December 21, 2012
Project No. 2-915-17377-A

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

Attention: John Morgan

Subject: Groundwater Sampling Report
Seattle, Washington

Dear Mr. Morgan:

AMEC Environment & Infrastructure, 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 Environment & Infrastructure, 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

AMEC Environment & Infrastructure, Inc.
221 S. 28th Street, Suite 102
Tacoma, Washington 98402
(425) 368-1000 Phone
(425) 368-1003 Facsimile
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1.0 INTRODUCTION

AMEC Environment & Infrastructure, 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 in accordance with AMEC's proposal 91P-21960, dated November 21, 2012. AMEC's scope of work is outlined below.

- Collect groundwater samples from two wells on Site;
- Analyze the groundwater samples for diesel (carbon range C10 to C25) and residual range organics (carbon range C25 to C36); 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. Washington State Department of Ecology (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 Longview Fibre Paper and Packaging, Inc.

The two wells sampled by AMEC are located on the north and west sides of the Site, as shown on Figure 1. The wells both have older flush mounted well monuments that appear to be corroding. AMEC observed that the well covers do not seal. The wells both have newer well caps; however, Well 01 is cut at a slant which makes getting a proper seal on the well impossible. Well 01 had a significant amount of mud around the casing. AMEC cleaned out the mud from the well as best as possible prior to sampling. 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 14.22 feet below the top of casing (TOC). Groundwater was encountered at 4.50 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 15.33 feet below TOC, and groundwater was encountered at a depth of 3.90 feet below TOC.

2.0 GROUNDWATER SAMPLE COLLECTION

AMEC collected groundwater samples from Well 01 and Well 02 on December 4, 2012. Before collecting groundwater samples in each of the wells AMEC removed the well sock, stored it in a decontaminated area, and re-installed it following completion of sampling activities. AMEC noted that the well sock for Well 01 was in good condition and no free product was observed on it; however, AMEC also noted that the well sock was covered in mud and not in the water column. AMEC noted that the well sock for Well 02 was in good condition and no free product was observed on it; however, AMEC also noted that the well sock was not 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 500 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).

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 Friedman & Bruya, Inc. in Seattle, Washington within one hour of sample collection.

3.0 GROUNDWATER SAMPLE RESULTS

Two primary groundwater samples were analyzed for Diesel Range Organics (DRO) and Residual Range Organics (RRO) using Method NWTPH-Dx Extended. The groundwater analytical results are presented in Table 1 and are discussed in this section. Table 1 also shows the groundwater analytical results for the two prior monitoring events (November 2010 and February 2012). Attachment 2 contains the groundwater sampling analytical report and the chain-of-custody. The results were screened against the Ecology's 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 No.	mm/year	Well Number	Diesel Range Organics (ug/L)	Residual Range Organics (ug/L)
LF-111210-01	11/2010	Well 01	**290**	**280**
LF-111210-02	11/2010	Well 02	**820**	**230**
MW-01-020112	02/2012	Well 01	**210**	<250
MW-02-020112	02/2012	Well 02	**1,100**	<250
MW-01-120412	12/2012	Well 01	**110**	<250
MW-02-120412	12/2012	Well 02	**1,800**	**350**
MTCA Method A Cleanup Levels			500	500

Notes:
ug/L = micrograms per liter
BOLD = detection above laboratory reporting limit
Red font = detection greater than MTCA Method A CULs
MTCA Method A Cleanup Levels (CULs) from *Washington State Department of Ecology, Cleanup Levels and Risk Calculations* (CLARC) database (December 17, 2012)

A review of the analytical results indicates the following:

1. Detections of diesel range organics were below Ecology's MTCA Method A CULs in Well 01.
2. Detections of diesel range organics were above Ecology's MTCA Method A CULs in Well 02.
3. Residual range organics were not detected above the laboratory reporting limit in Well 01. Residual range organics were detected above the laboratory reporting limit in Well 02, but were not above Ecology's MTCA Method A CULs.

4.0 SUMMARY AND RECOMMENDATIONS

AMEC collected groundwater samples from Well 01 and Well 02 and analyzed the groundwater samples for diesel and residual range organic hydrocarbons. Diesel range organics are present in both wells and are above Ecology's CUL in Well 02. Residual range organics are present in Well 02, but are not above Ecology's CUL.

The current well monuments are out of compliance with state regulations. AMEC recommends that the wells either be decommissioned or refitted with well monuments that meet with the regulatory standards.

AMEC also recommends that the well socks in each of the wells be lowered so that they are in the water column. The well socks should be monitored at least quarterly to determine if the well socks are still located at the top of the water column.

