

ATTACHMENT B

Table 1
Analytical Results for HTDF Storm Water Discharge
Eagle Mine LLC - Humboldt Mill

Sample Location		Rule 57	HMWQ-009	EM-HMP-009	HMSW-006 ¹	HMSW-006 ¹
Lab Sample ID		Water	1104403-01	T13H002-01	E3PY0	T11K055-10
Sampled By		Quality	KEMC	AECOM	OTIE	AECOM
Analyzed By		Values ²	TriMatrix	Trace	USEPA	Trace
Sample Date			4/22/2011	7/31/2013	11/2/2011	11/2/2011
Inorganics	Units					
Aluminum	ug/L	NA	<50	<50	200 U	<50
Antimony	ug/L	130	5.9	5.6	60 U	4.5
Arsenic	ug/L	10	<1.0	<1.0	10 U	<5.0
Barium ³	ug/L	165	<10	9.5	200 U	<100
Beryllium ³	ug/L	0.236	<1.0	<1.0	5 U	<1.0
Boron	ug/L	7200	77	90	—	—
Cadmium ³	ug/L	1.14	<0.40	<0.20	5 U	<1.0
Calcium	mg/L	NA	53	—	52.8	49
Chromium, Total ³	ug/L	35	<1.0	<10	10 U	<10
Cobalt	ug/L	100	<10	2.0	50 U	<20
Copper ³	ug/L	4.09	2.4	1.5	25 UJ	<4.0
Iron	ug/L	NA	240	<100	163	<200
Lead ³	ug/L	3.75	<1.0	<1.0	10 UJ	<3.0
Lithium	ug/L	440	<10	—	—	—
Magnesium	mg/L	NA	26	24	23.9	23
Manganese ³	ug/L	863	67	23	69.1	65
Mercury (Inorganic)	ng/L	1.3	<0.500	<0.50	200 U	<200
Molybdenum	ug/L	3200	10	10	—	—
Nickel ³	ug/L	24	16	11	9.2 J	<20
Potassium	mg/L	NA	8.5	—	7.48	7.4
Selenium	ug/L	5	<4.0	<1.0	35 UJ	<5.0
Silver	ug/L	0.2	<0.40	<0.50	10 U	<0.2
Sodium	mg/L	NA	13	—	12.2	12
Thallium	ug/L	3.7	<1.0	<1.0	25 UJ	<2
Tin	mg/L	NA	—	<0.050	—	—
Titanium	ug/L	NA	—	<6.0	—	—
Vanadium	ug/L	27	<1.0	—	50 U	<4
Zinc ³	ug/L	54.4	<10	<10	60 U	<150
Miscellaneous	Units					
Alkalinity, Bicarbonate	mg/L	NA	110	—	—	—
Alkalinity, Carbonate	mg/L	NA	<2.0	—	—	—
Biochemical Oxygen Demand 5-day	mg/L	NA	—	<2.0	—	—
Bromide	mg/L	NA	—	<0.36	—	—
Carbon, Total Organic	mg/L	NA	3.5	2.8	—	—
Chemical Oxygen Demand	mg/L	NA	—	<5.0	—	—
Chloride	mg/L	NA	22	—	—	—
Chlorine, Total Residual	mg/L	NA	—	0.12 J (0.11⁴)	—	—
Color	color units	NA	—	<1.0	—	—
Cyanide, total	mg/L	5.2	<0.020	0.006	0.0067 J-	<0.0050
Fecal Coliforms	CFU/100 ml	NA	—	21 J	—	—
Fluoride ³	mg/L	1.9	0.19	<0.10	—	—
Hardness	mg/L	NA	240	—	—	—
Nitrogen, Ammonia	mg/L	29	<0.050	<0.010	—	—
Nitrogen, Nitrite	mg/L	NA	<0.050	<0.10	—	—
Nitrogen, Nitrate	mg/L	NA	2.2	0.86	—	—
Nitrogen, Total	mg/L	NA	—	0.86	—	—
Nitrogen, Total Kjeldahl	mg/L	NA	—	<0.50	—	—
Oil & Grease	mg/L	NA	—	<5.0	—	—
Phenolics	mg/L	NA	—	<0.010	—	—
Phosphorus, Total	mg/L	NA	—	0.017	—	—
Radioactivity	NA	NA	—	—	—	—
Residue, Dissolved @180°C	mg/L	NA	364	—	—	—

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Sampled By		Quality	KEMC	AECOM	OTIE	AECOM
Analyzed By		Values ²	TriMatrix	Trace	USEPA	Trace
Sample Date			4/22/2011	7/31/2013	11/2/2011	11/2/2011
Residue, Suspended	mg/L	NA	<3.3	---	---	---
Sulfate	mg/L	NA	130	21	---	---
Sulfide, Total	mg/L	NA	<0.020	<0.10	---	---
Sulfite	mg/L	NA	---	<2.0	---	---
Surfactants (MBAS)	---	NA	---	Negative	---	---
Total Organic Nitrogen	mg/L	NA	---	<0.51	---	---
Total Suspended Solids	mg/L	NA	---	<10	---	---
Field Parameters		Units				
Temperature	°C	NA	6.1	---	---	---
	umhos/cm					
Specific conductivity	@ 25°C	NA	504	---	---	---
pH	SU	>6.5, <9.0	6.7	---	---	---
Dissolved oxygen	ppm	>7	10	---	---	---
Turbidity	NTU	NA	4.0	---	---	---
Flow	cfs	NA	<0.1	---	---	---
Volatiles		Units				
Acetone	ug/L	1700	<20	---	10 U	<50
Acrylonitrile	ug/L	1.2	<2.0	---	---	---
Benzene	ug/L	200	<1.0	---	5 U	<1.0
Bromobenzene	ug/L	NA	<1.0	---	---	---
Bromochloromethane	ug/L	59000	<1.0	---	5 U	<1.0
Bromodichloromethane	ug/L	180	<1.0	---	5 U	<1.0
Bromoform	ug/L	890	<1.0	---	5 U	<1.0
Bromomethane	ug/L	35	<5.0	---	5 U	<5.0
n-Butylbenzene	ug/L	NA	<1.0	---	---	---
sec-Butylbenzene	ug/L	NA	<1.0	---	---	---
tert-Butylbenzene	ug/L	NA	<1.0	---	---	---
Carbon disulfide	ug/L	34000	<1.0	---	5 U	<5.0
Carbon tetrachloride	ug/L	45	<1.0	---	5 U	<1.0
Chlorobenzene	ug/L	25	<1.0	---	5 U	<1.0
Chloroethane	ug/L	9400	<5.0	---	5 U	<5.0
Chloroform	ug/L	630	<1.0	---	5 U	<1.0
Chloromethane	ug/L	7300	<5.0	---	5 U	<5.0
Cyclohexane	ug/L	NA	---	---	5 U	<1.0
1,2-Dibromo-3-chloropropane	ug/L	4.9	<5.0	---	5 U	<1.0
Dibromochloromethane	ug/L	150	<1.0	---	5 U	<5.0
1,2-Dibromoethane	ug/L	5.7	<1.0	---	5 U	<1.0
Dibromomethane	ug/L	NA	<1.0	---	---	---
trans-1,4-Dichloro-2-butene	ug/L	NA	<1.0	---	---	---
1,2-Dichlorobenzene	ug/L	13	<1.0	---	5 U	<1.0
1,3-Dichlorobenzene	ug/L	28	<1.0	---	5 U	<1.0
1,4-Dichlorobenzene	ug/L	17	<1.0	---	5 U	<1.0
Dichlorodifluoromethane	ug/L	90000	<5.0	---	5 U	<5.0
1,1-Dichloroethane	ug/L	740	<1.0	---	5 U	<1.0
1,2-Dichloroethane	ug/L	360	<1.0	---	5 U	<1.0
1,1-Dichloroethene	ug/L	130	<1.0	---	5 U	<1.0
cis-1,2-Dichloroethene	ug/L	620	<1.0	---	5 U	<1.0
trans-1,2-Dichloroethene	ug/L	1500	<1.0	---	5 U	<1.0
1,2-Dichloroethene, total	ug/L	1100	---	---	---	<2.0
1,2-Dichloropropane	ug/L	230	<1.0	---	5 U	<1.0
cis-1,3-Dichloropropene	ug/L	9	<1.0	---	5 U	<1.0
trans-1,3-Dichloropropene	ug/L	9	<1.0	---	5 U	<1.0
1,4-Dioxane	ug/L	2800	---	---	R	---
Ethylbenzene	ug/L	18	<1.0	---	5 U	<1.0

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Sampled By		Quality	KEMC	AECOM	OTIE	AECOM
Analyzed By		Values ²	TriMatrix	Trace	USEPA	Trace
Sample Date			4/22/2011	7/31/2013	11/2/2011	11/2/2011
Ethyl ether	ug/L	1000000	<5.0	---	---	---
2-Hexanone	ug/L	630000	<5.0	---	10 U	<50
Iodomethane	ug/L	NA	<1.0	---	---	---
Isopropylbenzene (cumene)	ug/L	28	<1.0	---	5 U	<5.0
4-Isopropyltoluene	ug/L	NA	<5.0	---	---	---
Methyl-tert-butyl ether (MTBE)	ug/L	7100	<5.0	---	5 U	<5.0
Methylene chloride	ug/L	1500	<5.0	---	10 U	<5.0
2-Butanone (MEK)	ug/L	2200	<5.0	---	10 U	<25
Methyl acetate	ug/L	NA	---	---	5 U	---
Methylcyclohexane	ug/L	NA	---	---	5 U	---
2-Methylnaphthalene	ug/L	19	<5.0	---	---	---
4-Methyl-2-pentanone (MIBK)	ug/L	NA	<5.0	---	10 U	<50
Naphthalene	ug/L	11	<5.0	---	---	---
n-Propylbenzene	ug/L	NA	<1.0	---	---	---
Styrene	ug/L	80	<1.0	---	5 U	<1.0
1,1,1,2-Tetrachloroethane	ug/L	100	<1.0	---	---	---
1,1,2,2-Tetrachloroethane	ug/L	78	<1.0	---	5 U	<1.0
Tetrachloroethene	ug/L	60	<1.0	---	5 U	<1.0
Tetrahydrofuran	ug/L	11000	<5.0	---	---	---
Toluene	ug/L	270	<1.0	---	5 U	<1.0
1,2,3-Trichlorobenzene	ug/L	73	<5.0	---	5 U	<5.0
1,2,4-Trichlorobenzene	ug/L	99	<5.0	---	5 U	<5.0
1,1,1-Trichloroethane	ug/L	89	<1.0	---	5 U	<1.0
1,1,2-Trichloroethane	ug/L	330	<1.0	---	5 U	<1.0
Trichloroethene	ug/L	200	<1.0	---	5 U	<1.0
Trichlorofluoromethane	ug/L	NA	<1.0	---	5 U	<1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	32	---	---	5 U	<1.0
1,2,3-Trichloropropane	ug/L	NA	<1.0	---	---	---
1,2,4-Trimethylbenzene	ug/L	17	<1.0	---	---	---
1,3,5-Trimethylbenzene	ug/L	45	<1.0	---	---	---
Vinyl chloride	ug/L	13	<1.0	---	5 U	<1.0
Xylene, m- and p-	ug/L	41	<2.0	---	5 U	<2.0
Xylene, o-	ug/L	41	<1.0	---	5 U	<1.0
Xylene, total	ug/L	41	---	---	---	<3.0
Semi-Volatiles	Units					
Acenaphthene	ug/L	38	<5.0	---	5 U	<5.0
Acenaphthylene	ug/L	NA	<5.0	---	5 U	<5.0
Acetophenone	ug/L	NA	---	---	5 U	---
Anthracene	ug/L	2400	<5.0	---	5 U	<5.0
Atrazine	ug/L	7.3	---	---	5 U	---
Benzaldehyde	ug/L	NA	---	---	5 U	---
Benzo(a)anthracene	ug/L	NA	<1.0	---	5 U	<1.0
Benzo(b)fluoranthene	ug/L	NA	<1.0	---	5 U	<1.0
Benzo(k)fluoranthene	ug/L	NA	<1.0	---	5 U	<1.0
Benzo(g,h,i)perylene	ug/L	NA	<1.0	---	5 U	<1.0
Benzo(a)pyrene	ug/L	NA	<1.0	---	5 U	<1.0
1,1'-Biphenyl	ug/L	13	---	---	5 U	---
Benzoic acid	ug/L	NA	---	---	---	<50
Benzyl alcohol	ug/L	NA	---	---	---	<50
bis(2-Chloroethoxy)methane	ug/L	NA	---	---	5 U	<5.0
bis(2-Chloroethyl)ether	ug/L	15	---	---	5 U	<1.0
bis(2-Chloroisopropyl)ether	ug/L	290	---	---	---	<5.0
bis(2-Ethylhexyl)phthalate	ug/L	32	---	---	25 U	<5.0
4-Bromophenyl-phenylether	ug/L	NA	---	---	5 U	<5.0

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Lab Sample ID		Water	1104403-01	T13H002-01	E3PYO	T11K055-10
Sampled By		Quality	KEMC	AECOM	OTIE	AECOM
Analyzed By		Values ²	TriMatrix	Trace	USEPA	Trace
Sample Date			4/22/2011	7/31/2013	11/2/2011	11/2/2011
Butyl benzyl phthalate	ug/L	67	---	---	5 U	<5.0
Caprolactam	ug/L	NA	---	---	5 U	---
Carbazole	ug/L	4	---	---	5 U	<10
4-Chloroaniline	ug/L	72	---	---	5 U	<10
4-Chloro-3-methylphenol	ug/L	7.4	---	<5.0	5 U	<5.0
2-Chloronaphthalene	ug/L	NA	---	---	5 U	<5.0
2-Chlorophenol	ug/L	18	---	<5.0	5 U	<10
4-Chlorophenyl-phenyl ether	ug/L	NA	---	---	5 U	<5.0
Chrysene	ug/L	NA	<1.0	---	5 U	<1.0
Di-n-butyl phthalate	ug/L	9.7	---	---	5 U	<5.0
Di-n-octyl phthalate	ug/L	300	---	---	5 U	<5.0
Dibenzo(a,h)anthracene	ug/L	NA	<2.0	---	5 U	<2.0
Dibenzofuran	ug/L	4	---	---	5 U	<4.0
1,2-Dichlorobenzene	ug/L	13	---	---	---	<5.0
1,3-Dichlorobenzene	ug/L	28	---	---	---	<5.0
1,4-Dichlorobenzene	ug/L	17	---	---	---	<5.0
3,3'-Dichlorobenzidine	ug/L	0.2	---	---	5 U	<20
2,4-Dichlorophenol	ug/L	11	---	<5.0	5 U	<10
Diethyl phthalate	ug/L	110	---	---	5 U	<5.0
Dimethyl phthalate	ug/L	NA	---	---	5 U	<5.0
2,4-Dimethylphenol	ug/L	380	---	<5.0	5 U	<5.0
4,6-Dinitro-2-methylphenol	ug/L	NA	---	<20	10 U	<20
2,4-Dinitrophenol	ug/L	19	---	<22	10 U	<25
2,4-Dinitrotoluene	ug/L	NA	---	---	5 U	<5.0
2,6-Dinitrotoluene	ug/L	NA	---	---	5 U	<5.0
Fluoranthene	ug/L	1.6	<1.0	---	5 U	<1.0
Fluorene	ug/L	12	<5.0	---	5 U	<5.0
Hexachlorobenzene (C-66)	ug/L	0.0003	---	---	5 UJ	<5.0
Hexachlorobutadiene (C-46)	ug/L	0.098	---	---	5 U	<5.0
Hexachlorocyclopentadiene (C-56)	ug/L	450	---	---	5 U	<5.0
Hexachloroethane	ug/L	6.7	---	---	5 U	<5.0
Indeno(1,2,3-cd)pyrene	ug/L	NA	<2.0	---	5 U	<2.0
Isophorone	ug/L	1300	---	---	5 U	<5.0
2-Methylnaphthalene	ug/L	19	<5.0	---	5 U	<5.0
2-Methylphenol	ug/L	76	---	---	5 U	<10
3&4-Methylphenol	ug/L	25	---	---	---	<10
4-Methylphenol	ug/L	25	---	---	5 U	---
Naphthalene	ug/L	11	<5.0	---	5 U	<5.0
2-Nitroaniline	ug/L	NA	---	---	10 U	<25
3-Nitroaniline	ug/L	NA	---	---	10 U	<25
4-Nitroaniline	ug/L	NA	---	---	10 U	<25
Nitrobenzene	ug/L	180	---	---	5 U	<3.0
2-Nitrophenol	ug/L	56	---	<5.0	5 U	<5.0
4-Nitrophenol	ug/L	200	---	<22	10 U	<25
n-Nitroso-di-n-propylamine	ug/L	NA	---	---	5 U	<5.0
N-Nitrosodiphenylamine	ug/L	NA	---	---	5 U	<5.0
2,2'-Oxybis(1-chloropropane)	ug/L	NA	---	---	5 U	---
Pentachlorophenol	ug/L	---	---	<5.4	R	<20
Phenanthrene	ug/L	1.7	<2.0	---	5 U	<2.0
Phenol	ug/L	450	---	<5.0	5 U	<5.0
Pyrene	ug/L	15	<5.0	---	5 U	<5.0
1,2,4,5-Tetrachlorobenzene	ug/L	2.9	---	---	5 U	---
2,3,4,6-Tetrachlorophenol	ug/L	1.2	---	---	5 U	---
1,2,4-Trichlorobenzene	ug/L	99	---	---	---	<5.0

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Analyzed By		Values ²	TriMatrix	Trace	USEPA	Trace
Sample Date			4/22/2011	7/31/2013	11/2/2011	11/2/2011
2,4,5-Trichlorophenol	ug/L	NA	---	---	5 U	<5.0
2,4,6-Trichlorophenol	ug/L	5	---	<5.0	5 U	<4.0
PCBs		Units				
Aroclor-1016	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1221	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1232	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1242	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1248	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1254	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1260	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1262	ug/L	0.000026	---	---	1 U	<0.20
Aroclor-1268	ug/L	0.000026	---	---	1 U	<0.20

¹ Sample collected from surface of HTDF at north discharge location.

