampling Report
Seattle, Washington

Dear John:

AMEC Earth and Environmental, Inc. (AMEC), is pleased to submit this *Groundwater Sampling Report* for the above-referenced property (Longview Fibre) located in Seattle, Washington. This report has been prepared for the exclusive use of Longview Fibre, Inc., in accordance with generally accepted environmental practices.

AMEC appreciates the opportunity to be of service to Longview Fibre on this project. If you have any questions or comments regarding this report, please feel free to contact our office at (425) 368-1000.

Sincerely,

AMEC Earth and Environmental, Inc.

Justin Toney
Staff Scientist

David Braungardt
Project Manager

Attachments

Figure 1: Monitoring Well Locations
Attachment 1: Groundwater Sample Logs
Attachment 2: Laboratory Analytical Report and Chain-of-Custody

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1.0 INTRODUCTION

AMEC Earth and Environmental, Inc. (AMEC) prepared this *Groundwater Sampling Report* to summarize groundwater sample collection activities performed at the Longview Fibre, Inc. (Longview Fibre) property located at 5901 E. Marginal Way S., Seattle, Washington (Site). AMEC's work was completed under contract with Longview Fibre (Purchase Order No. 1177855) and in accordance with AMEC's proposal 91P-21202, dated November 8, 2010. AMEC's scope of work is outlined below.

- Collect groundwater samples from two wells on Site;
- Measure and record water quality parameters during the purging of groundwater in the wells;
- Analyze the groundwater samples for diesel (carbon range C12 to C24) and residual range organics (carbon range C24 to C38); and
- Prepare a summary report.

AMEC understands that the groundwater in the area of the monitoring wells to be sampled by AMEC has been impacted by a release of fuel from one or more former leaking underground storage tanks. Ecology was previously notified of this release.

1.1 Site Description

The Site is bounded on the north by Saint-Gobain Containers' operations; on the east by East Marginal Way S.; on the south by BPB Gypsum, Inc's operations; and on the west by the Lower Duwamish Waterway. According to the King County Tax Assessor's records, the Site is owned by Lonview Fibre Paper and Packaging, Inc.

The two wells sampled by AMEC are located on the north and west sides of the Site, shown on Figure 1. Both wells appeared to be in good condition and are protected by flush-mount traffic rated well monuments. Well 01 (as named by AMEC) is located on the north side of the property near the northwest corner of the receiving docks. AMEC measured the depth of this well to be 14.35 feet below the top of casing (TOC). Groundwater was encountered at 4.62 feet below the TOC using a water level meter. Well 02 (as named by AMEC) is located on the west side of the property in the parking area west of the lunch room. AMEC measured the depth of this well to be 15.31 feet below TOC, and groundwater was encountered at a depth of 5.10 feet below TOC.

2.0 GROUNDWATER SAMPLE COLLECTION

AMEC collected groundwater samples from Well 01 and Well 02 on November 12, 2010. Before collecting groundwater samples in each of the wells AMEC removed the well sock, stored it in a dedicated clean plastic bag, and re-installed it following completion of sampling activities. According to

John Morgan (Longview Fibre) the well socks had been replaced a few days prior to the sampling activities. AMEC noted that the well socks were in good condition and no free product was observed on them, however, AMEC also noted that the well socks were not in the water column. AMEC recommends lowering the wells socks so they are in the water column. To collect groundwater samples representative of the shallow aquifer below the Site, groundwater was removed (purged) from the wells using a peristaltic pump with dedicated disposable tubing. Groundwater was removed from the wells at a flow rate not exceeding 388 milliliters per minute. During the purging of the wells, water quality parameters were measured using a Horiba U-22 water quality meter. Parameters such as, temperature, pH, specific conductivity, turbidity, dissolved oxygen, and oxidation-reduction potential were recorded at regular intervals onto *Groundwater Sample Logs* (Attachment 1).

In Well 01, AMEC observed a sulfur/rotten egg odor, as well as what appeared to be free product on the down hole instruments and pump tubing. No odor or free product was observed in Well 02.

Upon stabilization of the water quality parameters, one groundwater sample was collected from each well using the peristaltic pump. The samples were collected from approximately the middle of the water column in each of the wells. The groundwater was placed in laboratory-provided containers, labeled, sealed, and stored on ice in a cooler. The cooler was securely stored under proper chain-and-custody procedures and was delivered to the Analytical Resources, Incorporated laboratory in Tukwila, Washington within four hours of sample collection.

