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May 21, 2021

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

Work Order: **HS21050675**

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

Dear Eric Matzner,

ALS Environmental received 1 sample(s) on May 13, 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,

Generated By: DANE.WACASEY  
Dane J. Wacasey

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**Work Order:** HS21050675

**SAMPLE SUMMARY**

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS21050675-01	WW-1620-IDW01-20210512	Liquid		12-May-2021 15:00	13-May-2021 14:00	<input type="checkbox"/>

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**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**Work Order:** HS21050675

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**CASE NARRATIVE**

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**GC Semivolatiles by Method TX1005****Batch ID: 165827**

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

**GCMS Semivolatiles by Method SW8270****Batch ID: 165870****Sample ID: LCSD-165870**

- The RPD between the LCS and LCSD was outside of the control limit for select analytes.
- 

**GCMS Volatiles by Method SW8260****Batch ID: R383669****Sample ID: WW-1620-IDW01-20210512 (HS21050675-01)**

- Lowest practical dilution due to sample matrix.
- 

**Metals by Method SW6020A****Batch ID: 165910****Sample ID: HS21050172-01MSD**

- MSD is for an unrelated sample (Barium)
- 

**Metals by Method SW7470A****Batch ID: 165906**

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

**WetChemistry by Method SW9040C****Batch ID: R383753**

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

**WetChemistry by Method SW1010****Batch ID: R383647**

- 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 IDWW  
 Sample ID: WW-1620-IDW01-20210512  
 Collection Date: 12-May-2021 15:00

**ANALYTICAL REPORT**

WorkOrder:HS21050675  
 Lab ID:HS21050675-01  
 Matrix:Liquid

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LOW LEVEL VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: AKP			
1,1,1-Trichloroethane	U		0.010	0.050	mg/L	50	14-May-2021 18:18
1,1,2,2-Tetrachloroethane	U		0.025	0.050	mg/L	50	14-May-2021 18:18
1,1,2-Trichloroethane	U		0.015	0.050	mg/L	50	14-May-2021 18:18
1,1-Dichloroethane	U		0.010	0.050	mg/L	50	14-May-2021 18:18
1,1-Dichloroethene	U		0.010	0.050	mg/L	50	14-May-2021 18:18
1,2-Dichlorobenzene	U		0.025	0.050	mg/L	50	14-May-2021 18:18
1,2-Dichloroethane	U		0.010	0.050	mg/L	50	14-May-2021 18:18
1,2-Dichloropropane	U		0.025	0.050	mg/L	50	14-May-2021 18:18
1,3-Dichlorobenzene	U		0.020	0.050	mg/L	50	14-May-2021 18:18
1,4-Dichlorobenzene	U		0.020	0.050	mg/L	50	14-May-2021 18:18
2-Butanone	U		0.025	0.10	mg/L	50	14-May-2021 18:18
2-Hexanone	U		0.050	0.10	mg/L	50	14-May-2021 18:18
4-Methyl-2-pentanone	U		0.035	0.10	mg/L	50	14-May-2021 18:18
Acetone	U		0.10	0.10	mg/L	50	14-May-2021 18:18
Benzene	U		0.010	0.050	mg/L	50	14-May-2021 18:18
Bromochloromethane	U		0.010	0.050	mg/L	50	14-May-2021 18:18
Bromodichloromethane	U		0.010	0.050	mg/L	50	14-May-2021 18:18
Bromoform	U		0.020	0.050	mg/L	50	14-May-2021 18:18
Bromomethane	U		0.020	0.050	mg/L	50	14-May-2021 18:18
Carbon disulfide	U		0.030	0.10	mg/L	50	14-May-2021 18:18
Carbon tetrachloride	U		0.025	0.050	mg/L	50	14-May-2021 18:18
Chlorobenzene	U		0.015	0.050	mg/L	50	14-May-2021 18:18
Chloroethane	U		0.015	0.050	mg/L	50	14-May-2021 18:18
Chloroform	U		0.010	0.050	mg/L	50	14-May-2021 18:18
Chloromethane	U		0.010	0.050	mg/L	50	14-May-2021 18:18
cis-1,2-Dichloroethene	U		0.010	0.050	mg/L	50	14-May-2021 18:18
cis-1,3-Dichloropropene	U		0.0050	0.050	mg/L	50	14-May-2021 18:18
Dibromochloromethane	U		0.015	0.050	mg/L	50	14-May-2021 18:18
Ethylbenzene	U		0.015	0.050	mg/L	50	14-May-2021 18:18
m,p-Xylene	U		0.025	0.10	mg/L	50	14-May-2021 18:18
Methylene chloride	U		0.050	0.10	mg/L	50	14-May-2021 18:18
o-Xylene	U		0.015	0.050	mg/L	50	14-May-2021 18:18
Styrene	U		0.015	0.050	mg/L	50	14-May-2021 18:18
Tetrachloroethene	U		0.015	0.050	mg/L	50	14-May-2021 18:18
Toluene	U		0.010	0.050	mg/L	50	14-May-2021 18:18
trans-1,2-Dichloroethene	U		0.010	0.050	mg/L	50	14-May-2021 18:18
trans-1,3-Dichloropropene	U		0.010	0.050	mg/L	50	14-May-2021 18:18
Trichloroethene	U		0.010	0.050	mg/L	50	14-May-2021 18:18
Vinyl acetate	U		0.025	0.050	mg/L	50	14-May-2021 18:18

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

Client: Golder Associates Inc.  
Project: Houston TX-Wood Preserving Works IDWW  
Sample ID: WW-1620-IDW01-20210512  
Collection Date: 12-May-2021 15:00

**ANALYTICAL REPORT**

WorkOrder:HS21050675  
Lab ID:HS21050675-01  
Matrix:Liquid

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LOW LEVEL VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>				Analyst: AKP	
Vinyl chloride	U		0.010	0.050	mg/L	50	14-May-2021 18:18
Xylenes, Total	U		0.015	0.050	mg/L	50	14-May-2021 18:18
1,2-Dichloroethene, Total	U		0.010	0.050	mg/L	50	14-May-2021 18:18
Surr: 1,2-Dichloroethane-d4	102			70-126	%REC	50	14-May-2021 18:18
Surr: 4-Bromofluorobenzene	97.3			81-113	%REC	50	14-May-2021 18:18
Surr: Dibromofluoromethane	103			77-123	%REC	50	14-May-2021 18:18
Surr: Toluene-d8	104			82-127	%REC	50	14-May-2021 18:18

Client: Golder Associates Inc.  
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**ANALYTICAL REPORT**

WorkOrder:HS21050675  
 Lab ID:HS21050675-01  
 Matrix:Liquid

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LOW-LEVEL SEMIVOLATILES BY 8270D</b>		<b>Method:SW8270</b>		Prep:SW3510 / 17-May-2021		Analyst: ACN	
1,2,4-Trichlorobenzene	U		0.00016	0.0011	mg/L	1	20-May-2021 17:12
2,4,5-Trichlorophenol	U		0.00030	0.0011	mg/L	1	20-May-2021 17:12
2,4,6-Trichlorophenol	U		0.00025	0.0011	mg/L	1	20-May-2021 17:12
2,4-Dichlorophenol	U		0.00023	0.0011	mg/L	1	20-May-2021 17:12
2,4-Dimethylphenol	U		0.00021	0.0011	mg/L	1	20-May-2021 17:12
2,4-Dinitrophenol	U		0.00053	0.0053	mg/L	1	20-May-2021 17:12
2,4-Dinitrotoluene	U		0.00031	0.0011	mg/L	1	20-May-2021 17:12
2,6-Dinitrotoluene	U		0.00022	0.0011	mg/L	1	20-May-2021 17:12
2-Chloronaphthalene	U		0.00011	0.0011	mg/L	1	20-May-2021 17:12
2-Chlorophenol	U		0.00019	0.0011	mg/L	1	20-May-2021 17:12
<b>2-Methylnaphthalene</b>	<b>0.00030</b>	<b>J</b>	<b>0.00010</b>	<b>0.00053</b>	<b>mg/L</b>	<b>1</b>	<b>20-May-2021 17:12</b>
2-Methylphenol	U		0.00024	0.0011	mg/L	1	20-May-2021 17:12
2-Nitroaniline	U		0.00022	0.0011	mg/L	1	20-May-2021 17:12
2-Nitrophenol	U		0.00018	0.0011	mg/L	1	20-May-2021 17:12
3&4-Methylphenol	U		0.00019	0.0011	mg/L	1	20-May-2021 17:12
3,3'-Dichlorobenzidine	U		0.00023	0.0011	mg/L	1	20-May-2021 17:12
3-Nitroaniline	U		0.00026	0.0011	mg/L	1	20-May-2021 17:12
4,6-Dinitro-2-methylphenol	U		0.00011	0.0011	mg/L	1	20-May-2021 17:12
4-Bromophenyl phenyl ether	U		0.00027	0.0011	mg/L	1	20-May-2021 17:12
4-Chloro-3-methylphenol	U		0.00017	0.0011	mg/L	1	20-May-2021 17:12
4-Chloroaniline	U		0.00021	0.0011	mg/L	1	20-May-2021 17:12
4-Chlorophenyl phenyl ether	U		0.00023	0.0011	mg/L	1	20-May-2021 17:12
4-Nitroaniline	U		0.00018	0.0011	mg/L	1	20-May-2021 17:12
4-Nitrophenol	U		0.00025	0.0053	mg/L	1	20-May-2021 17:12
<b>Acenaphthene</b>	<b>0.0028</b>		<b>0.00014</b>	<b>0.00053</b>	<b>mg/L</b>	<b>1</b>	<b>20-May-2021 17:12</b>
Acenaphthylene	U		0.000079	0.00053	mg/L	1	20-May-2021 17:12
<b>Anthracene</b>	<b>0.00057</b>		<b>0.000074</b>	<b>0.00053</b>	<b>mg/L</b>	<b>1</b>	<b>20-May-2021 17:12</b>
Benz(a)anthracene	U		0.00026	0.00053	mg/L	1	20-May-2021 17:12
Benzidine	U		0.00053	0.0011	mg/L	1	20-May-2021 17:12
Benzo(a)pyrene	U		0.00011	0.00053	mg/L	1	20-May-2021 17:12
Benzo(b)fluoranthene	U		0.00012	0.00053	mg/L	1	20-May-2021 17:12
Benzo(g,h,i)perylene	U		0.000074	0.00053	mg/L	1	20-May-2021 17:12
Benzo(k)fluoranthene	U		0.00010	0.00053	mg/L	1	20-May-2021 17:12
Benzyl alcohol	U		0.00028	0.0011	mg/L	1	20-May-2021 17:12
Bis(2-chloroethoxy)methane	U		0.00016	0.0011	mg/L	1	20-May-2021 17:12
Bis(2-chloroethyl)ether	U		0.00014	0.0011	mg/L	1	20-May-2021 17:12
Bis(2-chloroisopropyl)ether	U		0.00037	0.0011	mg/L	1	20-May-2021 17:12
<b>Bis(2-ethylhexyl)phthalate</b>	<b>0.0033</b>		<b>0.00019</b>	<b>0.0011</b>	<b>mg/L</b>	<b>1</b>	<b>20-May-2021 17:12</b>
Butyl benzyl phthalate	U		0.00010	0.0011	mg/L	1	20-May-2021 17:12