² Rule 323.1057 Part 4 of Part 31 of Michigan Public Act 451 of 1994, as amended. Presented values are protective for surface water that is not used as a drinking water source.

³ Criterion is dependant upon hardness value of the receiving source water. A hardness value of 40 mg/L was used based on the results of regional surface water sampling.

⁴ Field sample result from Eagle Mine staff on August 9, 2013 using HACH Pocket Colorimeter II.

Bolded value denotes parameter detected above detection limit

— Parameter not analyzed

J -The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.

R -The data are unusable. The compound may or may not be present.

U -The analyte was analyzed for, but was not detected above reported sample quantitation limit.

UJ -The analyte was not detected above reported sample quantitation limit which is approximate.

NA - A value is not available for this parameter



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September 23, 2013

Mr. Lance Lindberg
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1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333
Fax: (906) 228-8371

RE: Trace Project T131161
Client Project Humbolt Mill 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008 PADEP Accreditation No. 68-04471

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SAMPLE SUMMARY

Trace Project ID: T131161
Client Project ID: Humbolt Mill 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T131161-01	EM-HMP-009	Water	ajp	09/10/13 14:10	09/11/13 09:34

CERTIFICATE OF ANALYSIS

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

DATA QUALIFIERS

Trace ID: T040019-MSD1

Analysis: EPA 335.4 Rev. 1.0

Cyanide (total)

Note 213 : The MS and MSD recoveries were out of control high. The RPD between the MS and MSD was also out of control. The result for this analyte, in non-spiked version of the sample, must be considered estimated.

Trace ID: T131161-01

Analysis: EPA 335.4 Rev. 1.0

Cyanide (total)

Note 213 : The MS and MSD recoveries were out of control high. The RPD between the MS and MSD was also out of control. The result for this analyte, in non-spiked version of the sample, must be considered estimated.

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 Muskegon, MI 49444-2673
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 www.trace-labs.com

ANALYTICAL RESULTS

Trace Project ID: T131161
 Client Project ID: Humbolt Mill 60305471

Trace ID: T131161-01 Date Collected: 09/10/13 14:10 Matrix: Water
 Sample ID: EM-HMP-009 Date Received: 09/11/13 09:34

PARAMETERS RESULTS UNITS RDL DILUTION PREPARED BY ANALYZED BY NOTES MCL

METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T040001

Mercury 0.55 ng/L 0.50 1 09/12/13 kim 09/16/13 kim

Analysis Method: EPA 200.7 Rev. 4.4

Batch: T040023

Boron 71 ug/L 40 1 09/13/13 mes 09/17/13 mes
 Lithium <0.025 mg/L 0.025 1 09/13/13 mes 09/18/13 mes N
 Strontium 0.24 mg/L 0.050 1 09/13/13 mes 09/17/13 mes

Analysis Method: EPA 200.8 Rev. 5.4

Batch: T040209

Antimony <1.0 ug/L 1.0 1 09/19/13 gmr 09/20/13 gmr
 Arsenic <1.0 ug/L 1.0 1 09/19/13 gmr 09/20/13 gmr
 Barium 9.8 ug/L 5.0 1 09/19/13 gmr 09/20/13 gmr
 Beryllium <1.0 ug/L 1.0 1 09/19/13 gmr 09/20/13 gmr
 Cadmium <0.20 ug/L 0.20 1 09/19/13 gmr 09/20/13 gmr
 Chromium <10 ug/L 10 1 09/19/13 gmr 09/20/13 gmr
 Cobalt <2.0 ug/L 2.0 1 09/19/13 gmr 09/20/13 gmr
 Copper 4.6 ug/L 1.0 1 09/19/13 gmr 09/20/13 gmr
 Lead <1.0 ug/L 1.0 1 09/19/13 gmr 09/20/13 gmr
 Manganese 70 ug/L 1.0 1 09/19/13 gmr 09/20/13 gmr
 Molybdenum 8.0 ug/L 1.0 1 09/19/13 gmr 09/20/13 gmr N
 Nickel 8.6 ug/L 5.0 1 09/19/13 gmr 09/20/13 gmr
 Selenium <1.0 ug/L 1.0 1 09/19/13 gmr 09/20/13 gmr
 Silver <0.50 ug/L 0.50 1 09/19/13 gmr 09/20/13 gmr
 Thallium <1.0 ug/L 1.0 1 09/19/13 gmr 09/20/13 gmr
 Zinc <10 ug/L 10 1 09/19/13 gmr 09/20/13 gmr

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ANALYTICAL RESULTS

Trace Project ID: T131161

Client Project ID: Humbolt Mill 60305471

Trace ID: T131161-01 Date Collected: 09/10/13 14:10 Matrix: Water
 Sample ID: EM-HMP-009 Date Received: 09/11/13 09:34

PARAMETERS RESULTS UNITS RDL DILUTION PREPARED BY ANALYZED BY NOTES MCL

WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T039954

Fluoride <0.10 mg/L 0.10 5 09/11/13 jd 09/11/13 jd
 Sulfate as SO4 120 mg/L 2.6 5 09/11/13 jd 09/11/13 jd

Analysis Method: EPA 335.4 Rev. 1.0

Batch: T040019

Cyanide (total) 0.012 mg/L 0.0660 1 09/13/13 as 09/13/13 as 213

Analysis Method: EPA 350.1 Rev. 2.0

Batch: T040059

Ammonia as N <0.010 mg/L 0.010 1 09/16/13 as 09/16/13 as

Analysis Method: SM 2540 C-97

Batch: T040027

Total Dissolved Solids 410 mg/L 10 1 09/13/13 jd 09/13/13 jd

Analysis Method: SM 2540 D-97

Batch: T040216

Total Suspended Solids <10 mg/L 10 1 09/17/13 gmr 09/17/13 gmr

Analysis Method: SM 4500-P-E

Batch: T040077

Phosphorus-Total (as P) <0.010 mg/L 0.010 1 09/17/13 jd 09/17/13 jd N

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QUALITY CONTROL RESULTS

Trace Project ID: T131161
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040001	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T040001-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.50	0.50	

LABORATORY CONTROL SAMPLE: T040001-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	25.2	101	77-123	

Trace Project ID: T131161
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040023	Analysis Description: Strontium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T040023-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	ug/L	<40	40	
Lithium	mg/L	<0.025	0.025	
Strontium	mg/L	<0.050	0.050	

LABORATORY CONTROL SAMPLE: T040023-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	ug/L	1600	1460	91	85-115	
Lithium	mg/L	1.60	1.53	96	85-115	
Strontium	mg/L	1.60	1.59	100	85-115	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T040023-MSD1 Original: T131161-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	ug/L	70.9	1600	1450	1430	86	85	70-130	1	20	
Lithium	mg/L	0.00643	1.60	1.61	1.59	100	99	70-130	1	20	
Strontium	mg/L	0.239	1.60	1.79	1.67	97	102	70-130	5	20	

Trace Project ID: T131161
 Client Project ID: Humbolt Mill 60305471

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QC Batch: T040208	Analysis Description: Manganese, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.8 Rev. 5.4

METHOD BLANK: T040208-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	ug/L	<0.50	0.50	
Arsenic	ug/L	<1.0	1.0	
Barium	ug/L	<5.0	5.0	
Beryllium	ug/L	<1.0	1.0	
Cadmium	ug/L	<0.20	0.20	
Cobalt	ug/L	<2.0	2.0	
Chromium	ug/L	<10	10	
Copper	ug/L	<1.0	1.0	
Manganese	ug/L	<1.0	1.0	
Molybdenum	ug/L	<1.0	1.0	
Nickel	ug/L	<5.0	5.0	
Lead	ug/L	<1.0	1.0	
Antimony	ug/L	<1.0	1.0	
Selenium	ug/L	<1.0	1.0	
Thallium	ug/L	<1.0	1.0	
Zinc	ug/L	<10	10	

LABORATORY CONTROL SAMPLE: T040208-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	ug/L	100	102	102	85-115	
Arsenic	ug/L	100	97.2	97	85-115	
Barium	ug/L	100	97.9	98	85-115	
Beryllium	ug/L	100	96.4	96	85-115	
Cadmium	ug/L	100	96.1	96	85-115	
Cobalt	ug/L	100	98.4	98	85-115	
Chromium	ug/L	100	93.7	94	85-115	
Copper	ug/L	100	96.8	97	85-115	
Manganese	ug/L	100	98.5	98	85-115	
Molybdenum	ug/L	100	97.4	97	85-115	
Nickel	ug/L	100	96.2	96	85-115	
Lead	ug/L	100	92.7	93	85-115	
Antimony	ug/L	100	100	100	85-115	
Selenium	ug/L	100	99.4	99	85-115	
Thallium	ug/L	100	92.8	93	85-115	
Zinc	ug/L	100	98.0	98	85-115	

Trace Project ID: T131161

Client Project ID: Humbolt Mill 60305471

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QC Batch: T039954	Analysis Description: Sulfate
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev 2.1

METHOD BLANK: T039954-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Fluoride	mg/L	<0.10	0.10	
Sulfate as SO4	mg/L	<1.0	1.0	

LABORATORY CONTROL SAMPLE: T039954-BS1

Parameter	Units	Spike Conc	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	0.500	0.473	95	90-110	
Sulfate as SO4	mg/L	2.50	2.36	94	90-110	

Trace Project ID: T131161
Client Project ID: Humbolt Mill 60305471

QC Batch: T040019	Analysis Description: Cyanide, Total
QC Batch Method: EPA 335.4 Rev. 1.0	Analysis Method: EPA 335.4 Rev. 1.0

METHOD BLANK: T040019-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cyanide (total)	mg/L	<0.0050	0.0050	

LABORATORY CONTROL SAMPLE: T040019-BS1

Parameter	Units	Spike Conc	LCS Result	LCS % Rec	% Rec Limit	Notes
Cyanide (total)	mg/L	0.100	0.0969	97	90-110	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T040019-MSD1 Original: T131161-01

Parameter	Units	Original Result	Spike Conc	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Cyanide (total)	mg/L	0.0121	0.100	0.136	0.301	124	289	81-114	80	20	213

Trace Project ID: T131161
Client Project ID: Humbolt Mill 60305471

QC Batch: T040059	Analysis Description: Nitrogen, Ammonia
QC Batch Method: EPA 350.1 Rev. 2.0	Analysis Method: EPA 350.1 Rev. 2.0

METHOD BLANK: T040059-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Ammonia as N	mg/L	<0.010	0.010	

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LABORATORY CONTROL SAMPLE: T040059-BS1

Parameter	Units	Spike Conc	LCS Result	LCS % Rec	% Rec Limit	Notes
Ammonia as N	mg/L	0.500	0.500	100	90-110	

Trace Project ID: T131161
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040027	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-97	Analysis Method: SM 2540 C-97

METHOD BLANK: T040027-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T040027-BS1

Parameter	Units	Spike Conc	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	471	94	80-120	

Trace Project ID: T131161
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040216	Analysis Description: Total Suspended Solids
QC Batch Method: SM 2540 D-97	Analysis Method: SM 2540 D-97

METHOD BLANK: T040216-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Suspended Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T040216-BS1

Parameter	Units	Spike Conc	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Suspended Solids	mg/L	100	91.0	91	85-115	

Trace Project ID: T131161
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040077	Analysis Description: Total Phosphorus
QC Batch Method: SM 4500-P E	Analysis Method: SM 4500-P E

METHOD BLANK: T040077-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Phosphorus-Total (as P)	mg/L	<0.010	0.010	

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LABORATORY CONTROL SAMPLE: T040077-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Phosphorus-Total (as P)	mg/L	0.100	0.106	106	85-116	

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**CHAIN-OF-CUSTODY RECORD
 AND WORK AUTHORIZATION**

TRACE ID NO.
 7132161
 Page 1 of 1

Please Sign				Sample Identification / Request for Analytical Services						Report Results To:																			
Client Name:	AECOM			Project #:	00305471			Sampled by:	LTD			Trace	Date #:																
Contact Person:	Louise Lindberg			Project Name:	Hatch Mill #11			NO #:				Preparative Checked:	No																
Mailing Address:	1050 Wilson St			Request/Specimens:	Tannery Residues			W = Water				Received on site:	No																
City, State, Zip Code:	Muskegon, MI 49822			REGA TRUCKS:	Standard & No			LW = Liquid Wastes				Created By:	GMM																
Phone:	906.226.4200			RCPA:	5 Day			A = Air				Analyst Requested:	No																
Fax:	906.226.8371			VOCES:	24-Hour PUSH			D = Drinking Water				Solvent Preserved:	MARCH EN CON LOW LEVEL LAB																
Email Address:	louise.lindberg@aecom.com			USAGE:	24-Hour PUSH			S = Sludge				ANALYSIS REQUESTED																	
<table border="1"> <tr> <th>Trace ID</th> <th>Date</th> <th>Time</th> <th>Initials</th> <th>Quantity</th> <th>Sample ID</th> <th>Remarks</th> </tr> <tr> <td>7132161</td> <td>9/11/13</td> <td>1700</td> <td>[Signature]</td> <td>EM-#MP-009</td> <td></td> <td></td> </tr> </table>													Trace ID	Date	Time	Initials	Quantity	Sample ID	Remarks	7132161	9/11/13	1700	[Signature]	EM-#MP-009			For Use by TRACE Personnel Only Signature: [Signature] Date: 9/11/13		
Trace ID	Date	Time	Initials	Quantity	Sample ID	Remarks																							
7132161	9/11/13	1700	[Signature]	EM-#MP-009																									

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SAMPLE LOG IN CHECKLIST

Trace ID #: T132161 Date: 9/11/12 Package Description: COOLER
Client Name: MECOM Time: 9:32 Logged In by: JW

Cooler Receipt

Cooler samples delivered by: Trace cooler
Hand delivered Name of delivery person: _____
Commercial cooler UPS FED EX US Mail
Tracking Number: Not Applicable
Tracking #: 12RA10740197512823
COC Seals present and intact on cooler? No Not Applicable
Yes
Custody seals signed by Client? No Client custody seal # (if applicable): _____
Yes

Coolant and Temperature

Type of Coolant Used

Slurry w/ crushed, cubed, or chip ice?
Multiple bags of ice around samples?
Ice Packs/ Blue Ice:
No Coolant Present:

Cooler Temperature

Correction Factor: IR Thermometer -0.3 °C
Digital Stick Thermometer -0.2 °C
Temperature Blank: 6.0 °C (Use Digital Stick Thermometer)
Range of 3 samples: _____ °C (Use IR Thermometer)
Melt Water: -3.8 °C (IR or Stick Therm. - circle one)
Ice still present upon receipt: Yes No