3.0 GROUNDWATER SAMPLE RESULTS

Two primary and one duplicate groundwater samples were analyzed for Diesel Range Organics (DRO) and Residual Range Organics (RRO) using Method NWTPH-Dx Extended. The duplicate sample was collected from Well 01 for evaluation of laboratory quality control. The groundwater analytical results are presented in Table 1 and are discussed in this section. Attachment 2 contains the groundwater sampling analytical report and the chain-of-custody. The results were screened against the Washington State Department of Ecology's (Ecology) Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs). The laboratory detection limits are below the MTCA Method A CULs.

Table 1. Groundwater Analytical Results

Sample ID	Well Location	Diesel Range Organics (mg/L)	Residual Range Organics (mg/L)
LF-111210-01	**Well 01**	**0.29**	**0.28**
LF-111210-02	**Well 02**	**0.82**	**0.23**
LF-DUP	**Well 01**	**0.31**	**0.23**
MTCA Method A Cleanup Levels		***0.50***	***0.50***

Notes:
mg/L = milligrams per liter
BOLD = detection
Red font = detection above MTCA Method A CULs
MTCA Method A Cleanup Levels (CULs) from *Washington State Department of Ecology, Cleanup Levels and Risk Calculations* (CLARC) database (November 19, 2010)

A review of the analytical results indicates the following:

1. Detections of diesel range organics and residual range organics were below Ecology's MTCA Method A CULs in Well 01 and in the field duplicate sample.
2. Detections of residual range organics were below Ecology's MTCA Method A CULs in Well 02.
3. Detections of diesel range organics were above Ecology's MTCA Method A CULs in Well 02.
4. The relative percent difference in detected concentration between the primary and duplicate sample is less than 10 percent, and therefore is acceptable.