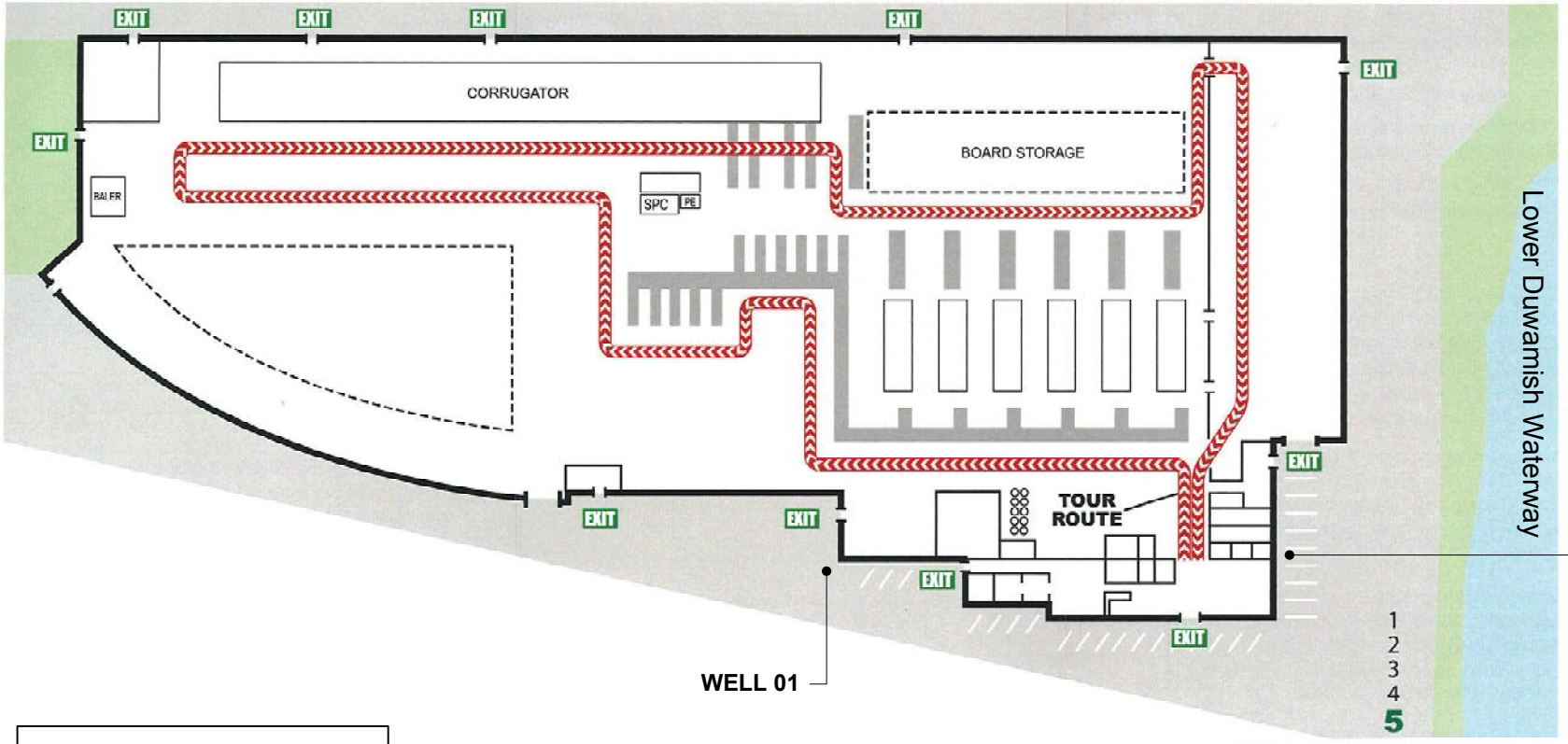
LIMITATIONS

This report was prepared exclusively for Longview Fibre (Client) by AMEC. The quality of information, conclusions, and recommendations 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 use 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 the sampling locations identified in our report, and cannot be construed to represent conditions at unsampled locations.

FIGURE 1

Monitoring Well 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

NOT TO SCALE

AMEC Earth & Environmental, Inc.
221 S. 28th Street
Suite 102
Tacoma, WA 98402
(425) 368-1000
(425) 368-1003 fax

PROJECT TITLE: LONGVIEW FIBRE GROUNDWATER SAMPLING

SHEET TITLE: MONITORING WELL LOCATIONS

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

DATE: DECEMBER 2012

FIGURE NO.

1

ATTACHMENT 1

Groundwater Sample Logs

GROUND-WATER SAMPLING LOG

WELL NO: MW-01 LOCATION: Longview Fibre - Seattle PROJECT #: 291517377A

DATE: 12-4-12 TIME: 11:08 CLIMATIC CONDITIONS: Partly Cloudy - 45°F

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

STATIC WATER LEVEL (TOC): _____ TOTAL DEPTH OF WELL (TOC): 14.22

80% RECOVERY DTW (TOC): _____ DTW BEFORE SAMPLING/TIME: 4.5 @ 11:08
4.73 @ 11:45

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)
12-4-12	11:22	0.50	16.1	6.64	0.00	357	10.78	63
	11:24	0.75	16.4	6.63	0.00	357	10.56	65
	11:26	1.0	16.7	6.62	0.00	355	10.42	68
	11:28	1.25	16.9	6.60	0.00	353	10.29	71
	11:30	1.50	17.1	6.58	0.00	352	10.19	74
	11:32	1.75	17.3	6.54	0.00	350	10.10	78
	11:34	2.0	17.3	6.53	0.00	347	10.07	80

SAMPLE WITHDRAWAL METHOD: Peristaltic Pump SAMPLED BY: JT/AS

SAMPLE NUMBER(S) AND TIME: MW-01-120412 @ 11:40

NOTES: Sock is not in water & is muddy.