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
pH checked and samples at correct pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Below
Correct preservative added to samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Notes: _____

***EMD pH Test Strips Used:**

pH 0-2.5 Lot: HIC300427 pH 11.0-13.0 Lot: HIC49264
 Other: _____

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October 09, 2013

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333
Fax: (906) 226-8371

RE: Trace Project T13J020
Client Project 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008 PADEP Accreditation No. 68-04471

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SAMPLE SUMMARY

Trace Project ID: T13J020
Client Project ID: 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13J020-01	EM-HMP-WaIEE	Aqueous	Client	09/27/13 11:15	10/02/13 08:10

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

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 www.trace-labs.com

ANALYTICAL RESULTS

Trace Project ID: T13J020
 Client Project ID: 60305471

Trace ID: T13J020-01 Date Collected: 09/27/13 11:15 Matrix: Aqueous
 Sample ID: EM-HMP-WtEE Date Received: 10/02/13 08:10

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED BY	ANALYZED BY	NOTES	MCL
METALS, TOTAL							
<i>Analysis Method: SM 2340B</i>							
<i>Batch: [CALC]</i>							
Hardness as CaCO3	240 mg/L	6.6	1	10/04/13	10/07/13	mes	N

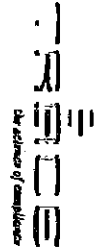
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CHAIN-OF-CUSTODY RECORD

Page 1 of 1

TRACE ID NO. 7135020

Client Name: **AT&T**
 Contact Person: **Lance Lindberg**
 Mailing Address: **1050 Wilson St.**
 City/State/Zip Code: **Muskegon MI 49855**
 Phone: **906 221-4080** Fax: **906 221-2571**
 Email Address: **lance.lindberg@att.com**
 Call #: _____ Sample by: **LMJ**

Project Name & # **10305471**
 Billing Address (if different): _____
 City/State/Zip Code: _____
 Phone: _____ PO #: _____

Report Results To:
 Regulatory Requirements:
 EPA 1604: Drinking Water
 1605: USEPA
 Standard: State
 24-Hr Filter:
 24-Hr Filter:
 Requires prior approval:

Analysis Requested:
 Water Use:
 S - Soil
 W - Water
 SE - Sediment
 SI - Sludge
 SP - Spill Water
 LW - Liquid Waste
 A - Air
 D - Drinking Water
 SL - Sludge

TRACE NO.	DATE TAKEN	TIME TAKEN	CLIENT SAMPLE ID	REP #	REP NAME	REMARKS
1	9/21/13	11:15 AM	EM-HMP-WETEE	W1	X	Possible Health Hazard

PLANSIGN #	RELEASED BY	RECEIVED BY	DATE	TIME	REP #	RELEASED BY	RECEIVED BY	DATE	TIME
1	[Signature]	Fed Ex	9/20	1400	3				
2	Fed Ex	[Signature]	10/2/13	8:10	4				

In executing this Chain of Custody, the client acknowledges acceptance of the terms and conditions of the agreement as set forth at <http://www.trace-labs.com/cocodterms.php>

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TRACE

the science of compliance

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T13J020

SAMPLE LOG IN CHECKLIST

Trace ID #: AECOM Date: 10/2/13 Package Description: COOLER
 Client Name: AECOM Time: 8:10 Logged In by: JL

Cooler Receipt

Cooler/samples delivered by: Trace cooler
 Hand delivered Name of delivery person: _____
 Commercial courier UPS - FED EX US Mail
 Tracking Number: Not Applicable
 Tracking #: 1Z A31 2E6 15 93 43 3297
 COC Seals present and intact on cooler? No Not Applicable
 Yes
 Custody seals signed by Client? No Client custody seal # (if applicable): _____
 Yes

Coolant and Temperature

Type of Coolant Used
 Slurry w/ crushed, cubed, or chip ice?
 Multiple bags of ice around samples?
 Ice Packs/ Blue Ice:
 No Coolant Present:

Cooler Temperature
 Correction Factor: IR Thermometer -0.2 °C
 Digital Stick Thermometer 0.0 °C
 Temperature Blank: N/A °C (Use Digital Stick Thermometer)
 Range of 3 samples: 2.2 °C (Use IR Thermometer)
 Melt Water: 0.7 °C (IR or Stick Thermo - circle one)
 Ice still present upon receipt: Yes No

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient samples to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
pH checked and samples at correct pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Below*
Correct preservative added to samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Notes:

*EMD pH Test Strips Used:

pH 0-2.5 Lot HC390427 pH 11.0-13.0 Lot HC019254
 Other: _____

Form 70-A.10
Effective 6/20/13

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October 25, 2013

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333
Fax: (906) 226-8371

RE: Trace Project T13J242
Client Project Humbolt Mill 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. M1008 PADEP Accreditation No. 68-04471

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SAMPLE SUMMARY

Trace Project ID: T13J242
Client Project ID: Humbolt Mill 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13J242-01	EM-HMP-009	Aqueous	AJP	10/14/13 15:15	10/15/13 09:54

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCS D	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

DATA QUALIFIERS

Trace ID: T040689-MSD1

Analysis: SM 4500-P E

Phosphorus-Total (as P) Note 207 : The RPD between the MS and the MSD was out of control. Because both spike recoveries were in control, no data require qualification.

Trace ID: T040763-BS1

Analysis: EPA 200.8 Rev. 5.4

Silver Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.

Trace ID: T040763-MSD1

Analysis: EPA 200.8 Rev. 5.4

Selenium Note 207 : The RPD between the MS and the MSD was out of control. Because both spike recoveries were in control, no data require qualification.

Silver Note 230 : The MS and MSD were out of control high. Because there was no positive result in the non-spiked version of the sample, no data require qualification.

Trace ID: T13J242-01

Analysis: SM 4500-H+ B-00

pH Note pH : The pH was analyzed at 11:04

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ANALYTICAL RESULTS

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13J242-01 Date Collected: 10/14/13 15:15 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 10/15/13 09:54

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T040807

Mercury	0.60 ng/L	0.50	1	10/21/13	klm	10/23/13	klm		
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Analysis Method: EPA 200.7 Rev. 4.4

Batch: T040763

Boron	93 ug/L	40	1	10/18/13	rib	10/21/13	mes		
Lithium	<0.025 mg/L	0.025	1	10/18/13	rib	10/21/13	mes	N	
Strontium	0.28 mg/L	0.050	1	10/18/13	rib	10/21/13	mes		

Analysis Method: EPA 200.8 Rev. 5.4

Batch: T040763

Antimony	5.5 ug/L	1.0	1	10/18/13	rib	10/23/13	klm		
Arsenic	1.1 ug/L	1.0	1	10/18/13	rib	10/23/13	klm		
Barium	12 ug/L	5.0	1	10/18/13	rib	10/23/13	klm		
Beryllium	<1.0 ug/L	1.0	1	10/18/13	rib	10/22/13	klm		
Cadmium	<0.20 ug/L	0.20	1	10/18/13	rib	10/23/13	klm		
Chromium	<10 ug/L	10	1	10/18/13	rib	10/23/13	klm		
Cobalt	2.9 ug/L	2.0	1	10/18/13	rib	10/23/13	klm		
Copper	2.9 ug/L	1.0	1	10/18/13	rib	10/23/13	klm		
Lead	<1.0 ug/L	1.0	1	10/18/13	rib	10/23/13	klm		
Manganese	130 ug/L	1.0	1	10/18/13	rib	10/23/13	klm		
Molybdenum	13 ug/L	1.0	1	10/18/13	rib	10/23/13	klm	N	
Nickel	11 ug/L	5.0	1	10/18/13	rib	10/23/13	klm		
Selenium	<1.0 ug/L	1.0	1	10/18/13	rib	10/23/13	klm		
Silver	<0.50 ug/L	0.50	1	10/18/13	rib	10/23/13	klm		
Thallium	<1.0 ug/L	1.0	1	10/18/13	rib	10/22/13	klm		
Zinc	<10 ug/L	10	1	10/18/13	rib	10/23/13	klm		

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ANALYTICAL RESULTS

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13J242-01 Date Collected: 10/14/13 15:15 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 10/15/13 09:54

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED BY	ANALYZED BY	NOTES	MCL
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WET CHEMISTRY

Analysis Method: EPA 300.0 Rev. 2.1

Batch: T040677

Fluoride	0.25 mg/L	0.10	5	10/15/13	sv	10/15/13	jd
Sulfate as SO4	120 mg/L	5.0	10	10/18/13	jd	10/18/13	jd

Analysis Method: EPA 335.4 Rev. 1.0

Batch: T040787

Cyanide (total)	<0.0050 mg/L	0.0050	1	10/21/13	as	10/21/13	as
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Analysis Method: EPA 350.1 Rev. 2.0

Batch: T040809

Ammonia as N	<0.010 mg/L	0.010	1	10/22/13	jd	10/22/13	jd
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Analysis Method: SM 2540 C-97

Batch: T040683

Total Dissolved Solids	340 mg/L	10	1	10/15/13	sv	10/15/13	jd
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Analysis Method: SM 2540 D-97

Batch: T040673

Total Suspended Solids	<10 mg/L	10	1	10/15/13	sv	10/15/13	jd
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Analysis Method: SM 4500-H+ B-00

Batch: T040701

pH	8.07 pH Units		1	10/14/13	jrjw	10/15/13	jrjw	pH
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Analysis Method: SM 4500-O C-01

Batch: T040681

Dissolved Oxygen	9.7 mg/L	0.080	1	10/15/13	jd	10/15/13	jd	N
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Analysis Method: SM 4500-P E

Batch: T040689

Phosphorus-Total (as P)	<0.010 mg/L	0.010	1	10/16/13	jd	10/16/13	jd	N
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QUALITY CONTROL RESULTS

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040807	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T040807-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.50	0.50	

LABORATORY CONTROL SAMPLE: T040807-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	25.3	101	77-123	

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040763	Analysis Description: Lithium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T040763-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	ug/L	<40	40	
Lithium	mg/L	<0.025	0.025	
Strontium	mg/L	<0.050	0.050	

LABORATORY CONTROL SAMPLE: T040763-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	ug/L	1600	1750	109	85-115	
Lithium	mg/L	1.60	1.60	100	85-115	
Strontium	mg/L	1.60	1.53	95	85-115	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T040763-MSD1 Original: T13J242-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	ug/L	92.6	1600	1780	1590	106	93	70-130	12	20	
Lithium	mg/L	0.00708	1.60	1.60	1.65	100	103	70-130	3	20	
Strontium	mg/L	0.284	1.60	1.77	1.90	93	101	70-130	8	20	

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

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QC Batch: T040763

QC Batch Method: EPA 200.2

Analysis Description: Zinc, Total

Analysis Method: EPA 200.8 Rev. 5.4

METHOD BLANK: T040763-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	ug/L	<0.50	0.50	
Arsenic	ug/L	<1.0	1.0	
Barium	ug/L	<5.0	5.0	
Beryllium	ug/L	<1.0	1.0	
Cadmium	ug/L	<0.20	0.20	
Cobalt	ug/L	<2.0	2.0	
Chromium	ug/L	<10	10	
Copper	ug/L	<1.0	1.0	
Manganese	ug/L	<1.0	1.0	
Molybdenum	ug/L	<1.0	1.0	
Nickel	ug/L	<5.0	5.0	
Lead	ug/L	<1.0	1.0	
Antimony	ug/L	<1.0	1.0	
Selenium	ug/L	<1.0	1.0	
Thallium	ug/L	<1.0	1.0	
Zinc	ug/L	<10	10	

LABORATORY CONTROL SAMPLE: T040763-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	ug/L	50.0	75.8	152	85-115	112
Arsenic	ug/L	100	105	105	85-115	
Barium	ug/L	1600	1650	103	85-115	
Beryllium	ug/L	200	224	112	85-115	
Cadmium	ug/L	50.0	55.2	110	85-115	
Cobalt	ug/L	1600	1680	105	85-115	
Chromium	ug/L	50.0	52.9	106	85-115	
Copper	ug/L	1600	1720	107	85-115	
Manganese	ug/L	1600	1620	101	85-115	
Molybdenum	ug/L	1600	1690	105	85-115	
Nickel	ug/L	1600	1720	108	85-115	
Lead	ug/L	100	106	106	85-115	
Antimony	ug/L	100	112	112	85-115	
Selenium	ug/L	100	113	113	85-115	
Thallium	ug/L	100	93.4	93	85-115	
Zinc	ug/L	1600	1820	113	85-115	

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MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T040763-MSD1

Original: T13J242-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Silver	ug/L	0	50.0	73.2	75.7	146	151	70-130	3	20	230
Arsenic	ug/L	1.12	100	106	90.8	105	90	70-130	16	20	
Barium	ug/L	12.1	1600	1650	1700	103	106	70-130	3	20	
Beryllium	ug/L	0	200	190	217	95	108	70-130	13	20	
Cadmium	ug/L	0	50.0	53.9	55.3	108	111	70-130	3	20	
Cobalt	ug/L	2.92	1600	1600	1630	100	102	70-130	1	20	
Chromium	ug/L	0	50.0	50.4	52.5	101	105	70-130	4	20	
Copper	ug/L	2.90	1600	1650	1710	103	107	70-130	4	20	
Manganese	ug/L	129	1600	1640	1700	95	98	70-130	4	20	
Molybdenum	ug/L	13.3	1600	1690	1490	105	92	70-130	13	20	
Nickel	ug/L	10.8	1600	1660	1720	103	107	70-130	4	20	
Lead	ug/L	0.160	100	104	109	104	109	70-130	5	20	
Antimony	ug/L	5.48	100	115	99.9	110	94	70-130	15	20	
Selenium	ug/L	0	100	107	75.8	107	76	70-130	34	20	207
Thallium	ug/L	0	100	86.5	90.5	86	90	70-130	5	20	
Zinc	ug/L	0	1600	1770	1780	111	111	70-130	0.5	20	

Trace Project ID: T13J242

Client Project ID: Humbolt Mill 60305471

QC Batch: T040677

QC Batch Method: IC Prep W

Analysis Description: Sulfate

Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T040677-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Fluoride	mg/L	<0.10	0.10	
Sulfate as SO4	mg/L	<1.0	1.0	

LABORATORY CONTROL SAMPLE: T040677-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	0.500	0.461	92	90-110	
Sulfate as SO4	mg/L	2.50	2.46	99	90-110	

Trace Project ID: T13J242

Client Project ID: Humbolt Mill 60305471

QC Batch: T040756

QC Batch Method: IC Prep W

Analysis Description: Sulfate

Analysis Method: EPA 300.0 Rev. 2.1

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METHOD BLANK: T040758-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Sulfate as SO4	mg/L	<1.0	1.0	

LABORATORY CONTROL SAMPLE: T040758-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sulfate as SO4	mg/L	2.50	2.52	101	90-110	

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040787	Analysis Description: Cyanide, Total
QC Batch Method: EPA 335.4 Rev. 1.0	Analysis Method: EPA 335.4 Rev. 1.0

METHOD BLANK: T040787-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cyanide (total)	mg/L	<0.0050	0.0050	

LABORATORY CONTROL SAMPLE: T040787-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Cyanide (total)	mg/L	0.100	0.0951	95	90-110	

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040809	Analysis Description: Nitrogen, Ammonia
QC Batch Method: EPA 350.1 Rev. 2.0	Analysis Method: EPA 350.1 Rev. 2.0

METHOD BLANK: T040809-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Ammonia as N	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T040809-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Ammonia as N	mg/L	0.500	0.538	108	90-110	

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040683	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-97	Analysis Method: SM 2540 C-97

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METHOD BLANK: T040683-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T040683-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	532	106	80-120	

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040673	Analysis Description: Total Suspended Solids
QC Batch Method: SM 2540 D-97	Analysis Method: SM 2540 D-97

METHOD BLANK: T040673-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Suspended Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T040673-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Suspended Solids	mg/L	50.0	51.0	102	85-115	

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040701	Analysis Description: pH, SM 4500
QC Batch Method: *** DEFAULT PREP ***	Analysis Method: SM 4500-H+ B-00

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040681	Analysis Description: Dissolved Oxygen
QC Batch Method: SM 4500-O C-01	Analysis Method: SM 4500-O C-01

Trace Project ID: T13J242
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040689	Analysis Description: Total Phosphorus
QC Batch Method: SM 4500-P E	Analysis Method: SM 4500-P E

