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January 31, 2021

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS21010962**

Laboratory Results for: **Houston TX-Wood Preserving Works SPLP**

Dear Eric Matzner,

ALS Environmental received 1 sample(s) on Jan 25, 2021 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dane J. Wacasey'.

Generated By: DANE.WACASEY
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
Work Order: HS21010962

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21010962-01	WW-1620-IDW 003256-20201222	Water	HS2012107 6-01C	22-Dec-2020 09:15	22-Dec-2020 12:56	<input type="checkbox"/>

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
Work Order: HS21010962

CASE NARRATIVE

Work Order Comments

- This report contains additional analyses per your request on January 26, 2021 via email. The laboratory analyzed your sample WW-1620-IDW003256-20201222 for TCLP lead by method 1311/6020. The sample was originally reported in ALS work order number HS20121076.

Metals by Method SW1311/6020

Batch ID: 162038

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Golder Associates Inc.
 Project: Houston TX-Wood Preserving Works SPLP
 Sample ID: WW-1620-IDW 003256-20201222
 Collection Date: 22-Dec-2020 09:15

ANALYTICAL REPORT

WorkOrder:HS21010962
 Lab ID:HS21010962-01
 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TCLP METALS BY SW6020A	Method:SW1311/6020		Leache:SW1311 / 26-Jan-2021	Prep:SW3010A / 29-Jan-2021	Analyst: JC		
Lead	0.128		0.00600	0.0500	mg/L	1	29-Jan-2021 22:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

Batch ID: 161887 **Start Date:** 26 Jan 2021 12:00 **End Date:** 26 Jan 2021 13:00
Method: TCLP METALS EXTRACTION BY SW1311 **Prep Code:** 1311LM EXT

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010962-01		100 (grams)	2000 (mL)	20	1-liter amber glass, Neat

Batch ID: 162038 **Start Date:** 29 Jan 2021 12:00 **End Date:** 29 Jan 2021 16:00
Method: TCLP LEACHATE DIGESTION BY SW3010A **Prep Code:** 3010A_TCLP

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21010962-01		1 (mL)	10 (mL)	10	1-liter amber glass, Neat

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 162038 (0)		Test Name : TCLP METALS BY SW6020A			Matrix: Water	
HS21010962-01	WW-1620-IDW 003256-20201222	22 Dec 2020 09:15	26 Jan 2021 13:00	29 Jan 2021 16:00	29 Jan 2021 22:00	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

QC BATCH REPORT

Batch ID: 162038 (0)	Instrument: ICPMS05	Method: TCLP METALS BY SW6020A
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MBLK	Sample ID: MBLKT2-162038	Units: mg/L	Analysis Date: 29-Jan-2021 21:56							
Client ID:	Run ID: ICPMS05_377163	SeqNo: 5937128	PrepDate: 29-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Lead < 0.00600 0.0500

MBLK	Sample ID: MBLKT1-162038	Units: mg/L	Analysis Date: 29-Jan-2021 21:54							
Client ID:	Run ID: ICPMS05_377163	SeqNo: 5937127	PrepDate: 29-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Lead < 0.00600 0.0500

MBLK	Sample ID: MBLK-162038	Units: mg/L	Analysis Date: 29-Jan-2021 21:51							
Client ID:	Run ID: ICPMS05_377163	SeqNo: 5937126	PrepDate: 29-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Lead < 0.000600 0.00500

LCS	Sample ID: LCS-162038	Units: mg/L	Analysis Date: 29-Jan-2021 21:58							
Client ID:	Run ID: ICPMS05_377163	SeqNo: 5937129	PrepDate: 29-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Lead 0.04436 0.00500 0.05 0 88.7 80 - 120

MS	Sample ID: HS21011046-02MS	Units: mg/L	Analysis Date: 29-Jan-2021 22:11							
Client ID:	Run ID: ICPMS05_377163	SeqNo: 5937132	PrepDate: 29-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Lead 0.4664 0.0500 0.5 0.00031 93.2 80 - 120

MSD	Sample ID: HS21011046-02MSD	Units: mg/L	Analysis Date: 29-Jan-2021 22:13							
Client ID:	Run ID: ICPMS05_377163	SeqNo: 5937133	PrepDate: 29-Jan-2021 DF: 1							
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	RPD Qual

