WLDRF 1.2

Landau Associates
Environmental and Geotechnical Services

March 28, 2000

Mr. Shorty Seel
Winlock Wood Products
c/o Spectrum Glass
P.O. Box 646
Woodinville, WA 98072-0646

**RE: ENVIRONMENTAL PROJECT UPDATE
WINLOCK WOOD PRODUCTS SITE
WINLOCK, WASHINGTON**

Dear Mr. Seel:

Per your request, this letter provides an update regarding environmental conditions at the Winlock Wood Products site in Winlock, Washington. Landau Associates' April 26, 1999 Cleanup Action Report (CA report) should be referenced for background information and figures. Discussions regarding specific environmental conditions are addressed in the following sections.

SOIL STOCKPILED IN BIOLOGICAL TREATMENT CELL NO. 2:

Petroleum hydrocarbon containing soil was placed in Biological Treatment Cell No. 2 during site cleanup in the fall of 1996. On-site biological treatment was considered a best management practice for this soil, since the volume was relatively small and there was space available to spread the material. The location of Biological Treatment Cell No. 2 is shown on Figure 4 in the CA report.

Sampling/testing of soil from Biological Treatment Cell No. 2 in the fall/winter of 1996 showed that it contained gasoline range total petroleum hydrocarbons (TPH) at concentrations that exceeded Washington State Department of Ecology (Ecology) cleanup levels. The soil was also tested for diesel range hydrocarbons (including comparison to a linseed oil laboratory standard), but only low concentrations were detected (e.g. less than 50 mg/kg). The presence of gasoline in soil was not anticipated at the start of the cleanup effort, which necessitated establishment of a cleanup standard for the site. Ecology's 100 mg/kg gasoline range TPH cleanup level for soil was established as the appropriate cleanup standard, after conferring with the Environmental Protection Agency (EPA) site manager.

The CA report recommended future field screening and possible sampling/testing of the landfarmed soil for gasoline-range TPH, as a means of assessing the effectiveness of volatilization/bioremediation. Biological Treatment Cell No. 2 was re-sampled on May 4, 1999 in

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USEPA SF
1426395

conjunction with post-cleanup groundwater monitoring. Two samples (BTC-North and BTC-South) were collected and tested. The laboratory reported that BTC-North contained 10 mg/kg TPH as gasoline, and BTC-South was reported as "not detected" (at a detection limit of 6.2 mg/kg). Several holes, in addition to the two that were sampled, were excavated at random locations across the treatment cell to aid in the overall assessment of soil quality. Field screening at all locations was negative (e.g. no odor or sheen). Copies of the laboratory reports are attached with this letter.

Based on the field screening and laboratory results, it appears that the soil has undergone sufficient natural attenuation to now be considered "clean". However, since the soil may contain low levels of lead, and likely contains some solid waste, (e.g. small solidified glue fragments, plastic, metal, etc.), that passed through the soil screen, we recommend that this soil, as well as the Biological Treatment Cell No. 1 soil, remain on-site, protected from wind and water erosion. Maintenance of a vegetative cover should provide adequate protection.

GROUNDWATER MONITORING:

During initial investigation of the site EPA requested the installation of groundwater monitoring wells. Three wells were installed between the cleanup area and Olequa Creek, as shown on Figure 5 in the CA report. The wells were sampled on three occasions during or immediately after the cleanup (1995/1996), and again about 1 year later (August 1997). With the concurrence of EPA, Ecology cleanup standards were adopted to assess groundwater quality at the site.

The April 1999 CA report recommended future sampling of groundwater from the 3 monitoring wells. This recommendation was based on inconclusive arsenic and lead groundwater results obtained through August 1997 (only arsenic and lead results remained inconclusive; all the other parameters which had been analyzed for were either not detected or below Ecology cleanup levels). Samples from the 3 wells were collected on May 4, 1999. All of the arsenic and lead results are under Ecology's cleanup levels for these compounds (the cleanup level for arsenic and lead is 5 ug/L). The results of this event, and the previous 4 sampling events, are summarized in attached Table 1. Copies of the laboratory reports are also attached.

At monitoring well MW-1 (well closest to cleanup areas), arsenic and lead levels have always been below the cleanup standards, including the May 1999 sampling event. At monitoring well MW-2, groundwater concentrations show a similar pattern for arsenic (e.g. no exceedances). However, lead concentrations at well MW-2 did exceed the 5 ug/L cleanup level in both 1996 and 1997. The pattern of lead in groundwater at MW-2 suggests that cleanup efforts caused a short-term increase in concentrations, possibly due to nearby excavation and hauling operations. The decreasing lead concentration trend from

1996 to the present indicates that this temporary "spike" has attenuated, and that lead concentrations in groundwater at well MW-2 are no longer of significant concern.