LAB ANALYSIS PARAMETERS AND PRESERVATIVES: NW TPH-Dx

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

DECON. PROCEDURES: Alconox, DI water, new tubing

SAMPLES DELIVERED TO: Friedman & Bruya TRANSPORTER: JT/AS

DATE: 12-4-12 TIME: 12:30

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

GROUND-WATER SAMPLING LOG

WELL NO: MW02 LOCATION: Longview Fibre - Seattle PROJECT #: 291517377A

DATE: 12-4-12 TIME: 9:55 CLIMATIC CONDITIONS: Partly Cloudy - 45°F

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

STATIC WATER LEVEL (TOC): _____ TOTAL DEPTH OF WELL (TOC): 15.33'

80% RECOVERY DTW (TOC): _____ DTW BEFORE SAMPLING/TIME: 3.90' @ 9:55

3.72' @ 10:50

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)
12-4-12	10:22	.50	13.1	5.99	2.08	197	2.41	3
	10:24	.75	13.1	5.98	2.29	52.3	1.28	-4
	10:26	1.0	13.5	5.97	3.12	14.9	1.04	-9
	10:28	1.25	13.7	6.0	3.75	7.7	0.86	-16
	10:30	1.50	13.8	6.01	4.18	18.6	0.75	-22
	10:32	1.75	14.0	6.04	4.49	8.5	0.63	-29
	10:34	2.0	14.1	6.07	4.70	5.9	0.59	-32
	10:36	2.25	14.2	6.08	4.82	4.8	0.55	-35
	10:38	2.50	14.2	6.10	4.92	8.2	0.52	-38
	10:40	2.75	14.3	6.10	5.03	6.5	0.50	-40
	10:42	3.0	14.3	6.12	5.15	5.6	0.47	-42

SAMPLE WITHDRAWAL METHOD: Peristaltic Pump SAMPLED BY: JT/AS

SAMPLE NUMBER(S) AND TIME: MW-02-120412 @ 10:45

NOTES: Sock is not in water.

LAB ANALYSIS PARAMETERS AND PRESERVATIVES: NWTPH-Dx

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

DECON. PROCEDURES: Alconox, DI water, new tubing

SAMPLES DELIVERED TO: Friedman & Bruya TRANSPORTER: JT/AS

DATE: 12-4-12 TIME: 12:30

CAPACITY OF CASING (GALLONS/LINEAR FOOT)

2" - 0.16 • 4" - 0.65 • 6" - 1.47 • 8" - 2.61 • 10" - 4.08 • 12" - 5.87

ATTACHMENT 2

Laboratory Analytical Report and Chain-of-Custody

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

December 10, 2012

Justin Toney, Project Manager
AMEC Environment & Infrastructure, Inc.
221 S 28th Street, Suite 102
Tacoma, WA 98402

Dear Mr. Toney:

Included are the results from the testing of material submitted on December 4, 2012 from the Longview Fibre PO NoTime-Longview, F&BI 212038 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
AMC1210R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 4, 2012 by Friedman & Bruya, Inc. from the AMEC Environment & Infrastructure Longview Fibre PO NoTime-Longview, F&BI 212038 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	AMEC Environment & Infrastructure
212038-01	MW-01-120412
212038-02	MW-02-120412

All quality control requirements were acceptable.

Date of Report: 12/10/12
Date Received: 12/04/12
Project: Longview Fibre PO NoTime-Longview, F&BI 212038
Date Extracted: 12/06/12
Date Analyzed: 12/06/12

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 51-134)
MW-01-120412 212038-01	110 x	<250	101
MW-02-120412 212038-02	1,800 x	350 x	98
Method Blank 02-2253 MB	<50	<250	76

Date of Report: 12/10/12
Date Received: 12/04/12
Project: Longview Fibre PO NoTime-Longview, F&BI 212038

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	103	110	58-134	7

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

212038

SAMPLE CHAIN OF CUSTODY

ME 12/04/12 E04

Page # 1 of 1

Send Report To Justin Toney
Company AMEC
Address 221 S. 28th Street, Suite 102
City, State, ZIP Tacoma, WA 98402
Phone # 425-368-1000 Fax # 425-368-1003

SAMPLERS (signature)
PROJECT NAME/NO. Longview Fibre
PO # NoTime-Longview
REMARKS

TURNAROUND TIME
[X] Standard (2 Weeks)
[ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
[ ] Dispose after 30 days
[ ] Return samples
[ ] Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: NWTPH-Diesel - DRO + RRO	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS						Notes
MW-01-120412	01 A-B	12-4-12	11:40	Water	2	X											
MW-02-120412	02 A-B	12-4-12	10:45	Water	2	X											

Samples received at 5 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Justin Toney	AMEC	12-4-12	12:30
Received by:	Nhan Phan	(NP) FEBT	12-4-12	1230
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
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