METHOD BLANK: T040689-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Phosphorus-Total (as P)	mg/L	<0.010	0.010	

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Muskegon, MI 49444-2673
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LABORATORY CONTROL SAMPLE: T040689-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Phosphorus-Total (as P)	mg/L	0.100	0.109	109	85-116	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T040689-MSD1

Original: T13J242-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Phosphorus-Total (as P)	mg/L	0	0.100	0.0895	0.102	90	102	84-112	13	7	207

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Please Sign		Sample Identification / Request for Analytical Services				Report Results To:			
Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME
1	[Signature]	[Signature]	10-11-13	1700	3)				
2	[Signature]	[Signature]	10/15/13	9154	4)				

Client Name: AECOM	Contact Person: Lance Lindberg	Mailing Address: 1050 Wilson St	City, State, Zip Code: Muskegon MI 49805	Phone: 906.226.4880	Fax: 906.226.8371
Email Address: lance.lindberg@aecom.com	Project Name: Humboldt Mill	PO #: 	Trace Order #:	Project #: 10305471	Sampled by: ATP
Regulation/Requirements: <input type="checkbox"/>	Turnaround Requirements: <input checked="" type="checkbox"/>	Matrix Key: <input type="checkbox"/>	VI - Vapor	Standard (2 wk): <input checked="" type="checkbox"/>	5 - Soil
MECHA TRIPLE: <input type="checkbox"/>	Standard (2 wk): <input checked="" type="checkbox"/>	WI - Water	LVI - Liquid Vapor	5 Day: <input type="checkbox"/>	SE - Sediment
RCPA: <input type="checkbox"/>	* 24 Day (RUSH): <input type="checkbox"/>	SI - Soil	A - Air	USACE: <input type="checkbox"/>	OI - Oil
NPROS: <input type="checkbox"/>	* 24 Hour (RUSH): <input type="checkbox"/>	SO - Solid Waste	D - Drinking Water	Special: <input type="checkbox"/>	SL - Sludge
USACE: <input type="checkbox"/>	* Resolves prior approval				

For Use by TRACE Personnel Only		ANALYSIS REQUESTED	
Logged By: SI	Checked By: ATP	Soil Volatiles Preserved: MOCH En Care Low Level Lab	
Received on loc: Yes / No	Preservative Checked: Yes / No / N/A	Total Cyanide	
		Total Hg	
		Total Sulfate	
		TDS	
		Total Phosphorus	
		TSS	
		Ammonia Nitrogen	
		DO & pH	
		REMARKS	
		Possible Health Hazard	

In executing this agreement, the client acknowledges acceptance of the terms of the agreement as listed on the reverse side.

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SAMPLE LOG IN CHECKLIST

Trace ID #: 7137242 Date: 10/15/13 Package Description: COULEM
Client Name: AF-CON Time: 9:54 Logged in by: JV

Cooler Receipt

Cooler/samples delivered by: Trace courier
Hand delivered Name of delivery person: _____
Commercial courier UPS FED EX US Mail

Tracking Number: Not Applicable
Tracking #: 1ZNA1834019C905062

COC Seals present and intact on cooler? No Yes Not Applicable

Custody seals signed by Client? No Yes Client custody seal # (if applicable): _____

Coolant and Temperature

Type of Coolant Used

Slurry w/ crushed, cubed, or chip ice?
Multiple bags of ice around samples?
Ice Packs/ Blue Ice:
No Coolant Present:

Cooler Temperature

Correction Factor: IR Thermometer -0.2 °C
Digital Stick Thermometer 0.0 °C
Temperature Blank: 10.0 °C (Use Digital Stick Thermometer)
Range of 3 samples: 6.7-9.4 °C (Use IR Thermometer)
Melt Water: 0.6 °C (IR or Stick Therm. - circle one)
Ice still present upon receipt: Yes No

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
pH checked and samples at correct pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Below*
Correct preservative added to samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Notes: _____

***EMD pH Test Strips Used:**

pH 0-2.5 Lot: HC390427 pH 11.0-13.0 Lot: HC949254
 Other: _____

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November 11, 2013

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333

Fax: (906) 226-8371

RE: Trace Project T13J426
Client Project Humbolt Mill 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008 PADEP Accreditation No. 68-04471

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SAMPLE SUMMARY

Trace Project ID: T13J426
Client Project ID: Humbolt Mill 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13J426-01	EM-HMP-009	Aqueous	ajp	10/25/13 11:15	10/26/13 13:00

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

DATA QUALIFIERS

Trace ID: T041122-BLK1

Analysis: EPA 200.8 Rev. 5.4

Copper	Note 620 : A positive result for this analyte was found in the method blank. Because no positive result was found in the sample, no data require qualification.
Molybdenum	Note 624 : A positive result for this analyte was found in the method blank. Because the concentration in the blank was greater than 5% of the sample concentration, the sample result must be considered estimated.
Selenium	Note 620 : A positive result for this analyte was found in the method blank. Because no positive result was found in the sample, no data require qualification.
Zinc	Note 620 : A positive result for this analyte was found in the method blank. Because no positive result was found in the sample, no data require qualification.

Trace ID: T041122-BS1

Analysis: EPA 200.8 Rev. 5.4

Silver	Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.
---------------	---

Trace ID: T041122-MS1

Analysis: EPA 200.8 Rev. 5.4

Silver	Note 230 : The MS and MSD were out of control high. Because there was no positive result in the non-spiked version of the sample, no data require qualification.
---------------	--

Trace ID: T041122-MSD1

Analysis: EPA 200.8 Rev. 5.4

Silver	Note 230 : The MS and MSD were out of control high. Because there was no positive result in the non-spiked version of the sample, no data require qualification.
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Trace ID: T13J426-01

Analysis: EPA 200.8 Rev. 5.4

Molybdenum	Note 624 : A positive result for this analyte was found in the method blank. Because the concentration in the blank was greater than 5% of the sample concentration, the sample result must be considered estimated.
-------------------	--

Analysis: SM 4500-H+ B-00

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pH	Note 511 : The sample was received and, therefore, analyzed beyond the established EPA hold time. The result must be considered estimated.
pH	Note pH : The pH was analyzed at 13:00

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ANALYTICAL RESULTS

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13J426-01 Date Collected: 10/25/13 11:15 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 10/26/13 13:00

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T040998

Mercury	<0.50 ng/L	0.50	1	10/29/13	klm	10/31/13	klm		
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Analysis Method: EPA 200.7 Rev. 4.4

Batch: T041122

Boron	80 ug/L	40	1	11/03/13	rlb	11/04/13	mes		
Lithium	<0.025 mg/L	0.025	1	11/05/13	rlb	11/05/13	mes	N	
Strontium	0.23 mg/L	0.050	1	11/03/13	rlb	11/04/13	mes		

Analysis Method: EPA 200.8 Rev. 5.4

Batch: T041122

Antimony	4.2 ug/L	1.0	1	11/03/13	rlb	11/04/13	klm		
Arsenic	<1.0 ug/L	1.0	1	11/03/13	rlb	11/04/13	klm		
Barium	9.3 ug/L	5.0	1	11/03/13	rlb	11/04/13	klm		
Beryllium	<1.0 ug/L	1.0	1	11/03/13	rlb	11/04/13	klm		
Cadmium	<0.20 ug/L	0.20	1	11/03/13	rlb	11/04/13	klm		
Chromium	<10 ug/L	10	1	11/03/13	rlb	11/04/13	klm		
Cobalt	2.0 ug/L	2.0	1	11/03/13	rlb	11/04/13	klm		
Copper	<1.0 ug/L	1.0	1	11/03/13	rlb	11/04/13	klm		
Lead	<1.0 ug/L	1.0	1	11/03/13	rlb	11/04/13	klm		
Manganese	78 ug/L	1.0	1	11/03/13	rlb	11/04/13	klm		
Molybdenum	9.7 ug/L	1.0	1	11/03/13	rlb	11/04/13	klm	624, N	
Nickel	8.3 ug/L	5.0	1	11/03/13	rlb	11/04/13	klm		
Selenium	<1.0 ug/L	1.0	1	11/03/13	rlb	11/05/13	klm		
Silver	<0.50 ug/L	0.50	1	11/03/13	rlb	11/04/13	klm		
Thallium	<1.0 ug/L	1.0	1	11/03/13	rlb	11/04/13	klm		
Zinc	<10 ug/L	10	1	11/03/13	rlb	11/04/13	klm		

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ANALYTICAL RESULTS

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13J426-01 Date Collected: 10/25/13 11:15 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 10/26/13 13:00

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED BY	ANALYZED BY	NOTES	MCL
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WET CHEMISTRY

Analysis Method: ASTM D7511-09e2

Batch: T041070

Cyanide (total)	<0.0050 mg/L	0.0050	1	10/31/13	jd	10/31/13	jd
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Analysis Method: EPA 300.0 Rev. 2.1

Batch: T040984

Fluoride	<0.10 mg/L	0.10	5	10/29/13	jd	10/29/13	jd
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Sulfate as SO4	120 mg/L	2.5	5	10/29/13	jd	10/29/13	jd
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Analysis Method: EPA 350.1 Rev. 2.0

Batch: T041018

Ammonia as N	<0.010 mg/L	0.010	1	10/29/13	jd	10/31/13	as
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Analysis Method: SM 2540 C-97

Batch: T040965

Total Dissolved Solids	330 mg/L	10	1	10/28/13	sv	10/29/13	sv
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Analysis Method: SM 2540 D-97

Batch: T040964

Total Suspended Solids	<10 mg/L	10	1	10/28/13	sv	10/28/13	sv
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Analysis Method: SM 4500-H+ B-00

Batch: T040971

pH	7.97 pH Units		1	10/25/13	jrjw	10/26/13	jrjw	511, pH
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Analysis Method: SM 4500-O C-01

Batch: T040972

Dissolved Oxygen	9.2 mg/L	0.080	1	10/28/13	jd	10/28/13	jd	N
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Analysis Method: SM 4500-P E

Batch: T041150

Phosphorus-Total (as P)	<0.010 mg/L	0.010	1	11/04/13	jd	11/04/13	jd	N
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QUALITY CONTROL RESULTS

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040998	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T040998-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.50	0.50	

LABORATORY CONTROL SAMPLE: T040998-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	25.0	100	77-123	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T040998-MSD1 Original: T13J426-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Mercury	ng/L	0.416	5.00	5.20	5.27	96	97	71-125	1	24	

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041122	Analysis Description: Strontium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T041122-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	ug/L	<40	40	
Strontium	mg/L	<0.050	0.050	

LABORATORY CONTROL SAMPLE: T041122-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	ug/L	1600	1450	91	85-115	
Strontium	mg/L	1.60	1.65	103	85-115	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T041122-MSD1 Original: T13J426-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Boron	ug/L	80.0	1600	1520	1600	90	95	70-130	5	20	
Strontium	mg/L	0.231	1.60	1.84	1.72	101	93	70-130	8	20	

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Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041171	Analysis Description: Lithium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T041171-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Lithium	mg/L	<0.025	0.025	

LABORATORY CONTROL SAMPLE: T041171-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Lithium	mg/L	1.60	1.55	97	85-115	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T041171-MSD1 Original: T13J426-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Lithium	mg/L	0.00569	1.60	1.65	1.62	103	101	70-130	2	20	

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041122	Analysis Description: Antimony, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.8 Rev. 5.4

METHOD BLANK: T041122-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	ug/L	<0.50	0.50	
Arsenic	ug/L	<1.0	1.0	
Barium	ug/L	<5.0	5.0	
Beryllium	ug/L	<1.0	1.0	
Cadmium	ug/L	<0.20	0.20	
Cobalt	ug/L	<2.0	2.0	
Chromium	ug/L	<10	10	
Copper	ug/L	17.0	1.0	620
Manganese	ug/L	<1.0	1.0	
Molybdenum	ug/L	4.80	1.0	624
Nickel	ug/L	<5.0	5.0	
Lead	ug/L	<1.0	1.0	
Antimony	ug/L	<1.0	1.0	
Selenium	ug/L	1.27	1.0	620
Thallium	ug/L	<1.0	1.0	
Zinc	ug/L	257	10	620

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LABORATORY CONTROL SAMPLE: T041122-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	ug/L	50.0	78.0	156	85-115	112
Arsenic	ug/L	100	96.8	97	85-115	
Barium	ug/L	1600	1450	90	85-115	
Beryllium	ug/L	200	186	93	85-115	
Cadmium	ug/L	50.0	50.7	101	85-115	
Cobalt	ug/L	1600	1490	93	85-115	
Chromium	ug/L	50.0	<50	87	85-115	
Copper	ug/L	1600	1550	97	85-115	
Manganese	ug/L	1600	1350	85	85-115	
Molybdenum	ug/L	1600	1500	94	85-115	
Nickel	ug/L	1600	1520	95	85-115	
Lead	ug/L	100	97.6	98	85-115	
Antimony	ug/L	100	94.5	95	85-115	
Selenium	ug/L	100	94.7	95	85-115	
Thallium	ug/L	100	103	103	85-115	
Zinc	ug/L	1600	1610	101	85-115	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T041122-MSD1

Original: T13J426-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Silver	ug/L	0	50.0	76.6	78.8	153	158	70-130	3	20	230
Arsenic	ug/L	0.542	100	96.7	97.0	96	96	70-130	0.4	20	
Barium	ug/L	9.26	1600	1440	1450	89	90	70-130	1	20	
Beryllium	ug/L	0	200	191	189	95	94	70-130	1	20	
Cadmium	ug/L	0	50.0	51.1	50.5	102	101	70-130	1	20	
Cobalt	ug/L	2.00	1600	1410	1460	88	91	70-130	3	20	
Chromium	ug/L	0	50.0	41.5	<50	83	84	70-130	0.8	20	
Copper	ug/L	0.176	1600	1490	1530	93	96	70-130	3	20	
Manganese	ug/L	78.0	1600	1360	1370	80	81	70-130	0.9	20	
Molybdenum	ug/L	9.70	1600	1520	1570	94	97	70-130	3	20	
Nickel	ug/L	8.33	1600	1460	1500	91	93	70-130	3	20	
Lead	ug/L	0	100	95.4	96.9	95	97	70-130	1	20	
Antimony	ug/L	4.23	100	98.8	98.8	95	95	70-130	0.05	20	
Selenium	ug/L	0.699	100	106	92.3	105	92	70-130	14	20	
Thallium	ug/L	0	100	101	103	101	103	70-130	2	20	
Zinc	ug/L	5.33	1600	1560	1600	97	100	70-130	3	20	

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Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041171	Analysis Description: Silver, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.8 Rev. 5.4

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041070	Analysis Description: Cyanide, Total
QC Batch Method: ASTM D7511-09e2	Analysis Method: ASTM D7511-09e2

METHOD BLANK: T041070-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cyanide (total)	mg/L	<0.0050	0.0050	

LABORATORY CONTROL SAMPLE: T041070-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Cyanide (total)	mg/L	0.100	0.0992	99	90-110	

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040984	Analysis Description: Fluoride
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T040984-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Fluoride	mg/L	<0.10	0.10	
Sulfate as SO4	mg/L	<1.0	1.0	

LABORATORY CONTROL SAMPLE: T040984-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	0.500	0.465	93	90-110	
Sulfate as SO4	mg/L	2.50	2.52	101	90-110	

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041018	Analysis Description: Nitrogen, Ammonia
QC Batch Method: EPA 350.1 Rev. 2.0	Analysis Method: EPA 350.1 Rev. 2.0

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METHOD BLANK: T041018-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Ammonia as N	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T041018-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Ammonia as N	mg/L	0.500	0.507	101	90-110	

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040965	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-97	Analysis Method: SM 2540 C-97

METHOD BLANK: T040965-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T040965-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	474	95	80-120	

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040964	Analysis Description: Total Suspended Solids
QC Batch Method: SM 2540 D-97	Analysis Method: SM 2540 D-97

METHOD BLANK: T040964-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Suspended Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T040964-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Suspended Solids	mg/L	50.0	52.0	104	85-115	

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040971	Analysis Description: pH, SM 4500
QC Batch Method: *** DEFAULT PREP ***	Analysis Method: SM 4500-H+ B-00

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Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T040972	Analysis Description: Dissolved Oxygen
QC Batch Method: SM 4500-O C-01	Analysis Method: SM 4500-O C-01

Trace Project ID: T13J426
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041150	Analysis Description: Total Phosphorus
QC Batch Method: SM 4500-P E	Analysis Method: SM 4500-P E