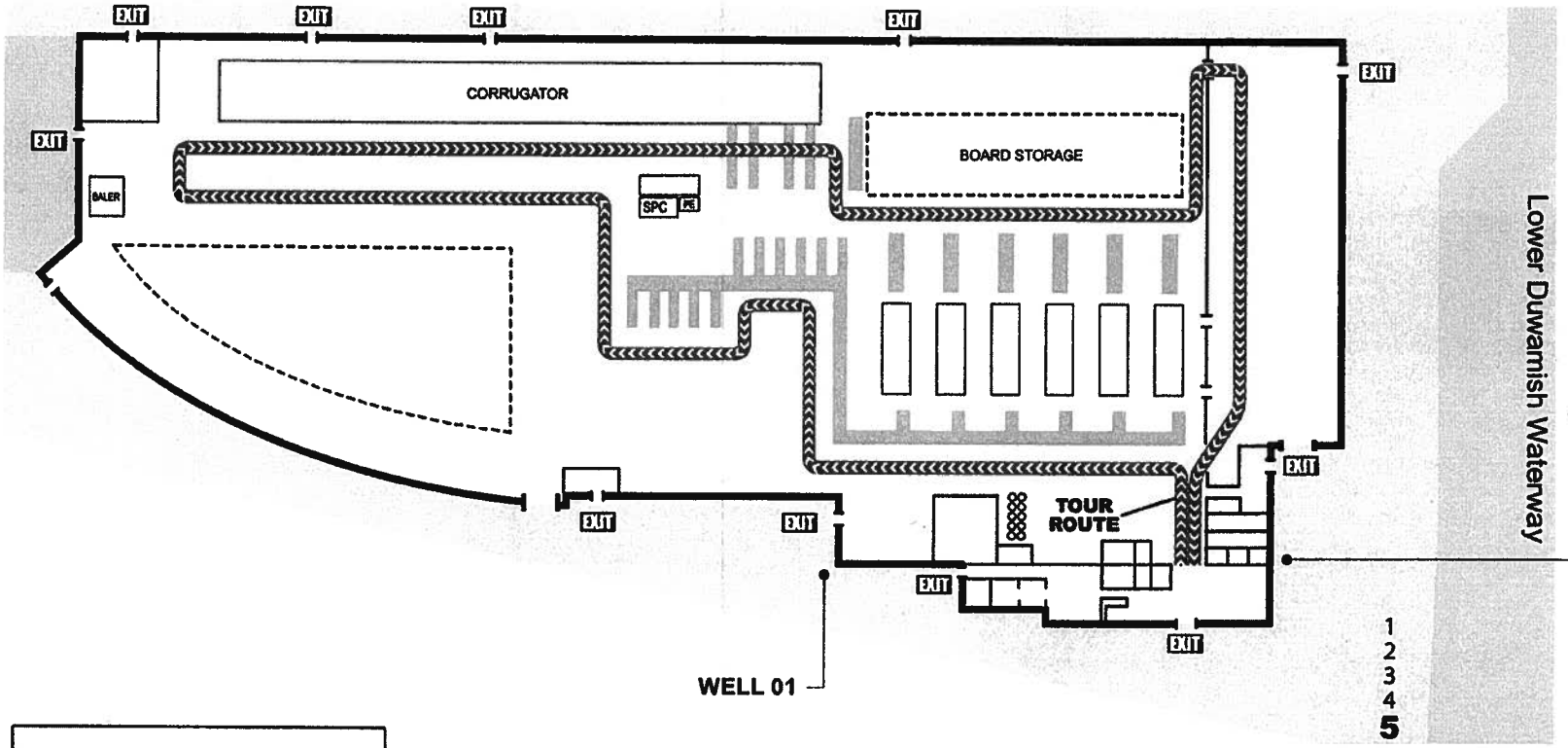
4.0 SUMMARY

AMEC collected groundwater samples from Well 01 and Well 02 and analyzed the groundwater samples for diesel and residual range organic hydrocarbons. Dissolved-phase diesel and residual range organics are present in both wells. In addition, free product was observed in Well 01. Although free product was not observed in Well 02, a review of the laboratory results indicates that the dissolved-phase concentration of diesel in this well is above Ecology's CUL for diesel.

LIMITATIONS

This report was prepared exclusively for Longview Fibre (Client) by AMEC. The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in AMEC services and based on: (i) information available at the time of preparation; (ii) data supplied by outside sources; and (iii) the assumptions, conditions, and qualifications set forth in this report and the AMEC proposal. This report is intended to be used by the Client for the Site only, subject to the terms and conditions of the Client contract with AMEC. Any other us of, or reliance on, this report by any third party is at the sole risk of the party.

The findings contained herein are relevant to the date of the AMEC Site visit and should not be relied upon to represent conditions at later dates. Data presented herein are from discreet sampling points identified in our report, and can not be construed to represent conditions at unsampled locations.



Drawing is a reproduction of drawing prepared by others. AMEC makes no warranty as to the accuracy of the drawing.

130,000 SQUARE FOOT PLANT
LOCATED ON 3.6 ACRES

EVACUATION MUSTERING POINT
VISITORS ARE TO STAND
NEAR THE NUMBER "5"
PAINTED ON ASPHALT

N

NOT TO SCALE

AMEC Earth & Environmental, Inc.
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PROJECT TITLE: LONGVIEW FIBRE GROUNDWATER SAMPLING

SHEET TITLE: MONITORING WELL LOCATIONS

LOCATION: 5901 E. MARGINAL WAY S.
SEATTLE, WASHINGTON

DATE: NOVEMBER 2010

FIGURE NO.

1

Well 01
Corner by

GROUND-WATER SAMPLING LOG

WELL NO: Receiving Docks LOCATION: Longview Fibre - Seattle PROJECT #: 0915171150

DATE: 11-12-10 TIME: 10:45 CLIMATIC CONDITIONS: Sunny - 50° F

OVA/PID READING WHEN WELL OPENED: _____ DEPTH TO PRODUCT (TOC): _____

STATIC WATER LEVEL (TOC): _____ TOTAL DEPTH OF WELL (TOC): 14.35'

80% RECOVERY DTW (TOC): _____ DTW BEFORE SAMPLING/TIME: 4.62' @ 10:48
4.64' @ 11:50

WELL PURGING:

LENGTH OF SATURATED ZONE: _____ LINEAR FEET

VOLUME OF WATER TO BE EVACUATED: _____ GALS./LINEAR FT. x _____ LINEAR FT.

OF SATURATED x 3 CASING VOLUMES = _____ GALS.