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

Client: Golder Associates Inc.  
 Project: Houston TX-Wood Preserving Works IDWW  
 Sample ID: WW-1620-IDW01-20210512  
 Collection Date: 12-May-2021 15:00

**ANALYTICAL REPORT**

WorkOrder:HS21050675  
 Lab ID:HS21050675-01  
 Matrix:Liquid

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LOW-LEVEL SEMIVOLATILES BY 8270D</b>			<b>Method:SW8270</b>		Prep:SW3510 / 17-May-2021		Analyst: ACN
Carbazole	0.00056	J	0.00013	0.0011	mg/L	1	20-May-2021 17:12
Chrysene	U		0.00011	0.00053	mg/L	1	20-May-2021 17:12
Di-n-butyl phthalate	0.0083		0.00011	0.0011	mg/L	1	20-May-2021 17:12
Di-n-octyl phthalate	U		0.00011	0.0011	mg/L	1	20-May-2021 17:12
Dibenz(a,h)anthracene	U		0.00013	0.00053	mg/L	1	20-May-2021 17:12
Dibenzofuran	0.0011		0.00011	0.00053	mg/L	1	20-May-2021 17:12
Diethyl phthalate	0.00084	J	0.00016	0.0011	mg/L	1	20-May-2021 17:12
Dimethyl phthalate	U		0.00022	0.0011	mg/L	1	20-May-2021 17:12
Fluoranthene	0.0020		0.00053	0.00053	mg/L	1	20-May-2021 17:12
Fluorene	0.0017		0.00016	0.00053	mg/L	1	20-May-2021 17:12
Hexachlorobenzene	U		0.00023	0.0011	mg/L	1	20-May-2021 17:12
Hexachlorobutadiene	U		0.00016	0.0011	mg/L	1	20-May-2021 17:12
Hexachlorocyclopentadiene	U		0.00016	0.0011	mg/L	1	20-May-2021 17:12
Hexachloroethane	U		0.00031	0.0011	mg/L	1	20-May-2021 17:12
Indeno(1,2,3-cd)pyrene	U		0.00012	0.00053	mg/L	1	20-May-2021 17:12
Isophorone	U		0.00013	0.0011	mg/L	1	20-May-2021 17:12
N-Nitrosodi-n-propylamine	U		0.00017	0.0011	mg/L	1	20-May-2021 17:12
N-Nitrosodimethylamine	U		0.00053	0.0011	mg/L	1	20-May-2021 17:12
N-Nitrosodiphenylamine	U		0.00013	0.0011	mg/L	1	20-May-2021 17:12
Naphthalene	0.00055		0.00011	0.00053	mg/L	1	20-May-2021 17:12
Nitrobenzene	U		0.00013	0.0011	mg/L	1	20-May-2021 17:12
Pentachlorophenol	U		0.00042	0.0011	mg/L	1	20-May-2021 17:12
Phenanthrene	0.00035	J	0.00011	0.00053	mg/L	1	20-May-2021 17:12
Phenol	U		0.00018	0.0011	mg/L	1	20-May-2021 17:12
Pyrene	0.0016		0.00010	0.00053	mg/L	1	20-May-2021 17:12
Pyridine	U		0.00016	0.0053	mg/L	1	20-May-2021 17:12
Surr: 2,4,6-Tribromophenol	79.7			34-129	%REC	1	20-May-2021 17:12
Surr: 2-Fluorobiphenyl	89.4			40-125	%REC	1	20-May-2021 17:12
Surr: 2-Fluorophenol	85.6			20-120	%REC	1	20-May-2021 17:12
Surr: 4-Terphenyl-d14	106			40-135	%REC	1	20-May-2021 17:12
Surr: Nitrobenzene-d5	83.2			41-120	%REC	1	20-May-2021 17:12
Surr: Phenol-d6	94.0			20-120	%REC	1	20-May-2021 17:12
<b>LOW-LEVEL TEXAS TPH BY TX1005</b>			<b>Method:TX1005</b>		Prep:TX1005PR / 14-May-2021		Analyst: MBG
nC6 to nC12	U		0.20	0.49	mg/L	1	15-May-2021 05:49
>nC12 to nC28	U		0.20	0.49	mg/L	1	15-May-2021 05:49
>nC28 to nC35	U		0.20	0.49	mg/L	1	15-May-2021 05:49
Total Petroleum Hydrocarbon	U		0.20	0.49	mg/L	1	15-May-2021 05:49
Surr: 2-Fluorobiphenyl	83.1			70-130	%REC	1	15-May-2021 05:49
Surr: Trifluoromethyl benzene	87.5			70-130	%REC	1	15-May-2021 05:49

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

Client: Golder Associates Inc.  
 Project: Houston TX-Wood Preserving Works IDWW  
 Sample ID: WW-1620-IDW01-20210512  
 Collection Date: 12-May-2021 15:00

**ANALYTICAL REPORT**

WorkOrder:HS21050675  
 Lab ID:HS21050675-01  
 Matrix:Liquid

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>ICP-MS METALS BY SW6020A</b>		<b>Method:SW6020A</b>		Prep:SW3010A / 18-May-2021		Analyst: JHD	
<b>Antimony</b>	<b>0.00534</b>	J	<b>0.00400</b>	<b>0.0200</b>	<b>mg/L</b>	1	19-May-2021 12:48
<b>Arsenic</b>	<b>0.0326</b>		<b>0.00400</b>	<b>0.0200</b>	<b>mg/L</b>	1	19-May-2021 12:48
<b>Barium</b>	<b>0.0644</b>		<b>0.0190</b>	<b>0.0400</b>	<b>mg/L</b>	1	19-May-2021 12:48
Beryllium	U		0.00200	0.0200	mg/L	1	19-May-2021 12:48
Cadmium	U		0.00200	0.0200	mg/L	1	19-May-2021 12:48
<b>Chromium</b>	<b>0.0399</b>	J	<b>0.00400</b>	<b>0.0400</b>	<b>mg/L</b>	1	19-May-2021 12:48
<b>Lead</b>	<b>0.109</b>		<b>0.00600</b>	<b>0.0200</b>	<b>mg/L</b>	1	19-May-2021 12:48
<b>Nickel</b>	<b>0.0789</b>		<b>0.00600</b>	<b>0.0200</b>	<b>mg/L</b>	1	19-May-2021 12:48
Selenium	U		0.0110	0.0200	mg/L	1	19-May-2021 12:48
Silver	U		0.00200	0.0200	mg/L	1	19-May-2021 12:48
<b>MERCURY BY SW7470A</b>		<b>Method:SW7470A</b>		Prep:SW7470A / 18-May-2021		Analyst: MSC	
Mercury	U		0.000300	0.00200	mg/L	1	18-May-2021 12:34
<b>FLASH POINT BY PENSKEY-MARTENS SW1010A</b>		<b>Method:SW1010</b>				Analyst: TH	
Ignitability	> 212		70.0	70.0	°F	1	14-May-2021 08:00
<b>PH BY SW9040C</b>		<b>Method:SW9040C</b>				Analyst: JAC	
<b>pH</b>	<b>9.05</b>	H	<b>0.100</b>	<b>0.100</b>	<b>pH Units</b>	1	17-May-2021 14:18
<b>Temp Deg C @pH</b>	<b>23.2</b>	H	<b>0</b>	<b>0</b>	<b>DEG C</b>	1	17-May-2021 14:18

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 IDWW  
**WorkOrder:** HS21050675

<b>Batch ID:</b> 165827	<b>Start Date:</b> 14 May 2021 13:49	<b>End Date:</b> 14 May 2021 16:00
<b>Method:</b> TX 1005 PREP		<b>Prep Code:</b> TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21050675-01	1	30.51 (g)	3 (mL)	0.09833	2-oz glass, Neat