METHOD BLANK: T041150-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Phosphorus-Total (as P)	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T041150-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Phosphorus-Total (as P)	mg/L	0.100	0.109	109	85-116	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T041150-MSD1 Original: T13J426-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Phosphorus-Total (as P)	mg/L	0.00590	0.100	0.105	0.101	99	95	84-112	4	7	

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CHAIN-OF-CUSTODY RECORD

Page 1 of 1

TRACE ID NO. T13J426

Client Name: AECOM Contact Person: Lance Lindberg Mailing Address: 1050 Wilson St. City, State, Zip Code: Muskegon, MI 49855 Phone: 906.226.4880 Fax: 906.226.8371 Email Address: lance.lindberg@aecom.com Cell #: _____				Project Name & #: Humboldt Mill / 60305471 Billing Address (if different): SAME City, State, Zip Code: _____ Phone: _____ PO #: _____																																	
Report Results To: Analytical Requirements: <input type="checkbox"/> MEPA TMDLs <input type="checkbox"/> Drinking Water <input type="checkbox"/> NPDES <input type="checkbox"/> USACE <input type="checkbox"/> Special				Turnaround Requirements: <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 2-4 Day (RUSH) <input type="checkbox"/> 24-48 Hour (RUSH)* <input type="checkbox"/> *Exclusion prior approval																																	
Matrix Key: S = Soil W = Water SE = Sediment OI = Oil SO = Solid Waste				Matrix Key: WL = Wipes LW = Liquid Waste A = Air D = Drinking Water SL = Sludge																																	
TRACE USE ONLY Logged By: [Signature] Received on file: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Preservative Checked: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A Soil Volatile Preserved: <input type="checkbox"/> MOQH <input type="checkbox"/> Low Level <input type="checkbox"/> Lab Sampling Time: _____				ANALYSIS REQUESTED Total Ammonia Total Nitrate Total Sulfate TDS Total Phosphorous LG-S Ammonia Nitrogen (NH3) D/D & pH																																	
Request for Analytical Services <table border="1"> <thead> <tr> <th>TRACE NO.</th> <th>DATE TAKEN</th> <th>TIME TAKEN</th> <th>WEA'S FIELD FILTERED</th> <th>CLIENT SAMPLE ID</th> <th>DATE</th> <th>MAJOR USE</th> <th>MAJOR USE OF CONTAINER</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>10-25-13</td> <td>11:15</td> <td>W</td> <td>EA-HMP-009</td> <td>10-25-13</td> <td>W & X</td> <td>W & X</td> </tr> <tr> <td>02</td> <td>10-25-13</td> <td>11:30</td> <td>W</td> <td>EA-HMP-010</td> <td>10-25-13</td> <td>W & X</td> <td>W & X</td> </tr> </tbody> </table>				TRACE NO.	DATE TAKEN	TIME TAKEN	WEA'S FIELD FILTERED	CLIENT SAMPLE ID	DATE	MAJOR USE	MAJOR USE OF CONTAINER	01	10-25-13	11:15	W	EA-HMP-009	10-25-13	W & X	W & X	02	10-25-13	11:30	W	EA-HMP-010	10-25-13	W & X	W & X	REMARKS Possible Health Hazard									
TRACE NO.	DATE TAKEN	TIME TAKEN	WEA'S FIELD FILTERED	CLIENT SAMPLE ID	DATE	MAJOR USE	MAJOR USE OF CONTAINER																														
01	10-25-13	11:15	W	EA-HMP-009	10-25-13	W & X	W & X																														
02	10-25-13	11:30	W	EA-HMP-010	10-25-13	W & X	W & X																														
Please Sign <table border="1"> <thead> <tr> <th>Item #</th> <th>RELEASED BY</th> <th>RECEIVED BY</th> <th>DATE</th> <th>TIME</th> <th>Item #</th> <th>RELEASED BY</th> <th>RECEIVED BY</th> <th>DATE</th> <th>TIME</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>[Signature]</td> <td>WLS</td> <td>10-25-13</td> <td>17:00</td> <td>3</td> <td>[Signature]</td> <td>[Signature]</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>[Signature]</td> <td>WLS</td> <td>10-25-13</td> <td>17:00</td> <td>4</td> <td>[Signature]</td> <td>[Signature]</td> <td></td> <td></td> </tr> </tbody> </table>				Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME	1	[Signature]	WLS	10-25-13	17:00	3	[Signature]	[Signature]			2	[Signature]	WLS	10-25-13	17:00	4	[Signature]	[Signature]			Trace Analytical Laboratories, Inc. 2241 Black Creek Road Muskegon, MI 49444-2673 www.trace-labs.com			
Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME																												
1	[Signature]	WLS	10-25-13	17:00	3	[Signature]	[Signature]																														
2	[Signature]	WLS	10-25-13	17:00	4	[Signature]	[Signature]																														

In executing this Chain of Custody, the client acknowledges acceptance of the terms and conditions of the agreement as set forth at <http://www.trace-labs.com/coc/terms.php>

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SAMPLE LOG IN CHECKLIST

Trace ID #: T13J426 Date: 10/26/13 Package Description: Cooler
Client Name: AEL/M Time: 13:00 Logged In by: [Signature]

Cooler Receipt

Cooler/samples delivered by: Trace courier
Hand delivered Name of delivery person: _____
Commercial courier UPS FED EX US Mail
Tracking Number: Not Applicable
Tracking #: _____
COC Seals present and intact on cooler? No Not Applicable
Yes
Custody seals signed by Client? No Client custody seal # (if applicable): _____
Yes

Coolant and Temperature

<p>Type of Coolant Used</p> <p>Slurry w/ crushed, cubed, or chip ice? <input type="checkbox"/> Multiple bags of ice around samples? <input checked="" type="checkbox"/> Ice Packs/ Blue Ice: <input type="checkbox"/> No Coolant Present: <input type="checkbox"/></p>	<p>Cooler Temperature</p> <p>Correction Factor: IR Thermometer <u>-0.2</u> °C Digital Stick Thermometer <u>-0.0</u> °C Temperature Blank: <u>NA</u> °C (Use Digital Stick Thermometer) Range of 3 samples: <u>4.7</u> °C (Use IR Thermometer) Melt Water: <u>NA</u> °C (IR or Stick Therm. - circle one) Ice still present upon receipt: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
---	---

	General			Comments
	Yes	No	NA	
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
pH checked and samples at correct pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Below*
Correct preservative added to samples?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Notes: _____

***EMD pH Test Strips Used:**

pH 0-2.5 Lot: HC390427 pH 11.0-13.0 Lot: HC919254
 Other: _____

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November 27, 2013

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333
Fax: (906) 226-8371

RE: Trace Project T13K068
Client Project Humbolt Mill 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

The report was amended due to antimony being missed on original report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008 PADEP Accreditation No. 68-04471

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SAMPLE SUMMARY

Trace Project ID: T13K068
Client Project ID: Humbolt Mill 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13K068-01	EM-HMP-009	Aqueous	atp	11/05/13 15:00	11/06/13 10:31

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

DATA QUALIFIERS

Trace ID: T041336-BS1

Analysis: EPA 200.8 Rev. 5.4

Silver	Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.
Thallium	Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.

Trace ID: T041380-MS1

Analysis: ASTM D7511-09e2

Cyanide (total)	Note 208 : The MS recovery was out of control. Because the MSD recovery and the RPD between the MS and the MSD were in control, no data require qualification.
-----------------	--

Trace ID: T041380-MSD1

Analysis: ASTM D7511-09e2

Cyanide (total)	Note 208 : The MS recovery was out of control. Because the MSD recovery and the RPD between the MS and the MSD were in control, no data require qualification.
-----------------	--

Trace ID: T13K068-01

Analysis: SM 4500-H+ B-00

pH	Note pH : The pH was analyzed at 10:51
----	--

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ANALYTICAL RESULTS

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13K068-01 Date Collected: 11/05/13 15:00 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 11/06/13 10:31

PARAMETERS RESULTS UNITS RDL DILUTION PREPARED BY ANALYZED BY NOTES MCL

METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T041311

Mercury 0.66 ng/L 0.50 1 11/06/13 klm 11/11/13 klm

Analysis Method: EPA 200.7 Rev. 4.4

Batch: T041336

Boron 91 ug/L 40 1 11/11/13 rib 11/12/13 mes
 Lithium <0.025 mg/L 0.025 1 11/13/13 rib 11/13/13 dtm N
 Strontium 0.23 mg/L 0.050 1 11/11/13 rib 11/12/13 mes
 Titanium <6.0 ug/L 6.0 1 11/11/13 rib 11/12/13 mes

Analysis Method: EPA 200.8 Rev. 5.4

Batch: T041336

Antimony 4.3 ug/L 1.0 1 11/11/13 jd 11/25/13 jd
 Arsenic <1.0 ug/L 1.0 1 11/11/13 rib 11/14/13 jd
 Barium 13 ug/L 5.0 1 11/11/13 rib 11/14/13 jd
 Beryllium <1.0 ug/L 1.0 1 11/11/13 rib 11/14/13 jd
 Cadmium <0.20 ug/L 0.20 1 11/11/13 rib 11/14/13 jd
 Chromium <10 ug/L 10 1 11/11/13 rib 11/14/13 jd
 Cobalt 2.4 ug/L 2.0 1 11/11/13 rib 11/14/13 jd
 Copper 1.1 ug/L 1.0 1 11/11/13 rib 11/14/13 jd
 Lead <1.0 ug/L 1.0 1 11/11/13 rib 11/14/13 jd
 Manganese 88 ug/L 1.0 1 11/11/13 rib 11/14/13 jd
 Molybdenum 8.5 ug/L 1.0 1 11/11/13 rib 11/14/13 jd N
 Nickel 9.7 ug/L 5.0 1 11/11/13 rib 11/14/13 jd
 Selenium <1.0 ug/L 1.0 1 11/11/13 rib 11/14/13 jd
 Silver <0.50 ug/L 0.50 1 11/11/13 rib 11/14/13 jd
 Thallium <1.0 ug/L 1.0 1 11/11/13 rib 11/14/13 jd
 Zinc <10 ug/L 10 1 11/11/13 rib 11/14/13 jd

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ANALYTICAL RESULTS

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13K068-01 Date Collected: 11/05/13 15:00 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 11/06/13 10:31

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED BY	ANALYZED BY	NOTES	MCL
WET CHEMISTRY							
<u>Analysis Method: ASTM D7511-09e2</u>							
Batch: T041360							
Cyanide (total)	<0.0050 mg/L	0.0050	1	11/12/13	jd	11/13/13	jd
<u>Analysis Method: EPA 300.0 Rev. 2.1</u>							
Batch: T041259							
Fluoride	0.65 mg/L	0.10	5	11/07/13	sv	11/07/13	jd
Sulfate as SO4	110 mg/L	2.5	5	11/07/13	jd	11/07/13	jd
<u>Analysis Method: EPA 350.1 Rev. 2.0</u>							
Batch: T041334							
Ammonia as N	<0.010 mg/L	0.010	1	11/11/13	as	11/11/13	as
<u>Analysis Method: SM 2540 C-97</u>							
Batch: T041266							
Total Dissolved Solids	320 mg/L	10	1	11/08/13	jd	11/08/13	sv
<u>Analysis Method: SM 2540 D-97</u>							
Batch: T041265							
Total Suspended Solids	<10 mg/L	10	1	11/08/13	jd	11/08/13	sv
<u>Analysis Method: SM 4500-H+ B-00</u>							
Batch: T041243							
pH	8.00 pH Units		1	11/05/13	jrjw	11/06/13	jrjw pH
<u>Analysis Method: SM 4500-O C-01</u>							
Batch: T041266							
Dissolved Oxygen	11 mg/L	0.080	1	11/07/13	jd	11/07/13	sv N
<u>Analysis Method: SM 4500-PE</u>							
Batch: T041366							
Phosphorus-Total (as P)	<0.010 mg/L	0.010	1	11/12/13	jd	11/12/13	jd N

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QUALITY CONTROL RESULTS

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041311	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T041311-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.50	0.50	

LABORATORY CONTROL SAMPLE: T041311-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	22.9	92	77-123	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T041311-MSD2 Original: T13K068-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Mercury	ng/L	0.651	5.00	5.36	5.32	94	93	71-125	0.9	24	

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041336	Analysis Description: Titanium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T041336-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	ug/L	<40	40	
Strontium	mg/L	<0.050	0.050	
Titanium	ug/L	<6.0	6.0	

LABORATORY CONTROL SAMPLE: T041336-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	ug/L	1600	1580	99	85-115	
Strontium	mg/L	1.60	1.72	108	85-115	
Titanium	ug/L	1600	1640	103	85-115	

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041391	Analysis Description: Lithium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

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METHOD BLANK: T041391-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Lithium	mg/L	<0.025	0.025	

LABORATORY CONTROL SAMPLE: T041391-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Lithium	mg/L	1.60	1.76	110	85-115	

MATRIX SPIKE: T041391-MS1 Original: T13K068-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Lithium	mg/L	0	1.60	1.75	109	70-130	

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041336	Analysis Description: Silver, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.8 Rev. 5.4

METHOD BLANK: T041336-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	ug/L	<0.50	0.50	
Arsenic	ug/L	<1.0	1.0	
Barium	ug/L	<5.0	5.0	
Beryllium	ug/L	<1.0	1.0	
Cadmium	ug/L	<0.20	0.20	
Cobalt	ug/L	<2.0	2.0	
Chromium	ug/L	<10	10	
Copper	ug/L	<1.0	1.0	
Manganese	ug/L	<1.0	1.0	
Molybdenum	ug/L	<1.0	1.0	
Nickel	ug/L	<5.0	5.0	
Lead	ug/L	<1.0	1.0	
Antimony	ug/L	<1.0	1.0	
Selenium	ug/L	<1.0	1.0	
Thallium	ug/L	<1.0	1.0	
Zinc	ug/L	<10	10	

LABORATORY CONTROL SAMPLE: T041336-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	ug/L	50.0	65.3	131	85-115	112, 112
Arsenic	ug/L	100	93.4	93	85-115	
Barium	ug/L	1600	1430	89	85-115	

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LABORATORY CONTROL SAMPLE: T041336-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Beryllium	ug/L	200	216	108	85-115	
Cadmium	ug/L	50.0	49.7	99	85-115	
Cobalt	ug/L	1600	1470	92	85-115	
Chromium	ug/L	50.0	55.8	112	85-115	
Copper	ug/L	1600	1510	94	85-115	
Manganese	ug/L	1600	1420	89	85-115	
Molybdenum	ug/L	1600	1380	86	85-115	
Nickel	ug/L	1600	1470	92	85-115	
Lead	ug/L	100	85.9	86	85-115	
Antimony	ug/L	100	102	102	85-115	
Selenium	ug/L	100	92.2	92	85-115	
Thallium	ug/L	100	116	116	85-115	112
Zinc	ug/L	1600	1540	97	85-115	

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041391	Analysis Description: Selenium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.8 Rev. 5.4

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041380	Analysis Description: Cyanide, Total
QC Batch Method: ASTM D7511-09e2	Analysis Method: ASTM D7511-09e2

METHOD BLANK: T041380-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cyanide (total)	mg/L	<0.0050	0.0050	

LABORATORY CONTROL SAMPLE: T041380-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Cyanide (total)	mg/L	0.100	0.104	104	90-110	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T041380-MSD1 Original: T13K068-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Cyanide (total)	mg/L	0	0.100	0.119	0.105	119	105	81-114	12	20	208

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

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QC Batch: T041259	Analysis Description: Sulfate
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T041259-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Fluoride	mg/L	<0.10	0.10	
Sulfate as SO4	mg/L	<1.0	1.0	

LABORATORY CONTROL SAMPLE: T041259-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	0.500	0.507	101	90-110	
Sulfate as SO4	mg/L	2.50	2.68	107	90-110	

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041334	Analysis Description: Nitrogen, Ammonia
QC Batch Method: EPA 350.1 Rev. 2.0	Analysis Method: EPA 350.1 Rev. 2.0

METHOD BLANK: T041334-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Ammonia as N	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T041334-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Ammonia as N	mg/L	0.500	0.541	108	90-110	

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041286	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-97	Analysis Method: SM 2540 C-97

METHOD BLANK: T041286-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T041286-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	425	85	80-120	

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Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041285	Analysis Description: Total Suspended Solids
QC Batch Method: SM 2540 D-97	Analysis Method: SM 2540 D-97