At monitoring well MW-3, (most down-gradient of the 3 wells), arsenic and lead concentrations have remained below Ecology's cleanup levels throughout the monitoring period (1995 to present), except for arsenic which exceeded the 5 ug/L cleanup level for the September 1995 sampling event. The arsenic concentration reported in September 1995 was 27 ug/L. Based on the data record at this well, (and at the other two locations), the concentration of 27 ug/L for arsenic at well MW-3 is an anomalous result that does not reflect current groundwater quality conditions at the site.

Based on the above discussion, it is our opinion that future groundwater monitoring is no longer needed. We recommend properly abandoning the wells per WAC 173-160, provided EPA concurs with the above assessment.

STORAGE BUILDING – SOIL SAMPLE CF-C36:

The approximate extent of lead contaminated soil that was removed from the area north of the Storage Building is shown on Figure 3 in the CA report. As part of the cleanup effort, two confirmation soil samples were collected after excavation just outside of the building foundation. Sample CF-C30 contained total lead at 450 mg/kg, which is under the project cleanup goal of 1,000 mg/kg. Sample CF-C36 contained 3,200 mg/kg total lead, which is over the 1,000 mg/kg cleanup goal. Sample CF-C36 was collected from a relatively thin, discrete and discolored soil layer that appeared to extend under the building.

The presence of elevated lead levels next to and potentially beneath the building was discussed with EPA's project manager. The EPA project manager observed site conditions and concurred with our assessment that the volume of lead containing soil remaining at this location was probably small and that re-paving of the area would effectively isolate the material. Since repaving has been completed, site use remains industrial, and chain link fencing and lockable gates control access, additional remedial action does not appear warranted at this time. However, additional cleanup at this location should be anticipated when the building is eventually demolished.

Other:

Project cleanup goals were established based on an industrial setting, and an assumption that future use would remain industrial. Accordingly, if future use changes, (e.g. to residential), additional cleanup and/or the application of institutional controls should be anticipated.

Lastly, a significant amount of soil containing lead above Ecology's residential cleanup level (250 mg/kg), but below the cleanup goal established for the project (1,000 mg/kg), remains on-site.

While this soil is considered clean from an industrial perspective, best management practices should be followed when excavating soil within the cleanup area. For example, soil from the area should not be taken off site for use as fill without analytical testing to verify that it is acceptable for the intended use. Soil from the area should also not be placed elsewhere onsite (without prior testing) where it could be exposed to surface water, especially along Olequa Creek.

In summary, it is our opinion that site cleanup goals have been met, with the exception of an apparently small amount of lead containing soil near/under the Storage Building. That soil is now capped and effectively isolated, thereby reducing exposure risk to negligible levels. However, EPA may require some additional cleanup when the building is eventually demolished. Also, the 3 shallow monitoring wells will eventually need to be properly abandoned per WAC 173-160. We recommend forwarding a copy of this letter to the EPA for its files, along with a request for a written response from EPA regarding any concerns.

We appreciate having had the opportunity to provide environmental engineering services to Winlock Wood Products on this project. Please call if you have any questions regarding this letter or the project.

LANDAU ASSOCIATES, INC.

By:

William D. Evans, CPG
Associate

WDE/jas

Attachments: Table 1 – Groundwater Samples, Analytical Chemistry Results
Analytical Resources Results – ARI Job No: AF70

TABLE 1
GROUNDWATER SAMPLES
ANALYTICAL CHEMISTRY RESULTS

Parameter	MTCA Method A Cleanup Level	MW-1					MW-2				
		5/4/95	9/21/95	12/20/96	8/19/97	5/4/99	5/3/95	9/19/95	12/20/96	8/19/97	5/4/99
Total Metals (ug/L)											
Arsenic	5.0	5 U	4.1	5 U	4 U	0.2	5 U	5.4	5 U	5.0	0.7
Lead	5.0	2 U	2 U	2 U	2 U	1 U	2 U	2 U	10.5	7.44	2.0

		MW-3					
		5/4/95	9/20/95	12/20/96	8/19/97	8/19/97	5/4/99
Arsenic	5.0	5 U	27	5 U	4.6	4 U	3.0
Lead	5.0	2 U	2 U	2 U	2.34	3.83	1 U

U - Analyte was not detected at the stated quantitation limit.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

RECEIVED
MAY 2 5 1999
LANDAU ASSOCIATES, INC.
TACOMA

May 21, 1999

Mr. Ken Gill
Landau Associates, Inc.
Wapato Creek Place
4210 20th Street East, Suite F
Tacoma, WA 98424 – 1823

RE: **Client Project:** Winlock Wood Products 281001.51
ARI Job No: AF70

Dear Ken:

Please find enclosed original Chain of Custody documentation (COC) and analytical results for the project referenced above. Analytical Resources, Inc. (ARI) accepted two soil and three water samples on May 5, 1999. ARI received the samples intact with no discrepancies between the COC and the sample labels.

