

November 25, 2013

Heather Hopkins  
Department of Environmental Quality – Unit 10  
350 Ottawa Avenue, NW  
Grand Rapids, Michigan 49503-2341



Re: *Alternate Monitoring Point Sampling Results  
Melching, Inc (Former Sappi Fine Paper), Muskegon, Michigan  
Facility ID No. 61000359*

Ms. Hopkins:

Lakeshore Environmental, Inc. (LEI) has prepared this documentation to provide the results of the 2013 sampling of alternate monitoring points (AMPs) in accordance with the November 21, 2012 "Notice of Alternate Monitoring Points." Melching was provided approval of the notice from the DEQ on November 29, 2012.

### **SAMPLING LOCATIONS**

Two (2) AMP's and four (4) near-GSI monitoring wells (sentinel monitoring points) were sampled semi-annually in accordance with the approved methodology. Figure 1 (Attachment A) illustrates the location of each sampling point and provides a summary of the sampling data.

### **RESULTS**

#### **Alternate Monitoring Points**

Melching collected AMP samples on June 3, 2013 and October 11, 2013. Each sampling event consisted of two (2) separate sample locations directly off-shore of the LMW-4 (near GSI) wells. The first sample was collected at a depth of 25 feet, followed by a sample collected at 35 feet in depth. Samples were collected by lowering a horizontal water sampler until it rested on the bottom of the lake at the specified depth. The bottle was allowed to stabilize in the sediment for a few minutes, then the bottle was closed with the messenger and the sample was raised to the surface. At the surface, the sample was transferred to the appropriate sample bottles and submitted to the laboratory. A portion of the sample was utilized to immediately measure temperature, specific conductance, pH, ORP, dissolved oxygen and turbidity. Samples were submitted to the laboratory and analyzed for total arsenic and chromium.

The laboratory analytical results of the AMP samples reported no parameters above the laboratory detection limit for both semi-annual sampling events. The field parameters also reported good results. When compared to the data from the AMP samples from September 26, 2012, there are no significant differences with the exception of specific conductivity. The specific conductivity of the two sample locations dropped from an average of 322 uS/cm on September 26, 2012 to 264 uS/cm on June 3, 2013. The average specific conductivity then rose back up to 337 uS/cm on October 11, 2013. This drop is believed to be the result of increased rainfall (more dilution) during the first half of 2013. In comparison, the January through June rainfall in 2012 was 15.8 inches, whereas the January through June rainfall in 2013 was 27.0 inches. The rainfall for the remainder of 2013 has been low. A summary of the AMP data is provided in Table 1 (Attachment B). The laboratory data is provided in Attachment C.



**Western Michigan Office (Main):**  
803 VerHoeks Street  
Grand Haven, Michigan 49417  
P: 616-844-5050 F: 616-844-5053  
[www.LakeshoreEnvironmental.com](http://www.LakeshoreEnvironmental.com)

Grand Haven, MI

Grand Rapids, MI

Muskegon, MI

### **Sentinel Monitoring Points**

In accordance with the approved plan, Melching sampled the existing near-GSI wells at the LMW-4i2, LMW-4d, LMW-8d, and LMW-9d locations as sentinel monitoring points. The wells were sampled on June 4, 2013 and October 11, 2013. A summary of the sampling results is provided in Table 2.

LMW-4i2 and LMW-4d exceeded the relevant Cleanup Criteria for arsenic and pH. Previously, LMW-4d also exceeded the criteria for chromium, but dropped to below the criteria in the recent sampling events. Data from LMW-8d and LMW-9d verifies that groundwater over the criteria has not migrated laterally.

### **Groundwater Flow and Water Elevations**

The horizontal component of groundwater flow is north to Muskegon Lake and the vertical component is upward (discharge). This is consistent with previous measurements at the site. Groundwater elevations have increased approximately 0.5 feet from 2012. Groundwater elevation contours for June 3, 2013 are illustrated in Figure 1.

The water elevation of Muskegon Lake is approximately 0.5 feet higher than water levels measured in 2012. The water elevations in the stormwater retention basin change daily based on rainfall and evaporation, however, in general are over 1.0 feet higher than in 2012. A summary of water elevation data is provided in Table 3.