<b>Batch ID:</b> 165870	<b>Start Date:</b> 17 May 2021 11:43	<b>End Date:</b> 17 May 2021 15:00
<b>Method:</b> SV AQ SEP FUN EXTRACT-LOWLEV - 3510C		<b>Prep Code:</b> 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21050675-01	1	190 (mL)	1 (mL)	0.005263	4-oz glass, Neat

<b>Batch ID:</b> 165906	<b>Start Date:</b> 18 May 2021 08:30	<b>End Date:</b> 18 May 2021 11:30
<b>Method:</b> MERCURY PREP BY 7470A- WATER		<b>Prep Code:</b> HG_WPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21050675-01		1 (mL)	10 (mL)	10	4-oz glass, Neat

<b>Batch ID:</b> 165910	<b>Start Date:</b> 18 May 2021 13:30	<b>End Date:</b> 18 May 2021 17:30
<b>Method:</b> WATER - SW3010A		<b>Prep Code:</b> 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS21050675-01		1 (mL)	10 (mL)	10	4-oz glass, Neat

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
<b>Batch ID:</b> 165827 ( 0 )		<b>Test Name :</b> LOW-LEVEL TEXAS TPH BY TX1005			<b>Matrix:</b> Liquid	
HS21050675-01	WW-1620-IDW01-20210512	12 May 2021 15:00		14 May 2021 13:49	15 May 2021 05:49	1
<b>Batch ID:</b> 165870 ( 0 )		<b>Test Name :</b> LOW-LEVEL SEMIVOLATILES BY 8270D			<b>Matrix:</b> Liquid	
HS21050675-01	WW-1620-IDW01-20210512	12 May 2021 15:00		17 May 2021 11:43	20 May 2021 17:12	1
<b>Batch ID:</b> 165906 ( 0 )		<b>Test Name :</b> MERCURY BY SW7470A			<b>Matrix:</b> Liquid	
HS21050675-01	WW-1620-IDW01-20210512	12 May 2021 15:00		18 May 2021 11:30	18 May 2021 12:34	1
<b>Batch ID:</b> 165910 ( 0 )		<b>Test Name :</b> ICP-MS METALS BY SW6020A			<b>Matrix:</b> Liquid	
HS21050675-01	WW-1620-IDW01-20210512	12 May 2021 15:00		18 May 2021 17:30	19 May 2021 12:48	1
<b>Batch ID:</b> R383647 ( 0 )		<b>Test Name :</b> FLASH POINT BY PENSKEY-MARTENS SW1010A			<b>Matrix:</b> Liquid	
HS21050675-01	WW-1620-IDW01-20210512	12 May 2021 15:00			14 May 2021 08:00	1
<b>Batch ID:</b> R383669 ( 0 )		<b>Test Name :</b> LOW LEVEL VOLATILES BY SW8260C			<b>Matrix:</b> Liquid	
HS21050675-01	WW-1620-IDW01-20210512	12 May 2021 15:00			14 May 2021 18:18	50
<b>Batch ID:</b> R383753 ( 0 )		<b>Test Name :</b> PH BY SW9040C			<b>Matrix:</b> Liquid	
HS21050675-01	WW-1620-IDW01-20210512	12 May 2021 15:00			17 May 2021 14:18	1

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165827 ( 0 )		Instrument: FID-10		Method: LOW-LEVEL TEXAS TPH BY TX1005					
<b>MBLK</b>	Sample ID: <b>MBLK-165827</b>	Units: <b>mg/L</b>		Analysis Date: <b>14-May-2021 17:50</b>					
Client ID:	Run ID: <b>FID-10_383792</b>		SeqNo: <b>6096120</b>		PrepDate: <b>14-May-2021</b>		DF: <b>1</b>		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
nC6 to nC12	U	0.50							
>nC12 to nC28	U	0.50							
>nC28 to nC35	U	0.50							
Total Petroleum Hydrocarbon	U	0.50							
Surr: 2-Fluorobiphenyl	2.637	0	2.5	0	105	70 - 130			
Surr: Trifluoromethyl benzene	2.554	0	2.5	0	102	70 - 130			
<b>LCS</b>	Sample ID: <b>LCS-165827</b>	Units: <b>mg/L</b>		Analysis Date: <b>14-May-2021 18:18</b>					
Client ID:	Run ID: <b>FID-10_383792</b>		SeqNo: <b>6096121</b>		PrepDate: <b>14-May-2021</b>		DF: <b>1</b>		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
nC6 to nC12	22.15	0.50	25	0	88.6	75 - 125			
>nC12 to nC28	26.24	0.50	25	0	105	75 - 125			
Surr: 2-Fluorobiphenyl	2.439	0	2.5	0	97.5	70 - 130			
Surr: Trifluoromethyl benzene	2.367	0	2.5	0	94.7	70 - 130			
<b>LCSD</b>	Sample ID: <b>LCSD-165827</b>	Units: <b>mg/L</b>		Analysis Date: <b>14-May-2021 18:47</b>					
Client ID:	Run ID: <b>FID-10_383792</b>		SeqNo: <b>6096122</b>		PrepDate: <b>14-May-2021</b>		DF: <b>1</b>		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
nC6 to nC12	21.07	0.50	25	0	84.3	75 - 125	22.15	5.02	20
>nC12 to nC28	24.75	0.50	25	0	99.0	75 - 125	26.24	5.84	20
Surr: 2-Fluorobiphenyl	2.433	0	2.5	0	97.3	70 - 130	2.439	0.222	20
Surr: Trifluoromethyl benzene	2.348	0	2.5	0	93.9	70 - 130	2.367	0.832	20
<b>MS</b>	Sample ID: <b>HS21050671-01MS</b>	Units: <b>mg/L</b>		Analysis Date: <b>14-May-2021 19:45</b>					
Client ID:	Run ID: <b>FID-10_383792</b>		SeqNo: <b>6096124</b>		PrepDate: <b>14-May-2021</b>		DF: <b>1</b>		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
nC6 to nC12	21.7	0.50	24.8	0	87.5	75 - 125			
>nC12 to nC28	26.12	0.50	24.8	0	105	75 - 125			
Surr: 2-Fluorobiphenyl	2.766	0	2.48	0	112	70 - 130			
Surr: Trifluoromethyl benzene	2.631	0	2.48	0	106	70 - 130			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165827 ( 0 )		Instrument: FID-10		Method: LOW-LEVEL TEXAS TPH BY TX1005						
<b>MSD</b>		Sample ID: <b>HS21050671-01MSD</b>		Units: <b>mg/L</b>		Analysis Date: <b>14-May-2021 20:14</b>				
Client ID:		Run ID: <b>FID-10_383792</b>		SeqNo: <b>6096125</b>		PrepDate: <b>14-May-2021</b>		DF: <b>1</b>		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	22.79	0.50	24.77	0	92.0	75 - 125	21.7	4.87	20	
>nC12 to nC28	27.73	0.50	24.77	0	112	75 - 125	26.12	6	20	
Surr: 2-Fluorobiphenyl	2.751	0	2.477	0	111	70 - 130	2.766	0.545	20	
Surr: Trifluoromethyl benzene	2.587	0	2.477	0	104	70 - 130	2.631	1.71	20	

The following samples were analyzed in this batch: HS21050675-01

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165906 ( 0 )		Instrument: HG03		Method: MERCURY BY SW7470A						
<b>MBLK</b>	Sample ID: <b>MBLK-165906</b>	Units: <b>mg/L</b>		Analysis Date: <b>18-May-2021 12:15</b>						
Client ID:	Run ID: <b>HG03_383835</b>		SeqNo: <b>6097328</b>		PrepDate: <b>18-May-2021</b>		DF: <b>1</b>			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.000200								
<b>LCS</b>	Sample ID: <b>LCS-165906</b>	Units: <b>mg/L</b>		Analysis Date: <b>18-May-2021 12:22</b>						
Client ID:	Run ID: <b>HG03_383835</b>		SeqNo: <b>6097331</b>		PrepDate: <b>18-May-2021</b>		DF: <b>1</b>			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00472	0.000200	0.005	0	94.4	80 - 120				
<b>MS</b>	Sample ID: <b>HS21050706-02MS</b>	Units: <b>mg/L</b>		Analysis Date: <b>18-May-2021 12:25</b>						
Client ID:	Run ID: <b>HG03_383835</b>		SeqNo: <b>6097333</b>		PrepDate: <b>18-May-2021</b>		DF: <b>1</b>			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00472	0.000200	0.005	-0.000022	94.8	75 - 125				
<b>MSD</b>	Sample ID: <b>HS21050706-02MSD</b>	Units: <b>mg/L</b>		Analysis Date: <b>18-May-2021 12:27</b>						
Client ID:	Run ID: <b>HG03_383835</b>		SeqNo: <b>6097334</b>		PrepDate: <b>18-May-2021</b>		DF: <b>1</b>			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00408	0.000200	0.005	-0.000022	82.0	75 - 125	0.00472	14.5	20	
The following samples were analyzed in this batch: HS21050675-01										

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165910 ( 0 )		Instrument: ICPMS06		Method: ICP-MS METALS BY SW6020A					
<b>MBLK</b>	Sample ID: <b>MBLK-165910</b>	Units: <b>mg/L</b>		Analysis Date: <b>19-May-2021 12:16</b>					
Client ID:	Run ID: <b>ICPMS06_383907</b>	SeqNo: <b>6099504</b>		PrepDate: <b>18-May-2021</b>		DF: <b>1</b>			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Antimony	U	0.00200							
Arsenic	U	0.00200							
Barium	U	0.00400							
Beryllium	U	0.00200							
Cadmium	U	0.00200							
Chromium	U	0.00400							
Lead	U	0.00200							
Nickel	U	0.00200							
Selenium	U	0.00200							
Silver	U	0.00200							