The samples were analyzed for gasoline range petroleum hydrocarbons by method WTPH-G and dissolved arsenic and lead by method 200.8. The dissolved metals samples were field-filtered.

The bromobenzene surrogate co-elutes with gasoline and can make accurate quantification of its recovery impossible when gasoline is present in the run. When this occurs, the bromobenzene surrogate recovery is reported as NR. No other analytical complications were encountered.

A copy of this report and the supporting data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience. If I am unavailable, you can leave a message on my voice mail and I will return your call as soon as possible.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mary Lou Fox

Mary Lou Fox
Project Manager
(206) 389-6155
marylou@arilabs.com

MLF/mlf
Enclosures
cc: File AF70

10,50C

LANDAU ASSOCIATES, INC.
Edmonds, WA (206) 778-0907
FAX (206)778-6409

Chain-of-Custody Record

№ 3211

Date 5-5-99
Page 1 of 1

Project WINLOCK WOOD PRODUCTS Job No. 281001.51

Client WINLOCK WOOD PRODUCTS

Project Location WINLOCK, WASHINGTON

Sampler's Name KEN GILL

Testing Parameters

Turnaround Time
☒ Standard
☐ Accelerated

AF TO 99-5844 to 99-5848

Sample Number	Date	Time	Matrix	No. of Containers	WTPH-G	6010/7000 (AS PB ONLY)									Observations/Comments
BTC-NORTH	5-4-99	1351	SOIL	1	X										
BTC-SOUTH	↓	1351	SOIL	1	X										
MW-1		4:27	WATER	1		X									WATER SAMPLES FIELD
MW-2		4:35	WATER	1		X									FILTERED
MW-3	↓	5:00	WATER	1		X									

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature: [signature]	Signature: [signature]	Signature	Signature
Printed Name: KEN GILL	Printed Name: ZACH STANLEY	Printed Name	Printed Name
Company: LANDAU-TACOMA	Company: ARI	Company	Company
Date: 5-5-99 Time: 8:30	Date: 5/5/99 Time: 1000	Date Time	Date Time

3/91

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
WTPHg Range Toluene to C12 by GC/FID

QC Report No: AF70-Landau Associates Inc. Tacoma
Matrix: Soil Project: Winlock Wood Products
281001.51
Data Release Authorized: Date Received: 05/05/99
Reported: 05/21/99

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range Hydrocarbons		Gasoline ID	Surr A Rec	Surr B Rec
AF70-0514MB	Method Blank	05/14/99	1:1	5.0	U	NO	96.0%	103%
99-5844-AF70A	**BTC-NORTH**	05/14/99	1:1	**10**		NO	118%	124%
99-5845-AF70B	BTC-SOUTH	05/14/99	1:1	6.2	U	NO	122%	134%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.
Values reported in ppm (mg/kg) on a dry weight basis.
Quantitation on total peaks in the gasoline range from Toluene to C12.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

FORM-1 TPH-g

ANALYTICAL
RESOURCES
INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
WTPHg Range Toluene to C12 by GC/FID

Sample No: BTC-NORTH
Lab Sample ID: AF70A QC Report No: AF70-Landau Associates Inc. Tacoma
LIMS ID: 99-5844 Project: Winlock Wood Products
Matrix: Soil 281001.51
Date Received: 05/05/99

Data Release Authorized:
Reported: 05/21/99

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Analyzed 05/15/99

CONSTITUENT	SAMPLE VALUE	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
MATRIX SPIKE					
Gasoline Range Hydrocarbons	10	360	325	109%	
MATRIX SPIKE DUPLICATE					
Gasoline Range Hydrocarbons	10	470	342	135%	21.1%

TPH-g Surrogate Recovery

Trifluorotoluene	102%
Bromobenzene	NR
Trifluorotoluene	147%
Bromobenzene	NR

Values reported in parts per million (mg/kg)

TPHg SPIKE CONTROL LIMITS

Percent Recovery 30.0-160.%
Duplicate RPD <30.0%

Advisory QA Limits

TOTAL GASOLINE RANGE HYDROCARBONS
WTPHg Range Toluene to C12 by GC/FID

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: AF70SB
LIMS ID: 99-5844
Matrix: Soil