METHOD BLANK: T041285-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Suspended Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T041285-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Suspended Solids	mg/L	50.0	54.0	108	85-115	

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041243	Analysis Description: pH, SM 4500
QC Batch Method: *** DEFAULT PREP ***	Analysis Method: SM 4500-H+ B-00

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041266	Analysis Description: Dissolved Oxygen
QC Batch Method: SM 4500-O C-01	Analysis Method: SM 4500-O C-01

Trace Project ID: T13K068
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041366	Analysis Description: Total Phosphorus
QC Batch Method: SM 4500-P E	Analysis Method: SM 4500-P E

METHOD BLANK: T041366-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Phosphorus-Total (as P)	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T041366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Phosphorus-Total (as P)	mg/L	0.100	0.0895	90	85-116	

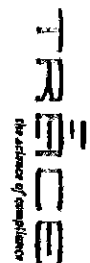
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CHAIN-OF-CUSTODY RECORD

Page 1 of 1

TRACE ID NO.
 713K068

Request for Analytical Services				BIN To:		Report Results To:	
Client Name:	AEDM			Billing Address (if different):	50 State		
Contact Person:	Lance Lindberg			City, State, Zip Code:			
Mailing Address:	1050 Wilson St			Phone:	906.226.5371		
City, State, Zip Code:	Muskegon, MI 49855			Email Address:	lindbergl@aedm.com		
Phone:	906.226.4990			Cell #:			
Fax:	906.226.5371			Project Name & #:	Lusholt Mill / 60305471		
Sampled By:	APD			PO #:			
Trace No.:	DATE TAKEN	TIME TAKEN	VOLUME (GAL)	CUSTOMER SAMPLE ID	DATE	TIME	REMARKS
1	11-5-13	1500	N	E-1-4-MB-009	11-5-13	1031	REGULATORY REQUIREMENTS: METALS, NUTRIENTS, DRINKING WATER, WPCSS, USADE, SPECIAL TOXICANT REQUIREMENTS: STANDARD, 24-HOUR FISH/SHRIMP, 24-HOUR FISH/SHRIMP, RESIDUES FROM TREATMENT MATRIX: S - Soil, W - Water, SE - Sediment, OI - Oil, SO - Solid Waste UNIT: Wt - Weigh, L/V - Liquid Measure, A - Air, D - Drinking Water, S - Sample ANALYSIS REQUESTED: Total Lead, Total ULL, TDS, Total Phosphorous, TSS, Ammonia Nitrogen (as N), DO Sp.H. REMARKS: Possible Health Hazard
In executing this Chain of Custody, the client acknowledges acceptance of the terms and conditions of the agreement as set forth at http://www.trace-labs.com/chainofcustody.php							

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SAMPLE LOG IN CHECKLIST

Trace ID #: T13K068 Date: 11/6/13 Package Description: COOLER
Client Name: A/E Com Time: 10:31 Logged In by: JV

Cooler Receipt

Cooler/samples delivered by: Trace cooler
Hand delivered Name of delivery person: _____
Commercial courier UPS FED EX US Mail
Tracking Number: Not Applicable
Tracking #: 1Z RA10340190456648
COC Seals present and intact on cooler? No Yes Not Applicable
Custody seals signed by Client? No Yes Client custody seal # (if applicable): _____

Coolant and Temperature

Type of Coolant Used
Slurry w/ crushed, cubed, or chip ice?
Multiple bags of ice around samples?
Ice Packs/ Blue Ice:
No Coolant Present:

Cooler Temperature
Correction Factor: IR Thermometer 0.2 °C
Digital Stick Thermometer 0.0 °C
Temperature Blank: 7.6 °C (Use Digital Stick Thermometer)
Range of 3 samples: 2.0-7.8 °C (Use IR Thermometer)
Melt Water: 0 °C (IR or Stick Therm. - circle one)
Ice still present upon receipt: Yes No

	General			Comments
	Yes	No	NA	
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
pH checked and samples at correct pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Below*
Correct preservative added to samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Notes: _____

*EMD pH Test Strips Used:
 pH 0-2.5 Lot: HC390427 pH 11.0-13.0 Lot: HC949234
 Other: _____

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November 22, 2013

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333

Fax: (906) 226-8371

RE: Trace Project T13K101
Client Project Humbolt Mill 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager
Enclosures



NJDEP Accreditation No. MI008 PADEP Accreditation No. 68-04471

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SAMPLE SUMMARY

Trace Project ID: T13K101
Client Project ID: Humbolt Mill 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13K101-01	EM-HMP-009	Wastewater	II	11/06/13 11:30	11/07/13 12:51

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

DATA QUALIFIERS

Trace ID: T041338-BS1

Analysis: EPA 200.8 Rev. 5.4

Silver	Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.
Thallium	Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.

Trace ID: T13K101-01

Analysis: SM 4500-H+ B-00

pH	Note 511 : The sample was received and, therefore, analyzed beyond the established EPA hold time. The result must be considered estimated.
pH	Note pH : The pH was analyzed at 13:07

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ANALYTICAL RESULTS

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13K101-01 Date Collected: 11/06/13 11:30 Matrix: Wastewater
 Sample ID: EM-HMP-009 Date Received: 11/07/13 12:51

PARAMETERS RESULTS UNITS RDL DILUTION PREPARED BY ANALYZED BY NOTES MCL

METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T041311

Mercury 1.0 ng/L 0.50 1 11/08/13 klm 11/11/13 klm

Analysis Method: EPA 200.7 Rev. 4.4

Batch: T041338

Boron 120 ug/L 40 1 11/11/13 rib 11/13/13 dtm

Iron 190 ug/L 100 1 11/11/13 rib 11/13/13 dtm

Lithium <0.025 mg/L 0.025 1 11/14/13 rib 11/15/13 dtm N

Phosphorus <0.050 mg/L 0.050 1 11/11/13 rib 11/13/13 dtm

Strontium 0.26 mg/L 0.050 1 11/11/13 rib 11/13/13 dtm

Analysis Method: EPA 200.8 Rev. 5.4

Batch: T041338

Antimony 4.9 ug/L 1.0 1 11/11/13 rib 11/14/13 jd

Arsenic <1.0 ug/L 1.0 1 11/11/13 rib 11/14/13 jd

Barium 10 ug/L 5.0 1 11/11/13 rib 11/14/13 jd

Beryllium <1.0 ug/L 1.0 1 11/11/13 rib 11/14/13 jd

Cadmium <0.20 ug/L 0.20 1 11/11/13 rib 11/14/13 jd

Chromium <10 ug/L 10 1 11/11/13 rib 11/14/13 jd

Cobalt 2.9 ug/L 2.0 1 11/11/13 rib 11/14/13 jd

Copper 2.5 ug/L 1.0 1 11/11/13 rib 11/14/13 jd

Lead <1.0 ug/L 1.0 1 11/11/13 rib 11/14/13 jd

Manganese 100 ug/L 1.0 1 11/11/13 rib 11/14/13 jd

Molybdenum 9.2 ug/L 1.0 1 11/11/13 rib 11/14/13 jd N

Nickel 12 ug/L 5.0 1 11/11/13 rib 11/14/13 jd

Selenium 2.1 ug/L 1.0 1 11/11/13 rib 11/14/13 jd

Silver <0.50 ug/L 0.50 1 11/11/13 rib 11/14/13 jd

Thallium <1.0 ug/L 1.0 1 11/11/13 rib 11/14/13 jd

Zinc <10 ug/L 10 1 11/11/13 rib 11/14/13 jd

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ANALYTICAL RESULTS

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13K101-01 Date Collected: 11/08/13 11:30 Matrix: Wastewater
 Sample ID: EM-HMP-009 Date Received: 11/07/13 12:51

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
WET CHEMISTRY									
<u>Analysis Method: ASTM D7511-09e2</u>									
Batch: T041380									
Cyanide (total)	<0.0050 mg/L	0.0050	1	11/12/13	jd	11/13/13	jd		
<u>Analysis Method: EPA 300.0 Rev. 2.1</u>									
Batch: T041259									
Fluoride	<0.10 mg/L	0.10	5	11/07/13	jd	11/15/13	sv		
Sulfate as SO4	130 mg/L	5.0	10	11/07/13	jd	11/15/13	sv		
<u>Analysis Method: EPA 350.1 Rev. 2.0</u>									
Batch: T041333									
Ammonia as N	<0.010 mg/L	0.010	1	11/11/13	as	11/11/13	as		
<u>Analysis Method: SM 2540 C-97</u>									
Batch: T041286									
Total Dissolved Solids	310 mg/L	10	1	11/08/13	jd	11/08/13	sv		
<u>Analysis Method: SM 2540 D-97</u>									
Batch: T041285									
Total Suspended Solids	<10 mg/L	10	1	11/08/13	jd	11/08/13	sv		
<u>Analysis Method: SM 4500-H+ B-00</u>									
Batch: T041405									
pH	7.72 pH Units		1	11/06/13	jrjw	11/07/13	jrjw	511, pH	
<u>Analysis Method: SM 4500-O C-01</u>									
Batch: T041286									
Dissolved Oxygen	12 mg/L	0.080	1	11/07/13	jd	11/07/13	sv	N	
<u>Analysis Method: SM 4500-PE</u>									
Batch: T041366									
Phosphorus-Total (as P)	<0.010 mg/L	0.010	1	11/12/13	jd	11/12/13	jd	N	

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QUALITY CONTROL RESULTS

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041311	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T041311-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.50	0.50	

LABORATORY CONTROL SAMPLE: T041311-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	22.9	92	77-123	

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041338	Analysis Description: Strontium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T041338-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	ug/L	<40	40	
Iron	ug/L	<100	100	
Phosphorus	mg/L	<0.050	0.050	
Strontium	mg/L	<0.050	0.050	

LABORATORY CONTROL SAMPLE: T041338-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	ug/L	1600	1480	93	85-115	
Iron	ug/L	16000	15700	98	85-115	
Phosphorus	mg/L	16.0	15.2	95	85-115	
Strontium	mg/L	1.60	1.57	98	85-115	

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041425	Analysis Description: Lithium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T041425-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
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METHOD BLANK: T041425-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Lithium	mg/L	<0.025	0.025	

LABORATORY CONTROL SAMPLE: T041425-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Lithium	mg/L	1.60	1.62	102	85-115	

MATRIX SPIKE: T041425-MS1 Original: T13K101-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Unit	Notes
Lithium	mg/L	0.00942	1.60	1.78	111	70-130	

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041338	Analysis Description: Zinc, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.8 Rev. 5.4

METHOD BLANK: T041338-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	ug/L	<0.50	0.50	
Arsenic	ug/L	<1.0	1.0	
Barium	ug/L	<5.0	5.0	
Beryllium	ug/L	<1.0	1.0	
Cadmium	ug/L	<0.20	0.20	
Cobalt	ug/L	<2.0	2.0	
Chromium	ug/L	<10	10	
Copper	ug/L	<1.0	1.0	
Manganese	ug/L	<1.0	1.0	
Molybdenum	ug/L	<1.0	1.0	
Nickel	ug/L	<5.0	5.0	
Lead	ug/L	<1.0	1.0	
Antimony	ug/L	<1.0	1.0	
Selenium	ug/L	<1.0	1.0	
Thallium	ug/L	<1.0	1.0	
Zinc	ug/L	<10	10	

LABORATORY CONTROL SAMPLE: T041338-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	ug/L	50.0	52.2	124	85-115	112
Arsenic	ug/L	100	87.2	87	85-115	
Barium	ug/L	1600	1360	85	85-115	

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LABORATORY CONTROL SAMPLE: T041338-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Beryllium	ug/L	200	191	96	65-115	
Cadmium	ug/L	50.0	50.6	101	65-115	
Cobalt	ug/L	1600	1400	88	65-115	
Chromium	ug/L	50.0	<50	100	65-115	
Copper	ug/L	1600	1410	88	65-115	
Manganese	ug/L	1600	1490	93	65-115	
Molybdenum	ug/L	1600	1520	95	65-115	
Nickel	ug/L	1600	1400	88	65-115	
Lead	ug/L	100	88.7	89	65-115	
Antimony	ug/L	100	93.6	94	65-115	
Selenium	ug/L	100	103	103	65-115	
Thallium	ug/L	100	117	117	65-115	112
Zinc	ug/L	1600	1430	89	65-115	

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041380	Analysis Description: Cyanide, Total
QC Batch Method: ASTM D7511-09e2	Analysis Method: ASTM D7511-09e2

METHOD BLANK: T041380-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cyanide (total)	mg/L	<0.0050	0.0050	

LABORATORY CONTROL SAMPLE: T041380-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Cyanide (total)	mg/L	0.100	0.104	104	90-110	

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041259	Analysis Description: Sulfate
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T041259-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Fluoride	mg/L	<0.10	0.10	
Sulfate as SO4	mg/L	<1.0	1.0	

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LABORATORY CONTROL SAMPLE: T041259-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	0.500	0.507	101	90-110	
Sulfate as SO4	mg/L	2.50	2.68	107	90-110	

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041333	Analysis Description: Nitrogen, Ammonia
QC Batch Method: EPA 350.1 Rev. 2.0	Analysis Method: EPA 350.1 Rev. 2.0

METHOD BLANK: T041333-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Ammonia as N	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T041333-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Ammonia as N	mg/L	0.500	0.541	108	90-110	

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041286	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-97	Analysis Method: SM 2540 C-97

METHOD BLANK: T041286-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T041286-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	426	85	80-120	

Trace Project ID: T13K101
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041285	Analysis Description: Total Suspended Solids
QC Batch Method: SM 2540 D-97	Analysis Method: SM 2540 D-97

METHOD BLANK: T041285-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Suspended Solids	mg/L	<10	10	

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LABORATORY CONTROL SAMPLE: T041285-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Suspended Solids	mg/L	50.0	54.0	108	85-115	

Trace Project ID: T13K101
 Client Project ID: Humbolt M# 60305471

QC Batch: T041405	Analysis Description: pH, SM 4500
QC Batch Method: *** DEFAULT PREP ***	Analysis Method: SM 4500-H+ B-00

Trace Project ID: T13K101
 Client Project ID: Humbolt M# 60305471

QC Batch: T041286	Analysis Description: Dissolved Oxygen
QC Batch Method: SM 4500-O C-01	Analysis Method: SM 4500-O C-01

Trace Project ID: T13K101
 Client Project ID: Humbolt M# 60305471

QC Batch: T041366	Analysis Description: Total Phosphorus
QC Batch Method: SM 4500-P E	Analysis Method: SM 4500-P E

METHOD BLANK: T041366-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Phosphorus-Total (as P)	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T041366-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Phosphorus-Total (as P)	mg/L	0.100	0.0895	80	85-116	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T041366-MSD1 Original: T13K101-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Phosphorus-Total (as P)	mg/L	0	0.100	0.0967	0.100	97	100	84-112	3	7	

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Sample Identification / Request for Analytical Services						Report Results To:			
Client Name: RECOY			Contact Person: LANCE LINDBERG			Mailing Address: 1050 WILSON ST			
City, State, Zip Code: MARQUETTE MI 49854			Phone: 226-226-4986 Fax: 226-226-9371			Email Address: lance.lindberg@recoy.com			
Project Name: Humboldt Mill, POA			Project #: 6830771			Sampled by: [Signature]			
Reagent/Reagents: <input type="checkbox"/> Standard (2 wk) <input checked="" type="checkbox"/> 5 Day <input checked="" type="checkbox"/> 24 Day (RUSH) <input type="checkbox"/> 24 Hour (RUSH) <input type="checkbox"/> Request (per approval)			Matrix: <input type="checkbox"/> S - Soil <input type="checkbox"/> W - Water <input type="checkbox"/> LI - Liquid Waste <input type="checkbox"/> SE - Sediment <input type="checkbox"/> O - Oil <input type="checkbox"/> SD - Solid Waste <input type="checkbox"/> SI - Sludge			For Use by TRACE Personnel Only Logged By: JW Checked By: [Signature] Received on test: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Preservation Checked: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Soil Volatiles Preserved: <input type="checkbox"/> MOH <input type="checkbox"/> En Comp <input type="checkbox"/> Low Level <input type="checkbox"/> Lab			
ANALYSIS REQUESTED Total Solids Total Suspended Solids Total Dissolved Solids Total Phosphate Total Nitrogen DO / pH REMARKS Possible Health Hazard			CLIENT SAMPLE ID: EM-HMP-089 MATRIX: W NUMBER OF CONTAINERS: 6						
Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME
1	[Signature]	[Signature]	11/7/12	12:51	3)	[Signature]	[Signature]		
2)	[Signature]	[Signature]	11/7/12	12:51	4)	[Signature]	[Signature]		

In executing this agreement, the client acknowledges acceptance of the terms of the agreement as listed on the reverse side.