  

<b>LCS</b>	Sample ID: <b>LCS-165910</b>	Units: <b>mg/L</b>		Analysis Date: <b>18-May-2021 19:34</b>					
Client ID:	Run ID: <b>ICPMS06_383838</b>	SeqNo: <b>6098381</b>		PrepDate: <b>18-May-2021</b>		DF: <b>1</b>			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Antimony	0.05617	0.00200	0.05	0	112	80 - 120			
Arsenic	0.05284	0.00200	0.05	0	106	80 - 120			
Barium	0.05356	0.00400	0.05	0	107	80 - 120			
Beryllium	0.05576	0.00200	0.05	0	112	80 - 120			
Cadmium	0.05571	0.00200	0.05	0	111	80 - 120			
Chromium	0.05248	0.00400	0.05	0	105	80 - 120			
Lead	0.05268	0.00200	0.05	0	105	80 - 120			
Nickel	0.05443	0.00200	0.05	0	109	80 - 120			
Selenium	0.05673	0.00200	0.05	0	113	80 - 120			
Silver	0.05621	0.00200	0.05	0	112	80 - 120			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165910 ( 0 )		Instrument: ICPMS06		Method: ICP-MS METALS BY SW6020A					
<b>MS</b>		Sample ID: HS21050172-01MS		Units: mg/L		Analysis Date: 18-May-2021 19:40			
Client ID:		Run ID: ICPMS06_383838		SeqNo: 6098384		PrepDate: 18-May-2021		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Antimony	0.0575	0.00200	0.05	0.000221	115	80 - 120			
Arsenic	0.05608	0.00200	0.05	0.001288	110	80 - 120			
Barium	0.4704	0.00400	0.05	0.4175	106	80 - 120			O
Beryllium	0.05652	0.00200	0.05	0.000017	113	80 - 120			
Cadmium	0.05496	0.00200	0.05	0.000015	110	80 - 120			
Chromium	0.05494	0.00400	0.05	0.000276	109	80 - 120			
Lead	0.05565	0.00200	0.05	0.00005	111	80 - 120			
Nickel	0.05472	0.00200	0.05	0.000599	108	80 - 120			
Selenium	0.05668	0.00200	0.05	0.000294	113	80 - 120			
Silver	0.05161	0.00200	0.05	0	103	80 - 120			

  

<b>MSD</b>		Sample ID: HS21050172-01MSD		Units: mg/L		Analysis Date: 18-May-2021 19:42			
Client ID:		Run ID: ICPMS06_383838		SeqNo: 6098385		PrepDate: 18-May-2021		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Antimony	0.05233	0.00200	0.05	0.000221	104	80 - 120	0.0575	9.42	20
Arsenic	0.05167	0.00200	0.05	0.001288	101	80 - 120	0.05608	8.19	20
Barium	0.4498	0.00400	0.05	0.4175	64.6	80 - 120	0.4704	4.48	20 SO
Beryllium	0.05455	0.00200	0.05	0.000017	109	80 - 120	0.05652	3.55	20
Cadmium	0.05232	0.00200	0.05	0.000015	105	80 - 120	0.05496	4.91	20
Chromium	0.05026	0.00400	0.05	0.000276	100.0	80 - 120	0.05494	8.92	20
Lead	0.05254	0.00200	0.05	0.00005	105	80 - 120	0.05565	5.75	20
Nickel	0.05135	0.00200	0.05	0.000599	101	80 - 120	0.05472	6.35	20
Selenium	0.05192	0.00200	0.05	0.000294	103	80 - 120	0.05668	8.76	20
Silver	0.04697	0.00200	0.05	0	93.9	80 - 120	0.05161	9.41	20

  

<b>PDS</b>		Sample ID: HS21050172-01PDS		Units: mg/L		Analysis Date: 18-May-2021 19:44			
Client ID:		Run ID: ICPMS06_383838		SeqNo: 6098386		PrepDate: 18-May-2021		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Barium	0.5299	0.00400	0.1	0.4175	112	75 - 125			O
Nickel	0.123	0.00200	0.1	0.000599	122	75 - 125			
Silver	0.1212	0.00200	0.1	0	121	75 - 125			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165910 ( 0 )		Instrument: ICPMS06		Method: ICP-MS METALS BY SW6020A						
<b>SD</b>		Sample ID: <b>HS21050172-01SD</b>		Units: <b>mg/L</b>		Analysis Date: <b>18-May-2021 19:38</b>				
Client ID:		Run ID: <b>ICPMS06_383838</b>		SeqNo: <b>6098383</b>		PrepDate: <b>18-May-2021</b>		DF: <b>5</b>		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	U	0.0100					0.000221	0	10	
Arsenic	U	0.0100					0.001288	0	10	
Barium	0.4098	0.0200					0.4175	1.84	10	
Beryllium	U	0.0100					0.000017	0	10	
Cadmium	U	0.0100					0.000015	0	10	
Chromium	U	0.0200					0.000276	0	10	
Lead	U	0.0100					0.000005	0	10	
Nickel	U	0.0100					0.000599	0	10	
Selenium	U	0.0100					0.000294	0	10	
Silver	U	0.0100					0	0	10	
The following samples were analyzed in this batch: HS21050675-01										



**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165870 ( 0 )		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D					
<b>MBLK</b>	Sample ID: <b>MBLK-165870</b>	Units: <b>ug/L</b>		Analysis Date: <b>20-May-2021 14:45</b>					
Client ID:	Run ID: <b>SV-8_384070</b>	SeqNo: <b>6102973</b>		PrepDate: <b>17-May-2021</b>		DF: <b>1</b>			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
1,2,4-Trichlorobenzene	U	0.20							
2,4,5-Trichlorophenol	U	0.20							
2,4,6-Trichlorophenol	U	0.20							
2,4-Dichlorophenol	U	0.20							
2,4-Dimethylphenol	U	0.20							
2,4-Dinitrophenol	U	1.0							
2,4-Dinitrotoluene	U	0.20							
2,6-Dinitrotoluene	U	0.20							
2-Chloronaphthalene	U	0.20							
2-Chlorophenol	U	0.20							
2-Methylnaphthalene	U	0.10							
2-Methylphenol	U	0.20							
2-Nitroaniline	U	0.20							
2-Nitrophenol	U	0.20							
3&4-Methylphenol	U	0.20							
3,3'-Dichlorobenzidine	U	0.20							
3-Nitroaniline	U	0.20							
4,6-Dinitro-2-methylphenol	U	0.20							
4-Bromophenyl phenyl ether	U	0.20							
4-Chloro-3-methylphenol	U	0.20							
4-Chloroaniline	U	0.20							
4-Chlorophenyl phenyl ether	U	0.20							
4-Nitroaniline	U	0.20							
4-Nitrophenol	U	1.0							
Acenaphthene	U	0.10							
Acenaphthylene	U	0.10							
Anthracene	U	0.10							
Benz(a)anthracene	U	0.10							
Benzidine	U	0.20							
Benzo(a)pyrene	U	0.10							
Benzo(b)fluoranthene	U	0.10							
Benzo(g,h,i)perylene	U	0.10							
Benzo(k)fluoranthene	U	0.10							
Benzyl alcohol	U	0.20							

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165870 ( 0 )		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
<b>MBLK</b>	Sample ID: <b>MBLK-165870</b>	Units: <b>ug/L</b>		Analysis Date: <b>20-May-2021 14:45</b>						
Client ID:	Run ID: <b>SV-8_384070</b>	SeqNo: <b>6102973</b>		PrepDate: <b>17-May-2021</b>		DF: <b>1</b>				
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-chloroethyl)ether	U	0.20								
Bis(2-chloroisopropyl)ether	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Butyl benzyl phthalate	U	0.20								
Carbazole	U	0.20								
Chrysene	U	0.10								
Dibenz(a,h)anthracene	U	0.10								
Dibenzofuran	U	0.10								
Diethyl phthalate	U	0.20								
Dimethyl phthalate	U	0.20								
Di-n-butyl phthalate	U	0.20								
Di-n-octyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Hexachlorobenzene	U	0.20								
Hexachlorobutadiene	U	0.20								
Hexachlorocyclopentadiene	U	0.20								
Hexachloroethane	U	0.20								
Indeno(1,2,3-cd)pyrene	U	0.10								
Isophorone	U	0.20								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodimethylamine	U	0.20								
N-Nitrosodi-n-propylamine	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Pyridine	U	1.0								
Surr: 2,4,6-Tribromophenol	4.238	0.20	5	0	84.8	34 - 129				
Surr: 2-Fluorobiphenyl	5.122	0.20	5	0	102	40 - 125				
Surr: 2-Fluorophenol	5.598	0.20	5	0	112	20 - 120				