QC Report No: AF70-Landau Associates Inc. Tacoma
Project: Winlock Wood Products
281001.51

Data Release Authorized:
Reported: 05/21/99

LABORATORY CONTROL SAMPLE RECOVERY REPORT
Analyzed 05/14/99

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
LABORATORY CONTROL SAMPLE			
Gasoline Range Hydrocarbons	2.72	2.5	109%

TPHg Surrogate Recovery

Trifluorotoluene	132%
Bromobenzene	NR

Values reported in parts per million (mg/kg)

TPHg SPIKE CONTROL LIMITS

Percent Recovery 80.0-120%

Advisory QA Limits

ANALYTICAL
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SOIL TPHg SYSTEM MONITORING COMPOUND SUMMARY

Matrix: Soil

QC Report No: AF70

LIMS ID	Lab ID	Client ID	TFT	BB	TOT OUT
99-5844MB	051499MB	Method Blank	96.0%	103%	0
99-5844LC	051499LC	Lab Control	132%	NR	0
99-5844	AF70A	BTC-NORTH	118%	124%	0
99-5844	AF70A-MS	BTC-NORTH-MS	102%	NR	0
99-5844	AF70A-MSD	BTC-NORTH-MSD	147%	NR	0
99-5845	AF70B	BTC-SOUTH	122%	134%	0

	MB/LCS QC LIMITS	SAMPLE QC LIMITS
(TFT) = Trifluorotoluene	(58.0-151)	(30.0-160)
(BB) = Bromobenzene	(36.0-160)	(30.0-160)

Limits Updated - 02/15/97

\# Column to be used to flag recovery values

D System Monitoring Compound diluted out

FORM-II TPHg

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: **Method Blank**

Lab Sample ID: AF70MB
LIMS ID: 99-5846
Matrix: Water

QC Report No: AF70-Landau Associates Inc. Tacoma
Project: Winlock Wood Products
281001.51
Date Sampled: NA
Date Received: NA

Data Release Authorized
Reported: 05/14/99

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
200.8	05/06/99	200.8	05/12/99	7440-38-2	Arsenic	0.2	0.2 U
200.8	05/06/99	200.8	05/12/99	7439-92-1	Lead	1	1 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No:** MW-1
DISSOLVED METALS

Lab Sample ID: AF70C
LIMS ID: 99-5846
Matrix: Water

QC Report No: AF70-Landau Associates Inc. Tacoma
Project: Winlock Wood Products
281001.51
Date Sampled: 05/04/99
Date Received: 05/05/99

Data Release Authorized:
Reported: 05/14/99

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
200.8	**05/06/99**	**200.8**	**05/12/99**	**7440-38-2**	**Arsenic**	**0.2**	**0.2**
200.8	05/06/99	200.8	05/12/99	7439-92-1	Lead	1	1 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No:** **MW-2**
DISSOLVED METALS

Lab Sample ID: AF70D
LIMS ID: 99-5847
Matrix: Water

QC Report No: AF70-Landau Associates Inc. Tacoma
Project: Winlock Wood Products
281001.51
Date Sampled: 05/04/99
Date Received: 05/05/99

Data Release Authorized:
Reported: 05/14/99

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
200.8	05/06/99	200.8	05/12/99	7440-38-2	Arsenic	0.2	0.7
200.8	05/06/99	200.8	05/12/99	7439-92-1	Lead	1	2

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No:** **MW-3**
DISSOLVED METALS

Lab Sample ID: AF70E
LIMS ID: 99-5848
Matrix: Water

QC Report No: AF70-Landau Associates Inc. Tacoma
Project: Winlock Wood Products
281001.51
Date Sampled: 05/04/99
Date Received: 05/05/99

Data Release Authorized:
Reported: 05/14/99

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
200.8	**05/06/99**	**200.8**	**05/12/99**	**7440-38-2**	**Arsenic**	**0.2**	**3.0**
200.8	05/06/99	200.8	05/12/99	7439-92-1	Lead	1	1 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL
RESOURCES
INCORPORATED

METALS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: MW-1
Lab Sample ID: AF70LCS
QC Report No: AF70-Landau Associates Inc. Tacoma
LIMS ID: 99-5846
Project: Winlock Wood Products
Matrix: Water
281001.51
Date Received: 05/05/99

Data Release Authorized:
Reported: 05/14/99

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Spike ug/L	Spike Added	% Recovery	Q
Arsenic	26.6	25.0	106%	
Lead	28	25.0	111%	

'Q' codes: N = control limit not met

Control Limits: 80-120%

FORM-VII