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SAMPLE LOG IN CHECKLIST

Trace ID #: T13K101 Date: 11/7/13 Package Description: COOL-ER
Client Name: A-12 COM Time: 12:51 Logged In by: JV

Cooler Receipt

Cooler/samples delivered by: Trace courier
Hand delivered Name of delivery person: _____
Commercial courier UPS FED EX US Mail
Tracking Number: Not Applicable
Tracking #: 12RA10340191787655
COC Seals present and intact on cooler? No Yes Not Applicable
Custody seals signed by Client? No Yes Client custody seal # (if applicable): _____

Coolant and Temperature

Type of Coolant Used
Slurry w/ crushed, cubed, or chip ice?
Multiple bags of ice around samples?
Ice Packs/ Blue Ice:
No Coolant Present:

Cooler Temperature
Correction Factor: IR Thermometer -0.2 °C
Digital Stick Thermometer 0.0 °C
Temperature Blank: 3.1 °C (Use Digital Stick Thermometer)
Range of 3 samples: 0.2-2.8 °C (Use IR Thermometer)
Melt Water: 0 °C (IR or Stick Therm. - pick one)
Ice still present upon receipt: Yes No

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
pH checked and samples at correct pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	See Below
Correct preservative added to samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Notes: _____

EMD pH Test Strips Used:
 pH 0-2.9 Lot: HC390427
 pH 11.0-13.0 Lot: HC049254
 Other: _____

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January 28, 2014

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333
Fax: (906) 226-8371

RE: Trace Project T14A091
Client Project Humbolt Mill / 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008 PADEP Accreditation No. 68-04471

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SAMPLE SUMMARY

Trace Project ID: T14A091
Client Project ID: Humbolt Mill / 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T14A091-01	EM-HMP-009	Aqueous	ajp	01/09/14 09:45	01/10/14 11:28

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

DATA QUALIFIERS

Trace ID: T042499-BS1

Analysis: EPA 200.8 Rev. 5.4

Cadmium	Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.
Thallium	Note 112 : The LCS recovery was out of control high. Because there were no positive results for this analyte in this QC batch, no data require qualification.

Trace ID: T042696-MS1

Analysis: SM 4500-P E

Phosphorus-Total (as P)	Note 230 : The MS and MSD were out of control high. Because there was no positive result in the non-spiked version of the sample, no data require qualification.
--------------------------------	--

Trace ID: T042696-MSD1

Analysis: SM 4500-P E

Phosphorus-Total (as P)	Note 230 : The MS and MSD were out of control high. Because there was no positive result in the non-spiked version of the sample, no data require qualification.
--------------------------------	--

Trace ID: T14A091-01

Analysis: SM 4500-H+ B-00

pH	Note 511 : The sample was received and, therefore, analyzed beyond the established EPA hold time. The result must be considered estimated.
pH	Note pH : The pH was analyzed at 11:34

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ANALYTICAL RESULTS

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

Trace ID: T14A091-01 Date Collected: 01/09/14 09:45 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 01/10/14 11:28

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED BY	ANALYZED BY	NOTES	MCL
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METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T042493

Mercury	1.4 ng/L	0.50	1	01/10/14	klm	01/15/14	klm
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Analysis Method: EPA 200.7 Rev. 4.4

Batch: T042499

Boron	83 ug/L	40	1	01/13/14	rlb	01/13/14	dtm
Lithium	<0.025 mg/L	0.025	1	01/13/14	rlb	01/13/14	dtm N
Strontium	0.22 mg/L	0.050	1	01/13/14	rlb	01/13/14	dtm

Analysis Method: EPA 200.8 Rev. 5.4

Batch: T042499

Antimony	5.7 ug/L	1.0	1	01/13/14	rlb	01/16/14	klm
Arsenic	<1.0 ug/L	1.0	1	01/13/14	rlb	01/16/14	klm
Barium	9.0 ug/L	5.0	1	01/13/14	rlb	01/16/14	klm
Beryllium	<1.0 ug/L	1.0	1	01/13/14	rlb	01/16/14	klm
Cadmium	<0.20 ug/L	0.20	1	01/13/14	rlb	01/16/14	klm
Chromium	<10 ug/L	10	1	01/13/14	rlb	01/16/14	klm
Cobalt	2.9 ug/L	2.0	1	01/13/14	rlb	01/16/14	klm
Copper	1.7 ug/L	1.0	1	01/13/14	rlb	01/16/14	klm
Lead	<1.0 ug/L	1.0	1	01/13/14	rlb	01/16/14	klm
Manganese	180 ug/L	1.0	1	01/13/14	rlb	01/16/14	klm
Molybdenum	11 ug/L	1.0	1	01/13/14	rlb	01/16/14	klm N
Nickel	14 ug/L	5.0	1	01/13/14	rlb	01/16/14	klm
Selenium	<1.0 ug/L	1.0	1	01/13/14	rlb	01/16/14	klm
Silver	<0.50 ug/L	0.50	1	01/13/14	rlb	01/16/14	klm
Thallium	<1.0 ug/L	1.0	1	01/13/14	rlb	01/16/14	klm
Zinc	<10 ug/L	10	1	01/13/14	rlb	01/16/14	klm

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ANALYTICAL RESULTS

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

Trace ID: T14A091-01 Date Collected: 01/09/14 09:45 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 01/10/14 11:28

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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WET CHEMISTRY

Analysis Method: ASTM D7511-09e2

Batch: T042568

Cyanide (total)	<0.0050 mg/L	0.0050	1	01/15/14	sv	01/15/14	sv		
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Analysis Method: EPA 300.0 Rev. 2.1

Batch: T042515

Fluoride	0.25 mg/L	0.10	5	01/13/14	sv	01/14/14	sv		
Sulfate as SO4	140 mg/L	5.0	10	01/13/14	sv	01/14/14	sv		

Analysis Method: EPA 350.1 Rev. 2.0

Batch: T042534

Ammonia as N	<0.010 mg/L	0.010	1	01/14/14	as	01/17/14	as		
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Analysis Method: SM 2540 C-97

Batch: T042511

Total Dissolved Solids	360 mg/L	10	1	01/13/14	sv	01/13/14	sv		
------------------------	----------	----	---	----------	----	----------	----	--	--

Analysis Method: SM 2540 D-97

Batch: T042500

Total Suspended Solids	<10 mg/L	10	1	01/13/14	sv	01/13/14	sv		
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Analysis Method: SM 4500-H+ B-00

Batch: T042554

pH	7.73 pH Units		1	01/10/14	jrw	01/10/14	jrw	511, pH	
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Analysis Method: SM 4500-O C-01

Batch: T042494

Dissolved Oxygen	14 mg/L	0.080	1	01/10/14	sv	01/10/14	sv	N	
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Analysis Method: SM 4500-PE

Batch: T042696

Phosphorus-Total (as P)	<0.010 mg/L	0.010	1	01/21/14	sv	01/22/14	sv	N	
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QUALITY CONTROL RESULTS

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042493	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T042493-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.50	0.50	

LABORATORY CONTROL SAMPLE: T042493-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	23.9	96	77-123	

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042499	Analysis Description: Strontium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T042499-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	ug/L	<40	40	
Lithium	mg/L	<0.025	0.025	
Strontium	mg/L	<0.050	0.050	

LABORATORY CONTROL SAMPLE: T042499-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	ug/L	1600	1490	93	85-115	
Strontium	mg/L	1.80	1.64	102	85-115	

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042499	Analysis Description: Beryllium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.8 Rev. 5.4

METHOD BLANK: T042499-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Silver	ug/L	<0.50	0.50	
Arsenic	ug/L	<1.0	1.0	
Barium	ug/L	<5.0	5.0	

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METHOD BLANK: T042499-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Beryllium	ug/L	<1.0	1.0	
Cadmium	ug/L	<0.20	0.20	
Cobalt	ug/L	<2.0	2.0	
Chromium	ug/L	<10	10	
Copper	ug/L	<1.0	1.0	
Manganese	ug/L	<1.0	1.0	
Molybdenum	ug/L	<1.0	1.0	
Nickel	ug/L	<5.0	5.0	
Lead	ug/L	<1.0	1.0	
Antimony	ug/L	<1.0	1.0	
Selenium	ug/L	<1.0	1.0	
Thallium	ug/L	<1.0	1.0	
Zinc	ug/L	<10	10	

LABORATORY CONTROL SAMPLE: T042499-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Silver	ug/L	20.0	21.3	106	85-115	
Arsenic	ug/L	100	108	108	85-115	
Barium	ug/L	1600	1790	112	85-115	
Beryllium	ug/L	200	218	109	85-115	
Cadmium	ug/L	50.0	57.8	116	85-115	112
Cobalt	ug/L	1600	1790	112	85-115	
Chromium	ug/L	50.0	56.0	112	85-115	
Copper	ug/L	1600	1800	113	85-115	
Manganese	ug/L	1600	1770	111	85-115	
Molybdenum	ug/L	1600	1760	110	85-115	
Nickel	ug/L	1600	1820	114	85-115	
Lead	ug/L	100	113	113	85-115	
Antimony	ug/L	100	114	114	85-115	
Selenium	ug/L	100	111	111	85-115	
Thallium	ug/L	100	116	116	85-115	112
Zinc	ug/L	1600	1790	112	85-115	

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042568	Analysis Description: Cyanide, Total
QC Batch Method: ASTM D7511-09e2	Analysis Method: ASTM D7511-09e2

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METHOD BLANK: T042568-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cyanide (total)	mg/L	<0.0050	0.0050	

LABORATORY CONTROL SAMPLE: T042568-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Cyanide (total)	mg/L	0.100	0.0979	98	90-110	

SAMPLE DUPLICATE: T042568-DUP1 Original: T14A091-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Cyanide (total)	mg/L	0.00401	0.00459	13	200	

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042515	Analysis Description: Fluoride
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T042515-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Fluoride	mg/L	<0.10	0.10	

LABORATORY CONTROL SAMPLE: T042515-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	0.500	0.491	98	90-110	

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042521	Analysis Description: Sulfate
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T042521-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Sulfate as SO4	mg/L	<1.0	1.0	

LABORATORY CONTROL SAMPLE: T042521-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Sulfate as SO4	mg/L	2.50	2.69	108	90-110	

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Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042534	Analysis Description: Nitrogen, Ammonia
QC Batch Method: EPA 350.1 Rev. 2.0	Analysis Method: EPA 350.1 Rev. 2.0

METHOD BLANK: T042534-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Ammonia as N	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T042534-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Ammonia as N	mg/L	0.500	0.457	91	90-110	

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042511	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-97	Analysis Method: SM 2540 C-97

METHOD BLANK: T042511-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T042511-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	508	102	80-120	

SAMPLE DUPLICATE: T042511-DUP1 Original: T14A091-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Dissolved Solids	mg/L	358	354	1	10	

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042500	Analysis Description: Total Suspended Solids
QC Batch Method: SM 2540 D-97	Analysis Method: SM 2540 D-97

METHOD BLANK: T042500-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Suspended Solids	mg/L	<10	10	

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LABORATORY CONTROL SAMPLE: T042500-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Suspended Solids	mg/L	50.0	46.0	92	85-115	

SAMPLE DUPLICATE: T042500-DUP1 Original: T14A091-01

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Notes
Total Suspended Solids	mg/L	0.00	<10		10	

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042554	Analysis Description: pH, SM 4500
QC Batch Method: *** DEFAULT PREP ***	Analysis Method: SM 4500-H+ B-00

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042494	Analysis Description: Dissolved Oxygen
QC Batch Method: SM 4500-O C-01	Analysis Method: SM 4500-O C-01

Trace Project ID: T14A091
 Client Project ID: Humbolt Mill / 60305471

QC Batch: T042696	Analysis Description: Total Phosphorus
QC Batch Method: SM 4500-P E	Analysis Method: SM 4500-P E

METHOD BLANK: T042696-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Phosphorus-Total (as P)	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T042696-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Phosphorus-Total (as P)	mg/L	0.100	0.0952	95	85-116	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T042696-MSD1 Original: T14A091-01

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Phosphorus-Total (as P)	mg/L	0	0.100	0.131	0.125	131	125	84-112	4	7	230

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Client Name: <u>AELCOM</u> Contact Person: <u>Lance Lindberg</u> Mailing Address: <u>1057 Wilson St.</u> City, State, Zip Code: <u>Marquette, MI 49854</u> Phone: <u>906.226.4680</u> Fax: <u>906.226.8571</u> Email Address: <u>lance.lindberg@aecom.com</u> Col #: _____ Sampled by: <u>ATD</u> Project Name & #: <u>Urethane Mill / 6030547</u>		Request for Analytical Services TRACE NO.: _____ DATE TAKEN: _____ TIME TAKEN: _____ VEGETABLE OIL FATS: _____ CLIENT SAMPLE ID: _____ DATE: _____ NO. OF SAMPLES: _____ NO. OF CONTAINERS: _____																															
Bill To: Billing Address (if different): _____ City, State, Zip Code: _____ Phone: _____ PO #: _____		Report Results To: Request: <input type="checkbox"/> Microbiology <input type="checkbox"/> MEVA TMD's <input type="checkbox"/> Drinking Water <input type="checkbox"/> NPDES <input type="checkbox"/> USACE <input type="checkbox"/> Spillies Turnaround Requirements: <input type="checkbox"/> Standard <input type="checkbox"/> 3-4 Day (RUSH)* <input type="checkbox"/> 24-48 Hour (RUSH)* <input type="checkbox"/> * Requires prior approval Matrix Key: S = Soil W = Water SE = Sediment OI = Oil SO = Solid Waste WI = Wipes LW = Liquid Waste A = Air D = Drinking Water SL = Sludge ANALYSIS REQUESTED																															
TRACE USE ONLY Logged By: <u>PMCD</u> Checked By: <u>ATD</u> Received on location: <input checked="" type="radio"/> Yes <input type="radio"/> No Preservative Checked: <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A Soil Volatiles Preserved: <input type="checkbox"/> MACH <input type="checkbox"/> Low Level <input type="checkbox"/> Lab Sampling Time: _____		REMARKS: <u>Total PCBs by EPA 8160</u> <u>4/24/14 E. P. Lindberg</u> <u>4/24/14 S. Lindberg</u> <u>Total Asbestos</u> <u>Total Lead</u> <u>Total Lead in</u> <u>LAB SUBJECTS</u> <u>Total PCBs</u> <u>Asbestos in Soil</u> <u>NO to pH</u> Possible Health Hazard																															
Please Sign <table border="1"> <thead> <tr> <th>Item #</th> <th>RELEASED BY</th> <th>RECEIVED BY</th> <th>DATE</th> <th>TIME</th> <th>Item #</th> <th>RELEASED BY</th> <th>RECEIVED BY</th> <th>DATE</th> <th>TIME</th> </tr> </thead> <tbody> <tr> <td>1)</td> <td><u>[Signature]</u></td> <td><u>UPS</u></td> <td><u>1-9-14</u></td> <td><u>1700</u></td> <td>3)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2)</td> <td><u>[Signature]</u></td> <td><u>PMCD</u></td> <td><u>1/10/14</u></td> <td><u>1128</u></td> <td>4)</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME	1)	<u>[Signature]</u>	<u>UPS</u>	<u>1-9-14</u>	<u>1700</u>	3)					2)	<u>[Signature]</u>	<u>PMCD</u>	<u>1/10/14</u>	<u>1128</u>	4)						
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In executing this Chain of Custody, the client acknowledges acceptance of the terms and conditions of the agreement as set forth at <http://www.trace-labs.com/ocforms.php>

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SAMPLE LOG IN CHECKLIST

Trace ID #: T14A091 Date: 11/01/14 Package Description: Cooler
Client Name: AECOM Time: 11:28 Logged in by: PBML

Cooler Receipt

Cooler/samples delivered by: Trace courier
Hand delivered Name of delivery person: _____
Commercial courier UPS FED EX US Mail
Tracking Number: Not Applicable
Tracking #: 1ZRH034019712007
COC Seals present and intact on cooler? No Not Applicable
Yes
Custody seals signed by Client? No Client custody seal # (if applicable): _____
Yes

Coolant and Temperature

Type of Coolant Used
Sturdy w/ crushed, cubed, or chip ice?
Multiple bags of ice around samples?
Ice Packs/ Blue Ice:
No Coolant Present:
Cooler Temperature
Correction Factor: IR Thermometer 102 °C
Digital Stick Thermometer -0.1 °C
Temperature Blank: NONE °C (Use Digital Stick Thermometer)
Range of 3 samples: 12 °C (Use IR Thermometer)
Melt Water: _____ °C (IR or Stick Therm. - circle one)
Ice still present upon receipt: Yes No

General

	Yes	No	NA	Comments
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
pH checked and samples at correct pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Below*
Correct preservative added to samples?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Notes: _____

*EMD pH Test Strips Used:
 pH 0-2.5 Lot: 1HC376384 pH 11.0-13.0 Lot: HC949264
 Other: _____

Form 70-A.10
Effective 8/26/13

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January 28, 2014

Mr. Lance Lindberg
AECOM
1050 Wilson
Marquette, MI 49855

Phone: (906) 228-2333
Fax: (906) 226-8371

RE: Trace Project T13L155
Client Project Humbolt Mill 60305471

Dear Mr. Lindberg:

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAC Accreditation, Trace certifies that these test results meet all requirements of the NELAC Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAC at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at jmink@trace-labs.com.