### **CONCLUSION**

The results of the 2013 semi-annual sampling of AMPs and sentinel monitoring points verifies there is no measureable impact to Muskegon Lake from groundwater conditions at Melching. Sentinel monitoring points report a reduction in specific conductance, arsenic, and chromium. These points also verify that the narrow area of groundwater (on-site) that is above criteria for pH, arsenic, and chromium is not increasing in width.

LEI originally concluded that increased precipitation in the first half of 2013 (42 % more than 2012) resulted in increased dilution of the site groundwater and a corresponding reduction in parameters of concern. However, the sampling in October 2013 followed normal precipitation patterns and still yielded a continued reduction in specific conductance, arsenic, and chromium. As a result, LEI concludes that the site groundwater is continuing to improve, regardless of precipitation and seasonal fluctuations. LEI also concludes that the sampling points verify compliance with applicable criteria and relocation of the sampling points is not required.

Please contact me with questions or comments.  
Lakeshore Environmental, Inc.



Kurt C. Koella  
Senior Hydrogeologist

(10-399/MVH)  
Attachments

Cc: Ken Callow – Melching, Inc.  
Matt VanHoef – Scholten Fant  
File



**Attachment A**

**Figure 1**

MUSKEGON LAKE  
ELEV. 578.6 (06/03/13)

AMP-25			
	6/03/13	10/11/13	CRITERIA
ARSENIC	ND	ND	0.01
CHROMIUM	ND	ND	0.1
pH	8.47	7.82	6.5 - 9.0

AMP-35			
	6/03/13	10/11/13	CRITERIA
ARSENIC	ND	ND	0.01
CHROMIUM	ND	ND	0.1
pH	8.20	7.48	6.5 - 9.0

LMW-9d			
	6/04/13	10/11/13	CRITERIA
ARSENIC	ND	ND	0.01
CHROMIUM	ND	ND	0.1
pH	7.33	6.94	6.5 - 9.0

LMW-8D			
	6/04/13	10/11/13	CRITERIA
ARSENIC	ND	ND	0.01
CHROMIUM	ND	ND	0.1
pH	7.57	7.59	6.5 - 9.0

LMW-8d  
578.53

LMW-9d  
578.82

LMW-4d  
578.71

LMW-4i2  
578.65

LMW-4D			
	6/03/13	10/11/13	CRITERIA
ARSENIC	0.13	0.092	0.01
CHROMIUM	0.099	0.071	0.1
pH	10.58	10.75	6.5 - 9.0

LMW-4i2			
	6/03/13	10/11/13	CRITERIA
ARSENIC	0.012	0.012	0.01
CHROMIUM	0.053	0.058	0.1
pH	10.11	10.02	6.5 - 9.0

STORMWATER  
RETENTION POND  
ELEV. 581.61

579

580

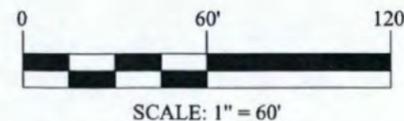
581

LEGEND

- AMP ALTERNATE MONITORING POINT SAMPLE LOCATION 06-03-2013 and 10-11-2013
- LMW GROUNDWATER SAMPLE LOCATION 6-03-2013 and 10-11-2013

- GROUNDWATER ELEVATION CONTOUR
- PROPERTY BOUNDARY
- SHORELINE

- BOLD PARAMETERS EXCEED APPLICABLE CRITERIA
- ARSENIC AND CHROMIUM RESULTS IN mg/L (MILLIGRAMS PER LITER)
- pH RESULTS IN s.u. (STANDARD UNITS)
- ND - NOT DETECTED



**Lakeshore**  
Environmental, Inc.  
Scientists | Engineers | Planners

WATER SAMPLE ANALYTICAL MAP		
2400 LAKESHORE DRIVE MUSKEGON, MICHIGAN		
JOB # 10-339-01	11/22/2013	FIGURE 1

## **Attachment B**

### **Tables**

Table 1  
AMP Analytical Data  
Melching, Inc.