Lead 0.4534 0.0500 0.5 0.00031 90.6 80 - 120 0.4664 2.82 20

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

QC BATCH REPORT

Batch ID: 162038 (0) **Instrument:** ICPMS05 **Method:** TCLP METALS BY SW6020A

PDS Sample ID: **HS21011046-02PDS** Units: **mg/L** Analysis Date: **29-Jan-2021 22:15**
 Client ID: Run ID: **ICPMS05_377163** SeqNo: **5937134** PrepDate: **29-Jan-2021** DF: **1**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Lead 1.02 0.0500 1 0.00031 102 75 - 125

SD Sample ID: **HS21011046-02SD** Units: **mg/L** Analysis Date: **29-Jan-2021 22:09**
 Client ID: Run ID: **ICPMS05_377163** SeqNo: **5937131** PrepDate: **29-Jan-2021** DF: **5**
 Analyte Result MQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %D %D Limit Qual

Lead < 0.0300 0.250 0.00031 0 10

The following samples were analyzed in this batch: HS21010962-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
WorkOrder: HS21010962

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
Date	
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
California	2919, 2020-2021	30-Apr-2021
Dept of Defense	PJLA L20-507	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2020-2021	30-Apr-2021
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
North Dakota	R-193 2020-2021	30-Apr-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-20-26	30-Apr-2021

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works SPLP
Work Order: HS21010962

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	MET018
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	EXT181
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	WET078
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	WET078
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	WET078
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	VOA073
HS21010962-01	WW-1620-IDW 003256-20201222	Login	1/26/2021 10:33:12 AM	JRM	TPH052

Sample Receipt Checklist

Work Order ID: HS21010962

Date/Time Received: 25-Jan-2021 12:00

Client Name: PBW

Received by: Donald Gilmore

Completed By: <u>/S/ Corey Grandits</u>	26-Jan-2021 10:14	Reviewed by: <u>/S/ Corey Grandits</u>	26-Jan-2021 17:42
eSignature	Date/Time	eSignature	Date/Time

Matrices: **Water**

Carrier name: **ALS.HS**

- | | | | | |
|---|---|-----------------------------|---|--|
| Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/> | |
| Custody seals intact on shipping container/cooler? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> | |
| Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> | |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> | |
| Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | 1 Page(s) | |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | COC IDs:232007 | |
| Samplers name present on COC? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Samples in proper container/bottle? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |
| Container/Temp Blank temperature in compliance? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | |

Temperature(s)/Thermometer(s):	0.9°C UC/C	IR # 31
Cooler(s)/Kit(s):	RED	
Date/Time sample(s) sent to storage:	12/22/2020 14:00	
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/> No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
pH adjusted by:	<input style="width: 100%;" type="text"/>	

Login Notes:

Client Contacted:	Date Contacted:	Person Contacted:
Contacted By:	Regarding:	
Comments:	<input style="width: 100%; height: 30px;" type="text"/>	
Corrective Action:	<input style="width: 100%; height: 30px;" type="text"/>	



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Fort Collins, CO
+1 970 490 1511

Everett, WA
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Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 232007

HS21010962

Golder Associates Inc.
Houston TX-Wood Preserving Works



ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order	#003256	Project Number	1620-21-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive	Address	1400 Douglas Street
	Suite 4004		Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

REVISED
1-25-2021 (OB)

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WW-1620-IDW-003256-20201222	12-22-20	9:15	W		12	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <i>Tim McSpauld</i>		Shipment Method <i>Will Carter</i>	Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> 7 Wk Days <input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour	Results Due Date:
Relinquished by: <i>Tim McSpauld</i>	Date: 12-22-20	Time: 9:30	Received by: <i>D.S.</i>	Notes: UPRR HWPW 1620-21
Relinquished by: <i>D.S.</i>	Date: 12-23-20	Time: 1256	Received by (Laboratory): <i>D.S.</i>	Cooler ID: <i>Rec</i>
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Cooler Temp: <i>0-9</i>
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035				QC Package: (Check One Box Below) <input checked="" type="checkbox"/> Level II Std QC

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.