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165870 ( 0 )		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D					
<b>MBLK</b>	Sample ID: <b>MBLK-165870</b>	Units: <b>ug/L</b>		Analysis Date: <b>20-May-2021 14:45</b>					
Client ID:	Run ID: <b>SV-8_384070</b>		SeqNo: <b>6102973</b>		PrepDate: <b>17-May-2021</b>		DF: <b>1</b>		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Surr: 4-Terphenyl-d14	5.831	0.20	5	0	117	40 - 135			
Surr: Nitrobenzene-d5	4.774	0.20	5	0	95.5	41 - 120			
Surr: Phenol-d6	5.364	0.20	5	0	107	20 - 120			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165870 ( 0 )		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D					
<b>LCS</b>		Sample ID: <b>LCS-165870</b>		Units: <b>ug/L</b>		Analysis Date: <b>20-May-2021 15:05</b>			
Client ID:		Run ID: <b>SV-8_384070</b>		SeqNo: <b>6102974</b>		PrepDate: <b>17-May-2021</b>		DF: <b>1</b>	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
1,2,4-Trichlorobenzene	3.953	0.20	5	0	79.1	45 - 120			
2,4,5-Trichlorophenol	4.333	0.20	5	0	86.7	46 - 120			
2,4,6-Trichlorophenol	4.376	0.20	5	0	87.5	42 - 120			
2,4-Dichlorophenol	4.505	0.20	5	0	90.1	49 - 120			
2,4-Dimethylphenol	5.03	0.20	5	0	101	35 - 120			
2,4-Dinitrophenol	3.195	1.0	5	0	63.9	15 - 120			
2,4-Dinitrotoluene	5.279	0.20	5	0	106	50 - 122			
2,6-Dinitrotoluene	5.099	0.20	5	0	102	50 - 120			
2-Chloronaphthalene	5.212	0.20	5	0	104	50 - 120			
2-Chlorophenol	5.019	0.20	5	0	100	40 - 120			
2-Methylnaphthalene	4.856	0.10	5	0	97.1	50 - 120			
2-Methylphenol	5.133	0.20	5	0	103	45 - 120			
2-Nitroaniline	5.951	0.20	5	0	119	28 - 139			
2-Nitrophenol	4.661	0.20	5	0	93.2	40 - 120			
3&4-Methylphenol	5.509	0.20	5	0	110	35 - 120			
3,3'-Dichlorobenzidine	4.465	0.20	5	0	89.3	15 - 120			
3-Nitroaniline	5.744	0.20	5	0	115	30 - 120			
4,6-Dinitro-2-methylphenol	3.997	0.20	5	0	79.9	25 - 121			
4-Bromophenyl phenyl ether	4.292	0.20	5	0	85.8	45 - 120			
4-Chloro-3-methylphenol	5.386	0.20	5	0	108	47 - 120			
4-Chloroaniline	5.794	0.20	5	0	116	20 - 120			
4-Chlorophenyl phenyl ether	4.134	0.20	5	0	82.7	50 - 120			
4-Nitroaniline	5.504	0.20	5	0	110	30 - 133			
4-Nitrophenol	6.372	1.0	5	0	127	30 - 130			
Acenaphthene	4.469	0.10	5	0	89.4	45 - 120			
Acenaphthylene	4.901	0.10	5	0	98.0	47 - 120			
Anthracene	5.542	0.10	5	0	111	45 - 120			
Benz(a)anthracene	5.235	0.10	5	0	105	40 - 120			
Benzidine	2.383	0.20	5	0	47.7	10 - 120			
Benzo(a)pyrene	5.693	0.10	5	0	114	45 - 120			
Benzo(b)fluoranthene	5.57	0.10	5	0	111	50 - 120			
Benzo(g,h,i)perylene	4.55	0.10	5	0	91.0	42 - 127			
Benzo(k)fluoranthene	5.558	0.10	5	0	111	45 - 127			
Benzyl alcohol	5.229	0.20	5	0	105	35 - 122			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165870 ( 0 )		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D					
<b>LCS</b>		Sample ID: <b>LCS-165870</b>		Units: <b>ug/L</b>		Analysis Date: <b>20-May-2021 15:05</b>			
Client ID:		Run ID: <b>SV-8_384070</b>		SeqNo: <b>6102974</b>		PrepDate: <b>17-May-2021</b>		DF: <b>1</b>	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Bis(2-chloroethoxy)methane	4.98	0.20	5	0	99.6	45 - 120			
Bis(2-chloroethyl)ether	4.825	0.20	5	0	96.5	37 - 121			
Bis(2-chloroisopropyl)ether	4.748	0.20	5	0	95.0	40 - 120			
Bis(2-ethylhexyl)phthalate	6.862	0.20	5	0	137	40 - 139			
Butyl benzyl phthalate	6.017	0.20	5	0	120	47 - 123			
Carbazole	5.953	0.20	5	0	119	42 - 128			
Chrysene	5.582	0.10	5	0	112	43 - 120			
Dibenz(a,h)anthracene	4.658	0.10	5	0	93.2	45 - 125			
Dibenzofuran	4.922	0.10	5	0	98.4	50 - 120			
Diethyl phthalate	5.366	0.20	5	0	107	41 - 120			
Dimethyl phthalate	5.025	0.20	5	0	100	40 - 122			
Di-n-butyl phthalate	6.123	0.20	5	0	122	45 - 123			
Di-n-octyl phthalate	5.538	0.20	5	0	111	45 - 129			
Fluoranthene	5.121	0.10	5	0	102	45 - 125			
Fluorene	5.255	0.10	5	0	105	49 - 120			
Hexachlorobenzene	4.283	0.20	5	0	85.7	48 - 120			
Hexachlorobutadiene	3.5	0.20	5	0	70.0	40 - 120			
Hexachlorocyclopentadiene	3.23	0.20	5	0	64.6	34 - 136			
Hexachloroethane	5.048	0.20	5	0	101	40 - 120			
Indeno(1,2,3-cd)pyrene	4.566	0.10	5	0	91.3	41 - 128			
Isophorone	4.754	0.20	5	0	95.1	40 - 121			
Naphthalene	5.251	0.10	5	0	105	45 - 120			
Nitrobenzene	4.834	0.20	5	0	96.7	44 - 120			
N-Nitrosodimethylamine	3.825	0.20	5	0	76.5	30 - 121			
N-Nitrosodi-n-propylamine	5.054	0.20	5	0	101	40 - 120			
N-Nitrosodiphenylamine	5.564	0.20	5	0	111	40 - 125			
Pentachlorophenol	3.34	0.20	5	0	66.8	19 - 121			
Phenanthrene	5.555	0.10	5	0	111	45 - 121			
Phenol	5.046	0.20	5	0	101	20 - 124			
Pyrene	5.924	0.10	5	0	118	40 - 130			
Pyridine	3.392	1.0	5	0	67.8	15 - 120			
Surr: 2,4,6-Tribromophenol	4.368	0.20	5	0	87.4	34 - 129			
Surr: 2-Fluorobiphenyl	4.976	0.20	5	0	99.5	40 - 125			
Surr: 2-Fluorophenol	5.01	0.20	5	0	100	20 - 120			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165870 ( 0 )		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D					
<b>LCS</b>	Sample ID: <b>LCS-165870</b>	Units: <b>ug/L</b>		Analysis Date: <b>20-May-2021 15:05</b>					
Client ID:	Run ID: <b>SV-8_384070</b>		SeqNo: <b>6102974</b>		PrepDate: <b>17-May-2021</b>		DF: <b>1</b>		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Surr: 4-Terphenyl-d14	5.497	0.20	5	0	110	40 - 135			
Surr: Nitrobenzene-d5	4.871	0.20	5	0	97.4	41 - 120			
Surr: Phenol-d6	5.034	0.20	5	0	101	20 - 120			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165870 ( 0 )		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCSD		Sample ID: LCSD-165870		Units: ug/L		Analysis Date: 20-May-2021 15:25				
Client ID:		Run ID: SV-8_384070		SeqNo: 6102975		PrepDate: 17-May-2021		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	3.953	0.20	5	0	79.1	45 - 120	3.953	0.00402	20	
2,4,5-Trichlorophenol	4.22	0.20	5	0	84.4	46 - 120	4.333	2.64	20	
2,4,6-Trichlorophenol	4.207	0.20	5	0	84.1	42 - 120	4.376	3.94	20	
2,4-Dichlorophenol	4.508	0.20	5	0	90.2	49 - 120	4.505	0.0638	20	
2,4-Dimethylphenol	5.249	0.20	5	0	105	35 - 120	5.03	4.25	20	
2,4-Dinitrophenol	3.246	1.0	5	0	64.9	15 - 120	3.195	1.6	50	
2,4-Dinitrotoluene	5.552	0.20	5	0	111	50 - 122	5.279	5.05	20	
2,6-Dinitrotoluene	5.014	0.20	5	0	100	50 - 120	5.099	1.68	20	
2-Chloronaphthalene	4.948	0.20	5	0	99.0	50 - 120	5.212	5.19	20	
2-Chlorophenol	5.658	0.20	5	0	113	40 - 120	5.019	12	20	
2-Methylnaphthalene	4.771	0.10	5	0	95.4	50 - 120	4.856	1.76	20	
2-Methylphenol	5.524	0.20	5	0	110	45 - 120	5.133	7.34	20	
2-Nitroaniline	5.829	0.20	5	0	117	28 - 139	5.951	2.06	20	
2-Nitrophenol	4.925	0.20	5	0	98.5	40 - 120	4.661	5.51	20	
3&4-Methylphenol	5.746	0.20	5	0	115	35 - 120	5.509	4.21	20	
3,3'-Dichlorobenzidine	4.355	0.20	5	0	87.1	15 - 120	4.465	2.48	20	
3-Nitroaniline	5.263	0.20	5	0	105	30 - 120	5.744	8.74	20	
4,6-Dinitro-2-methylphenol	4.508	0.20	5	0	90.2	25 - 121	3.997	12	30	
4-Bromophenyl phenyl ether	4.312	0.20	5	0	86.2	45 - 120	4.292	0.468	20	
4-Chloro-3-methylphenol	5.388	0.20	5	0	108	47 - 120	5.386	0.0397	20	
4-Chloroaniline	5.647	0.20	5	0	113	20 - 120	5.794	2.57	20	
4-Chlorophenyl phenyl ether	4.012	0.20	5	0	80.2	50 - 120	4.134	3.01	20	
4-Nitroaniline	5.94	0.20	5	0	119	30 - 133	5.504	7.62	20	
4-Nitrophenol	6.223	1.0	5	0	124	30 - 130	6.372	2.36	20	
Acenaphthene	4.346	0.10	5	0	86.9	45 - 120	4.469	2.79	20	
Acenaphthylene	4.867	0.10	5	0	97.3	47 - 120	4.901	0.686	20	
Anthracene	5.53	0.10	5	0	111	45 - 120	5.542	0.218	20	
Benz(a)anthracene	5.27	0.10	5	0	105	40 - 120	5.235	0.66	20	
Benzidine	2.167	0.20	5	0	43.3	10 - 120	2.383	9.49	30	
Benzo(a)pyrene	5.674	0.10	5	0	113	45 - 120	5.693	0.335	20	
Benzo(b)fluoranthene	5.407	0.10	5	0	108	50 - 120	5.57	2.96	20	
Benzo(g,h,i)perylene	4.673	0.10	5	0	93.5	42 - 127	4.55	2.67	20	
Benzo(k)fluoranthene	5.296	0.10	5	0	106	45 - 127	5.558	4.84	20	
Benzyl alcohol	5.433	0.20	5	0	109	35 - 122	5.229	3.82	20	