Constituent	Non Residential Cleanup Criteria		AMP- 25' 6/3/2013	AMP- 25' 10/11/13	AMP- 35' 6/3/2013	AMP- 35' 10/11/2013
	Groundwater Surface Water Interface Criteria & RSBLs	Groundwater Contact Criteria &RSBLs				
<b>Field Parameters</b>						
pH	6.5 to 9.0	ID	8.47	7.82	8.20	7.48
Conductivity (uS/cm)	NC	NC	269	336	258.3	337
ORP (mV)	NC	NA	108	44	54	24
Dissolved Oxygen (mg/L)	5	NA	8.07	8.38	8.4	8.27
Turbidity (NTU)	NC	NA	NM	3.49	NM	2.79
Temperature (degrees C)	NA	NA	18.7	18.8	18.7	18.2
<b>Metals (mg/L)</b>						
Arsenic	0.01	4,300	ND	ND	ND	ND
Chromium	0.1	2.90E+08	ND	ND	ND	ND

**No Samples Exceed the Criteria**

ND - Not Detected

NA- Criterion or value is not available

NC - No Criteria Developed

(Revised 11/19/2013)

NM - Not Measured

Table 2  
Sentinel Monitoring Point (Near GSI Well) Sampling Data  
Melching, Inc.

Constituent	Non Residential Cleanup Criteria		LMW-4i2				LMW- 4d			
	Groundwater Surface Water Interface Criteria & RSBLs	Groundwater Contact Criteria &RSBLs	7/31/2012	8/27/2012	6/3/2013	10/11/2013	7/31/2012	8/27/2012	6/3/2013	10/11/2013
<b>Field Parameters</b>										
pH	6.5 to 9.0	ID	9.68	9.62	10.11	10.02	10.39	10.26	10.58	10.75
Conductivity (uS/cm)	NC	NC	2521	2566	1883	1889	3740	3790	3490	3300
ORP (mV)	NA	NA	-292	-381	-371	-362	-261	-432	-375	-356
Dissolved Oxygen (mg/L)	NA	NA	0.44	0.31	0.00	0.01	0.63	0.01	0.00	0.00
Turbidity	NA	NA	3.2	5.7	5	6.7	15.1	6.2	3	3.9
Temperature (degrees C)	NA	NA	15.8	17.0	14	14.5	15.1	18.01	14.8	14.7
<b>Metals (mg/L)</b>										
Arsenic	0.01	4,300	0.033	0.033	0.012	0.012	0.13	0.12	0.13	0.092
Chromium	0.1	2.90E+08	0.11	0.099	0.053	0.058	0.15	0.13	0.099	0.071

**Shaded Values Exceed Criteria**  
 ND - Not Detected  
 NA- Criterion or value is not available  
 NC - No Criteria Developed  
 ID - Inadequate data to develop criterion  
 (Revised 11/20/2013)

Table 2  
 Sentinel Monitoring Point (Near GSI Well) Sampling Data  
 Melching, Inc.

Constituent	LMW-8d			LMW-9d		
	7/31/2012	6/4/2013	10/11/2013	7/31/2012	6/4/2013	10/11/13
<b>Field Parameters</b>						
pH	8.10	7.57	7.59	7.38	7.33	6.94
Conductivity (uS/cm)	1677	1555	1405	1572	1461	1383
ORP (mV)	-215	-229	-250	-143	-196	-196
Dissolved Oxygen (mg/L)	0.56	0.74	0.02	0.48	1.18	0.14
Turbidity	8.0	1.8	3.8	10.0	2.6	2.4
Temperature (degrees C)	17.3	12.8	13	16.7	15.5	14.6
<b>Metals (mg/L)</b>						
Arsenic	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	ND

Table 3  
Water Elevations  
Melching, Inc.