METHOD OF REMOVAL: _____ PUMPING RATE: _____

WELL PURGE DATA:

Date	Time	Gallons Removed	Temp. (C°)	pH	Sp. Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	REDOX (mv)
11-12-10	11:06	0.30	17.6	5.82	0.380	111.0	1.94	-25
	11:08	0.30	17.2	5.91	0.291	117.0	1.29	-36
	11:10	0.60	16.8	5.93	0.290	99.8	1.00	-43
	11:12	0.60	16.4	5.96	0.307	92.9	0.78	-48
	11:14	0.90	16.0	6.02	0.348	64.5	0.62	-54
	11:16	1.20	15.7	6.05	0.368	56.7	0.54	-55
	11:18	1.20	15.4	6.07	0.388	52.3	0.52	-56
	11:20	1.50	15.2	6.07	0.404	45.7	0.43	-57
	11:22	1.50	15.2	6.08	0.407	45.8	0.41	-57
	11:24	1.80	15.1	6.09	0.413	41.7	0.42	-57

SAMPLE WITHDRAWAL METHOD: Low Flow Peristaltic Pump SAMPLED BY: JT

SAMPLE NUMBER(S) AND TIME: LF-111210-01 @ 11:28 & LF-DUP @ 11:28

NOTES: Well has a sulpher/rotten egg odor - Free product observed on well casing & disposable tubing

LAB ANALYSIS PARAMETERS AND PRESERVATIVES: Diesel range organics & residual range organics using Method - NWTPH DRO & RRO

NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 2 - 500 mL unpreserved ambers & 2 - 500 mL unpreserved ambers for Duplicate

DECON. PROCEDURES: Disposable teflon tubing, cleaned Horiba & water level meter with IPA & DI water

SAMPLES DELIVERED TO: ARI Lab TRANSPORTER: Justin

DATE: 11-12-10 TIME: 14:30

CAPACITY OF CASING (GALLONS/LINEAR FOOT)
2" - 0.16 • 4" - 0.65 • 6" - 1.47 • 8" - 2.61 • 10" - 4.08 • 12" - 5.87

Well 02 Outside

GROUND-WATER SAMPLING LOG

WELL NO: Lunch Room LOCATION: Longview Fibre - Seattle PROJECT #: 091S171150

DATE: 11-12-10 TIME: 12:08 CLIMATIC CONDITIONS: Sunny - 50°F

OVA/PID READING WHEN WELL OPENED: _____ DEPTH TO PRODUCT (TOC): _____

STATIC WATER LEVEL (TOC): _____ TOTAL DEPTH OF WELL (TOC): 15.31'

80% RECOVERY DTW (TOC): _____ DTW BEFORE SAMPLING/TIME: 5.10' @ 12:04
5.14 @ 12:40

WELL PURGING:

LENGTH OF SATURATED ZONE: _____ LINEAR FEET

VOLUME OF WATER TO BE EVACUATED: _____ GALS./LINEAR FT. x _____ LINEAR FT.

OF SATURATED x 3 CASING VOLUMES = _____ GALS.

METHOD OF REMOVAL: _____ PUMPING RATE: _____

WELL PURGE DATA:

Date	Time	Gallons Removed	Temp. (C°)	pH	Sp. Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	REDOX (mv)
11-12-10	12:12	0.30	12.3	6.62	0.508	21.4	4.07	-27
	12:14	0.30	13.0	6.38	0.474	12.8	2.58	-24
	12:16	0.60	13.5	6.28	0.457	11.2	2.00	-24
	12:18	0.90	14.2	6.22	0.450	10.1	1.33	-26
	12:20	0.90	14.8	6.18	0.459	12.8	0.99	-30
	12:22	1.20	15.6	6.19	0.489	8.9	0.72	-36
	12:24	1.50	16.0	6.21	0.526	8.2	0.75	-42
	12:26	1.50	16.4	6.23	0.569	8.3	0.56	-47
	12:28	1.80	16.6	6.23	0.582	6.8	0.54	-50
	12:30	1.80	16.7	6.24	0.596	6.6	0.53	-52
	12:32	2.10	16.8	6.25	0.608	6.9	0.52	-53

SAMPLE WITHDRAWAL METHOD: Low Flow Peristaltic Pump SAMPLED BY: JT

SAMPLE NUMBER(S) AND TIME: LF-111210-02 @ 12:35

NOTES: _____

LAB ANALYSIS PARAMETERS AND PRESERVATIVES: Diesel range organics & residual range organics using Method - NWTPH DRO & RRO

NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 2 - 500 mL unpreserved amber

DECON. PROCEDURES: Disposable teflon tubing, cleaned Horiba & water level meter with IPA & DI water

SAMPLES DELIVERED TO: ARI Lab TRANSPORTER: Courier

DATE: 11-12-10 TIME: 14:30

CAPACITY OF CASING (GALLONS/LINEAR FOOT)
2" - 0.16 • 4" - 0.65 • 6" - 1.47 • 8" - 2.61 • 10" - 4.08 • 12" - 5.87