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165870 ( 0 )		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCSD		Sample ID: LCSD-165870		Units: ug/L		Analysis Date: 20-May-2021 15:25				
Client ID:		Run ID: SV-8_384070		SeqNo: 6102975		PrepDate: 17-May-2021		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bis(2-chloroethoxy)methane	4.926	0.20	5	0	98.5	45 - 120	4.98	1.09	20	
Bis(2-chloroethyl)ether	5.196	0.20	5	0	104	37 - 121	4.825	7.4	20	
Bis(2-chloroisopropyl)ether	5.227	0.20	5	0	105	40 - 120	4.748	9.61	20	
Bis(2-ethylhexyl)phthalate	6.804	0.20	5	0	136	40 - 139	6.862	0.854	20	
Butyl benzyl phthalate	6.125	0.20	5	0	122	47 - 123	6.017	1.78	20	
Carbazole	5.816	0.20	5	0	116	42 - 128	5.953	2.32	20	
Chrysene	5.619	0.10	5	0	112	43 - 120	5.582	0.673	20	
Dibenz(a,h)anthracene	4.619	0.10	5	0	92.4	45 - 125	4.658	0.831	20	
Dibenzofuran	4.773	0.10	5	0	95.5	50 - 120	4.922	3.07	20	
Diethyl phthalate	5.245	0.20	5	0	105	41 - 120	5.366	2.29	20	
Dimethyl phthalate	4.978	0.20	5	0	99.6	40 - 122	5.025	0.923	20	
Di-n-butyl phthalate	6.018	0.20	5	0	120	45 - 123	6.123	1.72	20	
Di-n-octyl phthalate	6.175	0.20	5	0	124	45 - 129	5.538	10.9	20	
Fluoranthene	5.056	0.10	5	0	101	45 - 125	5.121	1.28	20	
Fluorene	5.108	0.10	5	0	102	49 - 120	5.255	2.84	20	
Hexachlorobenzene	4.139	0.20	5	0	82.8	48 - 120	4.283	3.42	20	
Hexachlorobutadiene	3.612	0.20	5	0	72.2	40 - 120	3.5	3.15	20	
Hexachlorocyclopentadiene	3.12	0.20	5	0	62.4	34 - 136	3.23	3.45	20	
Hexachloroethane	5.338	0.20	5	0	107	40 - 120	5.048	5.59	20	
Indeno(1,2,3-cd)pyrene	4.531	0.10	5	0	90.6	41 - 128	4.566	0.783	20	
Isophorone	4.751	0.20	5	0	95.0	40 - 121	4.754	0.0645	20	
Naphthalene	5.221	0.10	5	0	104	45 - 120	5.251	0.571	20	
Nitrobenzene	4.778	0.20	5	0	95.6	44 - 120	4.834	1.15	20	
N-Nitrosodimethylamine	4.675	0.20	5	0	93.5	30 - 121	3.825	20	20	R
N-Nitrosodi-n-propylamine	5.34	0.20	5	0	107	40 - 120	5.054	5.49	20	
N-Nitrosodiphenylamine	5.467	0.20	5	0	109	40 - 125	5.564	1.76	20	
Pentachlorophenol	3.614	0.20	5	0	72.3	19 - 121	3.34	7.88	20	
Phenanthrene	5.48	0.10	5	0	110	45 - 121	5.555	1.36	20	
Phenol	5.278	0.20	5	0	106	20 - 124	5.046	4.51	20	
Pyrene	5.969	0.10	5	0	119	40 - 130	5.924	0.761	20	
Pyridine	3.666	1.0	5	0	73.3	15 - 120	3.392	7.76	20	
Surr: 2,4,6-Tribromophenol	4.489	0.20	5	0	89.8	34 - 129	4.368	2.73	20	
Surr: 2-Fluorobiphenyl	4.863	0.20	5	0	97.3	40 - 125	4.976	2.31	20	
Surr: 2-Fluorophenol	5.434	0.20	5	0	109	20 - 120	5.01	8.11	20	



**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: 165870 ( 0 )		Instrument: SV-8		Method: LOW-LEVEL SEMIVOLATILES BY 8270D						
LCSD		Sample ID: LCSD-165870		Units: ug/L		Analysis Date: 20-May-2021 15:25				
Client ID:		Run ID: SV-8_384070		SeqNo: 6102975		PrepDate: 17-May-2021		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: 4-Terphenyl-d14	5.536	0.20	5	0	111	40 - 135	5.497	0.71	20	
Surr: Nitrobenzene-d5	4.904	0.20	5	0	98.1	41 - 120	4.871	0.689	20	
Surr: Phenol-d6	5.47	0.20	5	0	109	20 - 120	5.034	8.3	20	

The following samples were analyzed in this batch: HS21050675-01

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: R383669 ( 0 )		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>MBLK</b>	Sample ID: VBLKW-210514	Units: ug/L		Analysis Date: 14-May-2021 12:04					
Client ID:	Run ID: VOA4_383669	SeqNo: 6092645		PrepDate:		DF: 1			
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
1,1,1-Trichloroethane	U	1.0							
1,1,2,2-Tetrachloroethane	U	1.0							
1,1,2-Trichloroethane	U	1.0							
1,1-Dichloroethane	U	1.0							
1,1-Dichloroethene	U	1.0							
1,2-Dichlorobenzene	U	1.0							
1,2-Dichloroethane	U	1.0							
1,2-Dichloropropane	U	1.0							
1,3-Dichlorobenzene	U	1.0							
1,4-Dichlorobenzene	U	1.0							
2-Butanone	U	2.0							
2-Hexanone	U	2.0							
4-Methyl-2-pentanone	U	2.0							
Acetone	U	2.0							
Benzene	U	1.0							
Bromochloromethane	U	1.0							
Bromodichloromethane	U	1.0							
Bromoform	U	1.0							
Bromomethane	U	1.0							
Carbon disulfide	U	2.0							
Carbon tetrachloride	U	1.0							
Chlorobenzene	U	1.0							
Chloroethane	U	1.0							
Chloroform	U	1.0							
Chloromethane	U	1.0							
cis-1,2-Dichloroethene	U	1.0							
cis-1,3-Dichloropropene	U	1.0							
Dibromochloromethane	U	1.0							
Ethylbenzene	U	1.0							
m,p-Xylene	U	2.0							
Methylene chloride	U	2.0							
o-Xylene	U	1.0							
Styrene	U	1.0							
Tetrachloroethene	U	1.0							