Well Designation	Screened Interval	Ground Elevation	TOC Elevation	9/5/2012		6/3-4/2013		6/25/2013		10/11/2013	
				SWL (ft BTOC)	GWE (ft*)						

Sampled Wells:

LMW-4i2	29.9-34.9	587.19	591.61	13.58	578.03	12.96	578.65	12.77	578.84	12.96	578.65
LMW-4d	41.6-46.6	587.07	590.44	12.35	578.09	11.73	578.71	11.45	578.99	11.75	578.69
LMW-8d	43.1-48.1	587.01	589.39	11.43	577.96	10.86	578.53	10.54	578.85	10.90	578.49
LMW-9d	55.3-60.3	588.72	592.04	13.77	578.27	13.22	578.82	13.05	578.99	12.60	579.44

Unsampled Wells:

4i1	20.1-25.1	587.09	590.79	12.78	578.01	NM	NM	11.98	578.81	11.98	578.81
4s	7.0-12.0	586.92	589.92	11.93	577.99	NM	NM	11.14	578.78	11.14	578.78
8s	10.4-15.4	587.21	590.21	12.40	577.81	NM	NM	11.35	578.86	11.35	578.86
9s	10.0-15.0	588.78	592.38	14.31	578.07	NM	NM	13.70	578.68	13.70	578.68

Stormwater Retention Basin

	9/5/2012	6/4/2013	6/25/2013	10/11/2013
Water Elev. (ft)	579.92	581.61	582.08	580.71

Lake Muskegon

	9/5/2012	6/4/2013	6/25/2013	10/11/2013
Water Elev. (ft)	578.10	578.60	578.59	578.66

NM-not measured



**Attachment C**  
**-Laboratory Data for Water Samples**  
**-Field Sampling Data for Water Samples**



13-Jun-2013

Kurt Koella  
Lakeshore Environmental, Inc.  
803 VerHoeks St  
Grand Haven, MI 49417

Re: **Melching Inc 10-339 6/3/13**

Work Order: **1306098**

Dear Kurt,

ALS Environmental received 2 samples on 04-Jun-2013 03:50 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 8.

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

Sincerely,

A handwritten signature in cursive script that reads "Ann Preston".

Electronically approved by: Ann Preston

Ann Preston  
Project Manager



Certificate No: MN 532786

### Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

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Environmental ALS

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RIGHT SOLUTIONS RIGHT PARTNER

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**Client:** Lakeshore Environmental, Inc.  
**Project:** Melching Inc 10-339 6/3/13  
**Work Order:** 1306098

**Work Order Sample Summary**

---

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1306098-01	AMP-25	Water		6/3/2013 11:45	6/4/2013 15:50	<input type="checkbox"/>
1306098-02	AMP-35	Water		6/3/2013 12:00	6/4/2013 15:50	<input type="checkbox"/>

**Client:** Lakeshore Environmental, Inc.  
**Project:** Melching Inc 10-339 6/3/13  
**WorkOrder:** 1306098

**QUALIFIERS,  
ACRONYMS, UNITS**

---

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

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
TDL	Target Detection Limit
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
mg/L	Milligrams per Liter

**ALS Group USA, Corp**

Date: 13-Jun-13

**Client:** Lakeshore Environmental, Inc.  
**Work Order:** 1306098  
**Project:** Melching Inc 10-339 6/3/13  
**Lab ID:** 1306098-01

**Client Sample ID:** AMP-25  
**Collection Date:** 6/3/2013 11:45:00 AM  
**Matrix:** WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
<b>METALS BY ICP-MS</b>			<b>SW6020A</b>			Prep Date: <b>6/6/2013</b>	Analyst: <b>RH</b>
Arsenic	ND	0.0050	0.0050		mg/L	1	6/6/2013
Chromium	ND	0.010	0.010		mg/L	1	6/6/2013

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 13-Jun-13

**Client:** Lakeshore Environmental, Inc.  
**Work Order:** 1306098  
**Project:** Melching Inc 10-339 6/3/13  
**Lab ID:** 1306098-02

**Client Sample ID:** AMP-35  
**Collection Date:** 6/3/2013 12:00:00 PM  
**Matrix:** WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual	Units	Dilution Factor	Date Analyzed
<b>METALS BY ICP-MS</b>			<b>SW6020A</b>			Prep Date: <b>6/6/2013</b>	Analyst: <b>RH</b>
Arsenic	ND	0.0050	0.0050		mg/L	1	6/6/2013
Chromium	ND	0.010	0.010		mg/L	1	6/6/2013

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 13-Jun-13

Client: Lakeshore Environmental, Inc.  
 Work Order: 1306098  
 Project: Melching Inc 10-339 6/3/13