Sincerely,

Jon Mink
Senior Project Manager

Enclosures



NJDEP Accreditation No. MI008 PADEP Accreditation No. 68-04471

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SAMPLE SUMMARY

Trace Project ID: T13L155
Client Project ID: Humbolt Mill 60305471

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13L155-01	EM-HMP-009	Aqueous	ajp	12/09/13 10:30	12/10/13 12:38

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AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the compound has not been evaluated by NELAC
NA	Indicates that the compound is not available.

DATA QUALIFIERS

Trace ID: T13L155-01

Analysis: SM 4500-H+ B-00

pH	Note 511 : The sample was received and, therefore, analyzed beyond the established EPA hold time. The result must be considered estimated.
pH	Note pH : The pH was analyzed at 12:55

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ANALYTICAL RESULTS

Trace Project ID: T13L155
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13L155-01 Date Collected: 12/09/13 10:30 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 12/10/13 12:38

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED BY	ANALYZED BY	NOTES	MCL
------------	---------------	-----	----------	-------------	-------------	-------	-----

METALS, TOTAL

Analysis Method: EPA 1631E

Batch: T041879

Mercury	<0.50 ng/L	0.50	1	12/10/13	klm	12/11/13	klm
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Analysis Method: EPA 200.7 Rev. 4.4

Batch: T042013

Boron	120 ug/L	40	1	12/12/13	rlb	12/13/13	dtm
Lithium	<0.010 mg/L	0.010	1	12/12/13	rlb	12/13/13	dtm N
Strontium	0.28 mg/L	0.042	1	12/12/13	rlb	12/13/13	dtm

Analysis Method: EPA 200.8 Rev. 5.4

Batch: T042013

Antimony	5.4 ug/L	0.20	1	12/12/13	rlb	01/02/14	klm
Arsenic	<1.0 ug/L	1.0	1	12/12/13	rlb	01/02/14	klm
Barium	10 ug/L	0.60	1	12/12/13	rlb	01/02/14	klm
Beryllium	<1.0 ug/L	1.0	5	12/12/13	rlb	01/16/14	rw
Cadmium	<0.040 ug/L	0.040	1	12/12/13	rlb	01/02/14	klm
Chromium	<0.80 ug/L	0.80	1	12/12/13	rlb	01/02/14	klm
Cobalt	2.3 ug/L	1.6	1	12/12/13	rlb	01/02/14	klm
Copper	<0.80 ug/L	0.80	1	12/12/13	rlb	01/02/14	klm
Lead	<0.40 ug/L	0.40	1	12/12/13	rlb	01/02/14	klm
Manganese	230 ug/L	0.40	1	12/12/13	rlb	01/02/14	klm
Molybdenum	12 ug/L	0.40	1	12/12/13	rlb	01/02/14	klm N
Nickel	16 ug/L	0.40	1	12/12/13	rlb	01/02/14	klm
Selenium	<1.0 ug/L	1.0	1	12/12/13	rlb	01/02/14	klm
Thallium	<0.040 ug/L	0.040	1	12/12/13	rlb	01/02/14	klm
Zinc	<20 ug/L	20	5	12/12/13	rlb	01/10/14	rw

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ANALYTICAL RESULTS

Trace Project ID: T13L155
 Client Project ID: Humbolt Mill 60305471

Trace ID: T13L155-01 Date Collected: 12/09/13 10:30 Matrix: Aqueous
 Sample ID: EM-HMP-009 Date Received: 12/10/13 12:38

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
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WET CHEMISTRY

Analysis Method: ASTM D7511-09e2

Batch: T041990

Cyanide (total)	<0.0050 mg/L	0.0050	1	12/11/13	sv	12/11/13	sv		
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Analysis Method: EPA 300.0 Rev. 2.1

Batch: T041987

Fluoride	0.27 mg/L	0.10	5	12/11/13	sv	12/11/13	rbp		
Sulfate as SO4	130 mg/L	5.0	10	12/11/13	sv	12/11/13	rbp		

Analysis Method: EPA 350.1 Rev. 2.0

Batch: T042046

Ammonia as N	<0.010 mg/L	0.010	1	12/13/13	sv	12/13/13	as		
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Analysis Method: SM 2540 C-97

Batch: T041961

Total Dissolved Solids	310 mg/L	10	1	12/10/13	sv	12/10/13	sv		
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Analysis Method: SM 2540 D-97

Batch: T041958

Total Suspended Solids	<10 mg/L	10	1	12/10/13	sv	12/11/13	sv		
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Analysis Method: SM 4500-H+ B-00

Batch: T041984

pH	7.56 pH Units		1	12/10/13	jrw	12/10/13	jrw	511, pH	
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Analysis Method: SM 4500-O C-01

Batch: T041953

Dissolved Oxygen	13 mg/L	0.080	1	12/10/13	sv	12/10/13	sv	N	
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Analysis Method: SM 4500-P E

Batch: T042050

Phosphorus-Total (as P)	<0.010 mg/L	0.010	1	12/13/13	sv	12/16/13	rbp	N	
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QUALITY CONTROL RESULTS

Trace Project ID: T13L155
Client Project ID: Humbolt Mill 60305471

QC Batch: T041879	Analysis Description: Mercury, Total, Low Level
QC Batch Method: EPA 1631E	Analysis Method: EPA 1631E

METHOD BLANK: T041879-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Mercury	ng/L	<0.50	0.50	

LABORATORY CONTROL SAMPLE: T041879-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Mercury	ng/L	25.0	26.6	106	77-123	

Trace Project ID: T13L155
Client Project ID: Humbolt Mill 60305471

QC Batch: T042013	Analysis Description: Strontium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.7 Rev. 4.4

METHOD BLANK: T042013-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Boron	ug/L	<40	40	
Lithium	mg/L	<0.010	0.010	
Strontium	mg/L	<0.042	0.042	

LABORATORY CONTROL SAMPLE: T042013-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Boron	ug/L	1600	1640	103	85-115	
Strontium	mg/L	1.60	1.65	103	85-115	

Trace Project ID: T13L155
Client Project ID: Humbolt Mill 60305471

QC Batch: T042013	Analysis Description: Cadmium, Total
QC Batch Method: EPA 200.2	Analysis Method: EPA 200.8 Rev. 5.4

METHOD BLANK: T042013-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Arsenic	ug/L	<1.0	1.0	
Barium	ug/L	<5.0	5.0	
Beryllium	ug/L	<1.0	1.0	

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METHOD BLANK: T042013-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cadmium	ug/L	<0.20	0.20	
Cobalt	ug/L	<2.0	2.0	
Chromium	ug/L	<10	10	
Copper	ug/L	<1.0	1.0	
Manganese	ug/L	<1.0	1.0	
Molybdenum	ug/L	<1.0	1.0	
Nickel	ug/L	<5.0	5.0	
Lead	ug/L	<0.40	0.40	
Antimony	ug/L	<1.0	1.0	
Selenium	ug/L	<1.0	1.0	
Thallium	ug/L	<1.0	1.0	
Zinc	ug/L	28.4	20	

LABORATORY CONTROL SAMPLE: T042013-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Arsenic	ug/L	100	109	109	85-115	
Barium	ug/L	1600	1780	111	85-115	
Beryllium	ug/L	200	196	98	85-115	
Cadmium	ug/L	50.0	56.7	113	85-115	
Cobalt	ug/L	1600	1730	108	85-115	
Chromium	ug/L	50.0	54.8	110	85-115	
Copper	ug/L	1600	1750	109	85-115	
Manganese	ug/L	1600	1550	97	85-115	
Molybdenum	ug/L	1600	1750	109	85-115	
Nickel	ug/L	1600	1750	109	85-115	
Lead	ug/L	100	110	110	85-115	
Antimony	ug/L	100	112	112	85-115	
Selenium	ug/L	100	101	101	85-115	
Thallium	ug/L	100	93.4	93	85-115	
Zinc	ug/L	1600	1480	92	85-115	

Trace Project ID: T13L155

Client Project ID: Humbolt Mill 60305471

QC Batch: T041990

Analysis Description: Cyanide, Total

QC Batch Method: ASTM D7511-09e2

Analysis Method: ASTM D7511-09e2

METHOD BLANK: T041990-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Cyanide (total)	mg/L	<0.0050	0.0050	

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LABORATORY CONTROL SAMPLE: T041990-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Cyanide (total)	mg/L	0.250	0.234	93	90-110	

MATRIX SPIKE / MATRIX SPIKE DUPLICATE: T041990-MSD1 Original: **T13L155-01**

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Notes
Cyanide (total)	mg/L	0.00467	0.100	0.105	0.106	101	102	81-114	1	20	

Trace Project ID: T13L155
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041987	Analysis Description: Fluoride
QC Batch Method: IC Prep W	Analysis Method: EPA 300.0 Rev. 2.1

METHOD BLANK: T041987-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Sulfate as SO4	mg/L	<1.0	1.0	

LABORATORY CONTROL SAMPLE: T041987-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Fluoride	mg/L	0.500	0.465	93	90-110	
Sulfate as SO4	mg/L	2.50	2.28	91	90-110	

Trace Project ID: T13L155
 Client Project ID: Humbolt Mill 60305471

QC Batch: T042046	Analysis Description: Nitrogen, Ammonia
QC Batch Method: EPA 350.1 Rev. 2.0	Analysis Method: EPA 350.1 Rev. 2.0

METHOD BLANK: T042046-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Ammonia as N	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T042046-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Ammonia as N	mg/L	0.500	0.526	105	90-110	

Trace Project ID: T13L155
 Client Project ID: Humbolt Mill 60305471

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QC Batch: T041961	Analysis Description: Total Dissolved Solids
QC Batch Method: SM 2540 C-97	Analysis Method: SM 2540 C-97

METHOD BLANK: T041961-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Dissolved Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T041961-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Dissolved Solids	mg/L	500	510	102	80-120	

Trace Project ID: T13L155
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041958	Analysis Description: Total Suspended Solids
QC Batch Method: SM 2540 D-97	Analysis Method: SM 2540 D-97

METHOD BLANK: T041958-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Total Suspended Solids	mg/L	<10	10	

LABORATORY CONTROL SAMPLE: T041958-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Total Suspended Solids	mg/L	50.0	48.0	96	85-115	

Trace Project ID: T13L155
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041984	Analysis Description: pH, SM 4500
QC Batch Method: *** DEFAULT PREP ***	Analysis Method: SM 4500-H+ B-00

Trace Project ID: T13L155
 Client Project ID: Humbolt Mill 60305471

QC Batch: T041953	Analysis Description: Dissolved Oxygen
QC Batch Method: SM 4500-O C-01	Analysis Method: SM 4500-O C-01

Trace Project ID: T13L155
 Client Project ID: Humbolt Mill 60305471

QC Batch: T042050	Analysis Description: Total Phosphorus
QC Batch Method: SM 4500-P E	Analysis Method: SM 4500-P E

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METHOD BLANK: T042050-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Phosphorus-Total (as P)	mg/L	<0.010	0.010	

LABORATORY CONTROL SAMPLE: T042050-BS1

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Phosphorus-Total (as P)	mg/L	0.100	0.0946	95	85-116	

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CHAIN-OF-CUSTODY RECORD

Page 1 of 1

TRACE ID NO.
T13L155

Request for Analytical Services				Bill To:		Report Results To:					
Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Client Name: <u>AECOM</u> Contact Person: <u>Lance Lindberg</u> Mailing Address: <u>1050 Wilson St.</u> City, State, Zip Code: <u>Muskegon, MI 49555</u> Phone: <u>906.226.4980</u> Fax: <u>906.226.8371</u> Email Address: <u>lance.lindberg@aecom.com</u> Cell #: _____ Project Name & #: <u>Humboldt Mill / 6230571</u> Billing Address (if different): <u>Same</u> City, State, Zip Code: _____ Amt: _____ Phone: _____ PO #: _____	
TRACE NO.	DATE TAKEN	TIME TAKEN	VETALS FIELD PLATED	CLIENT SAMPLE ID	MATRIX	NUMBER OF CONTAINERS	ANALYSIS REQUESTED <input type="checkbox"/> MEPA TRAD's <input type="checkbox"/> Drinking Water <input type="checkbox"/> NPDES <input type="checkbox"/> USACE <input type="checkbox"/> Special <input type="checkbox"/> Inorganic Bioassays <input type="checkbox"/> Samsun <input checked="" type="checkbox"/> 2-4 Day (RUSH)* <input type="checkbox"/> 24-48 Hour (RUSH)* * Requires prior approval Matrix Key: S - Soil W - Water SE - Sediment CI - Oil SO - Solid Waste SL - Sludge WL - Wipes LW - Liquid Waste A - Air D - Drinking Water SL - Sludge				
12-9-13	1030	W		EM-HMD-009	WC	1	Total Solids Total Hardness Total Ammonia Total Nitrate Total Nitrite Total Chloride Total Sulfate TDS & TSS Total Phosphorus Ammonia Nitrogen (NH3)				
2)	<u>UPS</u>	<u>UPS</u>	12/9/13	1700		3)	RECEIVED BY: _____ DATE: 12/10/13 TIME: 12:38				

In executing this Chain of Custody, the client acknowledges acceptance of the terms and conditions of the agreement as set forth at <http://www.trace-labs.com/coc/terms.php>

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SAMPLE LOG IN CHECKLIST

Trace ID #: T13L155 Date: 12/10/13 Package Description: COOLER
Client Name: ARECOM Time: 12:38 Logged in by: JW

Cooler Receipt

Cooler/samples delivered by: Trace courier
Hand delivered Name of delivery person: _____
Commercial courier UPS FED EX US Mail

Tracking Number: Not Applicable
Tracking #: 1Z RA10340196623803

COC Seals present and intact on cooler? No Not Applicable
Yes

Custody seals signed by Client? No Client custody seal # (if applicable): _____
Yes

Coolant and Temperature

Type of Coolant Used

Sturry w/ crushed, cubed, or chip ice?
Multiple bags of ice around samples?
Ice Packs/ Blue Ice:
No Coolant Present:

Cooler Temperature

Correction Factor: IR Thermometer -0.2 °C
Digital Stick Thermometer 0.0 °C
Temperature Blank: 3.0 °C (Use Digital Stick Thermometer)
Range of 3 samples: 1.0-3.0 °C (Use IR Thermometer)
Melt Water: 0 °C (IR or Stick Therm. - circle one)
Ice still present upon receipt: Yes No

	General			Comments
	Yes	No	NA	
All bottles arrived unbroken with labels in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Each sample point is in a sealed plastic bag?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Labels filled out completely?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All bottle labels agree with Chain of Custody (COC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sufficient sample to run tests requested?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
pH checked and samples at correct pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See Below*
Correct preservative added to samples?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Air bubbles absent from VOAs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
COC filled out properly and signed by client?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
COC signed in by TRACE sample custodian?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was project manager called and samples discussed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Notes:

***EMD pH Test Strips Used:**

pH 0-2.5 Lot: HC376384 pH 11.0-13.0 Lot: HC949254
 Other: METRA

Form 70-A.10
Effective 8/26/13

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