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: R383669 ( 0 )		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>MBLK</b>	Sample ID: VBLKW-210514	Units: ug/L		Analysis Date: 14-May-2021 12:04					
Client ID:	Run ID: VOA4_383669		SeqNo: 6092645		PrepDate:		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Toluene	U	1.0							
trans-1,2-Dichloroethene	U	1.0							
trans-1,3-Dichloropropene	U	1.0							
Trichloroethene	U	1.0							
Vinyl acetate	U	1.0							
Vinyl chloride	U	1.0							
Xylenes, Total	U	1.0							
1,2-Dichloroethene, Total	U	1.0							
Surr: 1,2-Dichloroethane-d4	50.65	1.0	50	0	101	70 - 123			
Surr: 4-Bromofluorobenzene	47.43	1.0	50	0	94.9	82 - 115			
Surr: Dibromofluoromethane	49.39	1.0	50	0	98.8	73 - 126			
Surr: Toluene-d8	51.34	1.0	50	0	103	81 - 120			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: R383669 ( 0 )		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>LCS</b>		Sample ID: VLCSW-210514		Units: ug/L		Analysis Date: 14-May-2021 11:20			
Client ID:		Run ID: VOA4_383669		SeqNo: 6092644		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
1,1,1-Trichloroethane	19.79	1.0	20	0	98.9	70 - 130			
1,1,2,2-Tetrachloroethane	18.06	1.0	20	0	90.3	70 - 120			
1,1,2-Trichloroethane	18.51	1.0	20	0	92.6	77 - 113			
1,1-Dichloroethane	19.68	1.0	20	0	98.4	71 - 122			
1,1-Dichloroethene	20.04	1.0	20	0	100	70 - 130			
1,2-Dichlorobenzene	19.67	1.0	20	0	98.4	77 - 113			
1,2-Dichloroethane	18.11	1.0	20	0	90.5	70 - 124			
1,2-Dichloropropane	19.48	1.0	20	0	97.4	72 - 119			
1,3-Dichlorobenzene	20.01	1.0	20	0	100	78 - 118			
1,4-Dichlorobenzene	20.89	1.0	20	0	104	79 - 113			
2-Butanone	34.07	2.0	40	0	85.2	70 - 130			
2-Hexanone	35.99	2.0	40	0	90.0	70 - 130			
4-Methyl-2-pentanone	36.55	2.0	40	0	91.4	70 - 130			
Acetone	34.71	2.0	40	0	86.8	70 - 130			
Benzene	19.51	1.0	20	0	97.6	74 - 120			
Bromochloromethane	19.84	1.0	20	0	99.2	76 - 124			
Bromodichloromethane	19.6	1.0	20	0	98.0	74 - 122			
Bromoform	18.63	1.0	20	0	93.2	73 - 128			
Bromomethane	21.52	1.0	20	0	108	70 - 130			
Carbon disulfide	40.93	2.0	40	0	102	70 - 130			
Carbon tetrachloride	19.09	1.0	20	0	95.4	71 - 125			
Chlorobenzene	19.28	1.0	20	0	96.4	76 - 113			
Chloroethane	22.14	1.0	20	0	111	70 - 130			
Chloroform	19.57	1.0	20	0	97.8	71 - 121			
Chloromethane	21.34	1.0	20	0	107	70 - 129			
cis-1,2-Dichloroethene	18.73	1.0	20	0	93.6	75 - 122			
cis-1,3-Dichloropropene	20.25	1.0	20	0	101	73 - 127			
Dibromochloromethane	19.33	1.0	20	0	96.6	77 - 122			
Ethylbenzene	19.85	1.0	20	0	99.3	77 - 117			
m,p-Xylene	41.01	2.0	40	0	103	77 - 122			
Methylene chloride	20.21	2.0	20	0	101	70 - 127			
o-Xylene	21.16	1.0	20	0	106	75 - 119			
Styrene	21.08	1.0	20	0	105	72 - 126			
Tetrachloroethene	19.18	1.0	20	0	95.9	76 - 119			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: R383669 ( 0 )		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>LCS</b>		Sample ID: VLCSW-210514		Units: ug/L		Analysis Date: 14-May-2021 11:20			
Client ID:		Run ID: VOA4_383669		SeqNo: 6092644		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Toluene	19.44	1.0	20	0	97.2	77 - 118			
trans-1,2-Dichloroethene	18.59	1.0	20	0	93.0	72 - 127			
trans-1,3-Dichloropropene	18.2	1.0	20	0	91.0	77 - 119			
Trichloroethene	18.95	1.0	20	0	94.8	77 - 121			
Vinyl acetate	33.52	1.0	40	0	83.8	70 - 130			
Vinyl chloride	19.64	1.0	20	0	98.2	70 - 130			
Xylenes, Total	62.17	1.0	60	0	104	75 - 122			
1,2-Dichloroethene, Total	37.32	1.0	40	0	93.3	72 - 127			
Surr: 1,2-Dichloroethane-d4	48.84	1.0	50	0	97.7	70 - 123			
Surr: 4-Bromofluorobenzene	50.41	1.0	50	0	101	82 - 115			
Surr: Dibromofluoromethane	50.73	1.0	50	0	101	73 - 126			
Surr: Toluene-d8	51.48	1.0	50	0	103	81 - 120			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: R383669 ( 0 )		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>MS</b>		Sample ID: HS21050330-01MS		Units: ug/L		Analysis Date: 14-May-2021 13:32			
Client ID:		Run ID: VOA4_383669		SeqNo: 6092649		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
1,1,1-Trichloroethane	19.61	1.0	20	0	98.1	70 - 130			
1,1,2,2-Tetrachloroethane	17.18	1.0	20	0	85.9	70 - 123			
1,1,2-Trichloroethane	16.48	1.0	20	0	82.4	70 - 117			
1,1-Dichloroethane	19.14	1.0	20	0	95.7	70 - 127			
1,1-Dichloroethene	20.08	1.0	20	0	100	70 - 130			
1,2-Dichlorobenzene	18.51	1.0	20	0	92.5	70 - 115			
1,2-Dichloroethane	15.79	1.0	20	0	79.0	70 - 127			
1,2-Dichloropropane	18.44	1.0	20	0	92.2	70 - 122			
1,3-Dichlorobenzene	18.84	1.0	20	0	94.2	70 - 119			
1,4-Dichlorobenzene	19.79	1.0	20	0	99.0	70 - 114			
2-Butanone	30.56	2.0	40	0	76.4	70 - 130			
2-Hexanone	31.73	2.0	40	0	79.3	70 - 130			
4-Methyl-2-pentanone	32.35	2.0	40	0	80.9	70 - 130			
Acetone	33.77	2.0	40	0	84.4	70 - 130			
Benzene	18.8	1.0	20	0	94.0	70 - 127			
Bromochloromethane	19.09	1.0	20	0	95.5	70 - 127			
Bromodichloromethane	18.52	1.0	20	0	92.6	70 - 124			
Bromoform	16.57	1.0	20	0	82.9	70 - 129			
Bromomethane	21.76	1.0	20	0	109	70 - 130			
Carbon disulfide	40.65	2.0	40	0	102	70 - 130			
Carbon tetrachloride	19.01	1.0	20	0	95.0	70 - 130			
Chlorobenzene	18.18	1.0	20	0	90.9	70 - 114			
Chloroethane	22.59	1.0	20	0	113	70 - 130			
Chloroform	18.57	1.0	20	0	92.8	70 - 125			
Chloromethane	21.92	1.0	20	0	110	70 - 130			
cis-1,2-Dichloroethene	19.26	1.0	20	0	96.3	70 - 128			
cis-1,3-Dichloropropene	18.6	1.0	20	0	93.0	70 - 125			
Dibromochloromethane	17.85	1.0	20	0	89.3	70 - 124			
Ethylbenzene	19.21	1.0	20	0	96.0	70 - 124			
m,p-Xylene	38.69	2.0	40	0	96.7	70 - 130			
Methylene chloride	19.06	2.0	20	0	95.3	70 - 128			
o-Xylene	18.98	1.0	20	0	94.9	70 - 124			
Styrene	19.74	1.0	20	0	98.7	70 - 130			
Tetrachloroethene	18.81	1.0	20	0	94.0	70 - 130			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: R383669 ( 0 )		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>MS</b>		Sample ID: HS21050330-01MS		Units: ug/L		Analysis Date: 14-May-2021 13:32			
Client ID:		Run ID: VOA4_383669		SeqNo: 6092649		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Toluene	19	1.0	20	0	95.0	70 - 123			
trans-1,2-Dichloroethene	18.38	1.0	20	0	91.9	70 - 130			
trans-1,3-Dichloropropene	16.66	1.0	20	0	83.3	70 - 121			
Trichloroethene	17.66	1.0	20	0	88.3	70 - 129			
Vinyl acetate	31.75	1.0	40	0	79.4	70 - 130			
Vinyl chloride	19.41	1.0	20	0	97.0	70 - 130			
Xylenes, Total	57.68	1.0	60	0	96.1	70 - 130			
1,2-Dichloroethene, Total	37.64	1.0	40	0	94.1	70 - 130			
Surr: 1,2-Dichloroethane-d4	49.72	1.0	50	0	99.4	70 - 126			
Surr: 4-Bromofluorobenzene	49.27	1.0	50	0	98.5	81 - 113			
Surr: Dibromofluoromethane	50.68	1.0	50	0	101	77 - 123			
Surr: Toluene-d8	49.65	1.0	50	0	99.3	82 - 127			

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: R383669 ( 0 )		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>MSD</b>		Sample ID: HS21050330-01MSD		Units: ug/L		Analysis Date: 14-May-2021 13:54			
Client ID:		Run ID: VOA4_383669		SeqNo: 6092650		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
1,1,1-Trichloroethane	20.03	1.0	20	0	100	70 - 130	19.61	2.08	20
1,1,2,2-Tetrachloroethane	16.86	1.0	20	0	84.3	70 - 123	17.18	1.87	20
1,1,2-Trichloroethane	17.27	1.0	20	0	86.4	70 - 117	16.48	4.69	20
1,1-Dichloroethane	18.89	1.0	20	0	94.5	70 - 127	19.14	1.29	20
1,1-Dichloroethene	19.37	1.0	20	0	96.8	70 - 130	20.08	3.59	20
1,2-Dichlorobenzene	18.24	1.0	20	0	91.2	70 - 115	18.51	1.47	20
1,2-Dichloroethane	16.83	1.0	20	0	84.2	70 - 127	15.79	6.36	20
1,2-Dichloropropane	18.72	1.0	20	0	93.6	70 - 122	18.44	1.51	20
1,3-Dichlorobenzene	19.1	1.0	20	0	95.5	70 - 119	18.84	1.37	20
1,4-Dichlorobenzene	19.56	1.0	20	0	97.8	70 - 114	19.79	1.2	20
2-Butanone	30.62	2.0	40	0	76.6	70 - 130	30.56	0.188	20
2-Hexanone	31.36	2.0	40	0	78.4	70 - 130	31.73	1.19	20
4-Methyl-2-pentanone	32.71	2.0	40	0	81.8	70 - 130	32.35	1.12	20
Acetone	34.43	2.0	40	0	86.1	70 - 130	33.77	1.95	20
Benzene	18.81	1.0	20	0	94.0	70 - 127	18.8	0.0571	20
Bromochloromethane	18.5	1.0	20	0	92.5	70 - 127	19.09	3.12	20
Bromodichloromethane	18.95	1.0	20	0	94.8	70 - 124	18.52	2.31	20
Bromoform	16.7	1.0	20	0	83.5	70 - 129	16.57	0.754	20
Bromomethane	20.11	1.0	20	0	101	70 - 130	21.76	7.88	20
Carbon disulfide	39.71	2.0	40	0	99.3	70 - 130	40.65	2.33	20
Carbon tetrachloride	19.21	1.0	20	0	96.0	70 - 130	19.01	1.04	20
Chlorobenzene	17.79	1.0	20	0	89.0	70 - 114	18.18	2.17	20
Chloroethane	19.4	1.0	20	0	97.0	70 - 130	22.59	15.2	20
Chloroform	18.72	1.0	20	0	93.6	70 - 125	18.57	0.817	20
Chloromethane	21.89	1.0	20	0	109	70 - 130	21.92	0.159	20
cis-1,2-Dichloroethene	18.2	1.0	20	0	91.0	70 - 128	19.26	5.66	20
cis-1,3-Dichloropropene	18.6	1.0	20	0	93.0	70 - 125	18.6	0.00685	20
Dibromochloromethane	17.25	1.0	20	0	86.3	70 - 124	17.85	3.4	20
Ethylbenzene	19.09	1.0	20	0	95.5	70 - 124	19.21	0.585	20
m,p-Xylene	38.68	2.0	40	0	96.7	70 - 130	38.69	0.0242	20
Methylene chloride	18.54	2.0	20	0	92.7	70 - 128	19.06	2.75	20
o-Xylene	19.75	1.0	20	0	98.7	70 - 124	18.98	3.95	20
Styrene	19.48	1.0	20	0	97.4	70 - 130	19.74	1.35	20
Tetrachloroethene	18.08	1.0	20	0	90.4	70 - 130	18.81	3.93	20



**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: R383669 ( 0 )		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
<b>MSD</b>		Sample ID: HS21050330-01MSD		Units: ug/L		Analysis Date: 14-May-2021 13:54			
Client ID:		Run ID: VOA4_383669		SeqNo: 6092650		PrepDate:		DF: 1	
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Toluene	18.39	1.0	20	0	91.9	70 - 123	19	3.25	20
trans-1,2-Dichloroethene	18.59	1.0	20	0	93.0	70 - 130	18.38	1.15	20
trans-1,3-Dichloropropene	16.53	1.0	20	0	82.6	70 - 121	16.66	0.807	20
Trichloroethene	18.47	1.0	20	0	92.4	70 - 129	17.66	4.48	20
Vinyl acetate	31.86	1.0	40	0	79.6	70 - 130	31.75	0.352	20
Vinyl chloride	19.56	1.0	20	0	97.8	70 - 130	19.41	0.772	20
Xylenes, Total	58.43	1.0	60	0	97.4	70 - 130	57.68	1.3	20
1,2-Dichloroethene, Total	36.79	1.0	40	0	92.0	70 - 130	37.64	2.28	20
Surr: 1,2-Dichloroethane-d4	47.06	1.0	50	0	94.1	70 - 126	49.72	5.5	20
Surr: 4-Bromofluorobenzene	48.72	1.0	50	0	97.4	81 - 113	49.27	1.12	20
Surr: Dibromofluoromethane	50.65	1.0	50	0	101	77 - 123	50.68	0.0529	20
Surr: Toluene-d8	49.19	1.0	50	0	98.4	82 - 127	49.65	0.942	20

The following samples were analyzed in this batch: HS21050675-01

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

<b>Batch ID:</b> R383647 ( 0 )		<b>Instrument:</b> WetChem_HS		<b>Method:</b> FLASH POINT BY PENSKY-MARTENS SW1010A					
<b>LCS</b>	Sample ID: LCS-R383647	Units: °F		Analysis Date: 14-May-2021 08:00					
Client ID:	Run ID: WetChem_HS_383647		SeqNo: 6092235		PrepDate:		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Ignitability	80.13	70.0	81	0	98.9	95 - 105			
<b>DUP</b>	Sample ID: HS21050386-01DUP	Units: °F		Analysis Date: 14-May-2021 08:00					
Client ID:	Run ID: WetChem_HS_383647		SeqNo: 6092236		PrepDate:		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Ignitability	> 212	70.0					0	0	20
The following samples were analyzed in this batch: HS21050675-01									

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QC BATCH REPORT**

Batch ID: R383753 ( 0 )		Instrument: WetChem_HS		Method: PH BY SM4500H+ B					
<b>DUP</b>	Sample ID: HS21050379-01DUP	Units: pH Units		Analysis Date: 17-May-2021 14:18					
Client ID:	Run ID: WetChem_HS_383753		SeqNo: 6094976		PrepDate:		DF: 1		
Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
pH	6.79	0.100					6.71	1.19	10
Temp Deg C @pH	23.3	0					23.2	0.43	10

The following samples were analyzed in this batch: HS21050675-01

**Client:** Golder Associates Inc.  
**Project:** Houston TX-Wood Preserving Works IDWW  
**WorkOrder:** HS21050675

**QUALIFIERS,  
ACRONYMS, UNITS**

<b>Qualifier</b>	<b>Description</b>
*	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

<b>Acronym</b>	<b>Description</b>
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

<b>Unit Reported</b>	<b>Description</b>
mg/L	Milligrams per Liter

---

**CERTIFICATIONS,ACCREDITATIONS & LICENSES**

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<b>Agency</b>	<b>Number</b>	<b>Expire Date</b>
Arkansas	21-022-0	26-Mar-2022
Dept of Defense	PJLA L20-507-R2	22-Dec-2021
Florida	E87611-30-07/01/2020	30-Jun-2021
Kansas	E-10352 2020-2021	31-Jul-2021
Kentucky	123043, 2021-2022	30-Apr-2022
Louisiana	03087, 2020-2021	30-Jun-2021
North Carolina	624-2021	31-Dec-2021
Oklahoma	2020-165	31-Aug-2021
Texas	T104704231-21-27	30-Apr-2022

## Sample Receipt Checklist

Work Order ID: HS21050675

Date/Time Received: 13-May-2021 14:00

Client Name: PBW

Received by: Jared R. Makan

Completed By: /S/ Pablo Martinez

13-May-2021 19:43

Reviewed by: /S/ Dane J. Wacasey

14-May-2021 16:36

eSignature

Date/Time

eSignature

Date/Time

Matrices: OIL

Carrier name: Client

Shipping container/cooler in good condition?

Yes ☒No ☐Not Present ☐

Custody seals intact on shipping container/cooler?

Yes ☒No ☐Not Present ☐

Custody seals intact on sample bottles?

Yes ☐No ☐Not Present ☒

VOA/TX1005/TX1006 Solids in hermetically sealed vials?

Yes ☐No ☒Not Present ☐

Chain of custody present?

Yes ☒No ☐

1 Page(s)

Chain of custody signed when relinquished and received?

Yes ☒No ☐

COC IDs:237972

Samplers name present on COC?

Yes ☒No ☐

Chain of custody agrees with sample labels?

Yes ☒No ☐

Samples in proper container/bottle?

Yes ☒No ☐

Sample containers intact?

Yes ☒No ☐

Sufficient sample volume for indicated test?

Yes ☒No ☐

All samples received within holding time?

Yes ☒No ☐

Container/Temp Blank temperature in compliance?

Yes ☒No ☐

Temperature(s)/Thermometer(s):

0.8°C UC/C

IR 31

Cooler(s)/Kit(s):

43398

Date/Time sample(s) sent to storage:

5/13/21 19:50

Water - VOA vials have zero headspace?

Yes ☐No ☐No VOA vials submitted ☒

Water - pH acceptable upon receipt?

Yes ☐No ☐N/A ☒

pH adjusted?

Yes ☐No ☐N/A ☒

pH adjusted by:

Login Notes:

Client Contacted:

Date Contacted: 14-May-2021

Person Contacted: Golder

Contacted By:

Regarding:

Comments:

PEDD required transfer of information to most recent template for ALS.

Corrective Action:



Cincinnati, OH  
+1 513 733 5336

Everett, WA  
+1 425 356 2600

Fort Collins, CO  
+1 970 490 1511

Holland, MI  
+1 616 399 6070

# Chain of Custody Form

Page \_\_\_\_ of \_\_\_\_

COC ID: 237972

HS21050675

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 IDWS
Work Order		Project Number	1620-15-Rev2 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 Suite 4004	Address	1400 Douglas Street 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	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-IDWV-202105			Solid	8	3	X	X	X	X	X	X	X				
2	SO-1620-IDWV-202105			Solid	8	3	X	X	X	X	X	X	X				
3	WW-1620-IDW01-20210512	5-12-21	1500	W	8	3	X	X	X	X	X	X	X				
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <i>Tim McSpodden</i>		Shipment Method <i>Hand delivered</i>		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> 7 <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>[Signature]</i>	Date: <i>5-13-21</i>	Time: <i>1:40</i>	Received by:	Notes: UPRR HWPW 1620-15 <i>WR# 004578</i>			
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID <i>43398</i>	Cooler Temp. <i>0.8°C</i>	QC Package: (Check One Box Below)	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):			<input checked="" type="checkbox"/> Level II Std QC <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> Level IV SWB/B/CLP <input type="checkbox"/> Other	
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other <i>8-4°C</i> 9-5035							

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.

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**ALS**

10450 Stancliff Rd., Suite 210  
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Tel. +1 281 530 5656  
Fax. +1 281 530 5887

**CUSTODY SEAL**

Date: 5-14-2001 Time: 1630  
Name: Jim M. S. P. L. A.  
Company: Golda

Seal Broken By: A

Date: 7/13/21