QC BATCH REPORT

Batch ID: 48890 Instrument ID ICPMS2 Method: SW6020A

MBLK		Sample ID: MBLK-48890-48890			Units: mg/L		Analysis Date: 6/6/2013 01:59 PM			
Client ID:	Run ID: ICPMS2_130606A	SeqNo: 2341839	Prep Date: 6/6/2013	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.0050								
Chromium	ND	0.0050								

LCS		Sample ID: LCS-48890-48890			Units: mg/L		Analysis Date: 6/6/2013 02:15 PM			
Client ID:	Run ID: ICPMS2_130606A	SeqNo: 2341841	Prep Date: 6/6/2013	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09996	0.0050	0.1	0	100	80-120	0			
Chromium	0.09793	0.0050	0.1	0	97.9	80-120	0			

MS		Sample ID: 1306098-02AMS			Units: mg/L		Analysis Date: 6/6/2013 02:26 PM			
Client ID: AMP-35	Run ID: ICPMS2_130606A	SeqNo: 2341843	Prep Date: 6/6/2013	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1046	0.0050	0.1	0.00104	104	75-125	0			
Chromium	0.09926	0.0050	0.1	0.0001844	99.1	75-125	0			

MSD		Sample ID: 1306098-02AMSD			Units: mg/L		Analysis Date: 6/6/2013 02:31 PM			
Client ID: AMP-35	Run ID: ICPMS2_130606A	SeqNo: 2341844	Prep Date: 6/6/2013	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.103	0.0050	0.1	0.00104	102	75-125	0.1046	1.54	20	
Chromium	0.09871	0.0050	0.1	0.0001844	98.5	75-125	0.09926	0.556	20	

The following samples were analyzed in this batch: | 1306098-01A | 1306098-02A |

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



**ALS Laboratory Group**  
 10450 Standliff Rd., Suite 210  
 Houston, Texas 77089  
 Tel. +1 281 530 5656  
 Fax. +1 281 530 5887

### Chain of Custody Form

**ALS Laboratory Group**  
 3352 128th Ave.  
 Holland, MI 49424-9263  
 Tel: +1 616 399 6070  
 Fax: +1 616 399 6185

Page 1 of 1

ALS Project Manager: \_\_\_\_\_ ALS Work Order #: 1306098

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order		Project Name	Melching Inc	A	Total arsenic											
Work Order		Project Number	10-339	B	total chromium											
Company Name	LEJ	Bill To Company		C												
Send Report To	Kurt Koella	Invoice Attn		D												
Address	803 VertHoeks	Address	2400 Lakeshore Dr.	E												
				F												
City/State/Zip	Grand Haven, MI 49417	City/State/Zip	Muskegon, MI	G												
Phone	616-844-5050	Phone		H												
Fax	" " -5053	Fax		I												
e-Mail Address	kurt@lakeshoreenvironmental.com	e-Mail Address		J												

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	AMP-2S	6/3/13	1145	W	2	1	X	X									
2	AMP-3S	6/3/13	1200	W	2	1	X	X									
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <i>Ryan Van de Griend</i>		Shipment Method		Required Turnaround Time: (Check Box) <input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour				Results Due Date:	
Requisitioned by: <i>Alan Calu</i>	Date: 6/4/13	Time: 1550	Received by: <i>[Signature]</i>		Notes:				
Requisitioned by:	Date: 6/4/13	Time: 1550	Received by (Laboratory):		Cooler ID	Cooler Temp 4.8°C	QC Package: (Check One Box Below)		
Logged by (Laboratory): DPS	Date: 6/4/13	Time: 1620	Checked by (Laboratory): <i>[Signature]</i>		<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP Checklist <input type="checkbox"/> Level III Std QC/Raw Date <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other				
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035									

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

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# ALS Group USA, Corp

## Sample Receipt Checklist

Client Name: **LAKESHOREENV**

Date/Time Received: **04-Jun-13 15:50**

Work Order: **1306098**

Received by: **DS**

Checklist completed by *Diane Shan* 04-Jun-13  
eSignature Date

Reviewed by: *Ann Preaton* 05-Jun-13  
eSignature Date

Matrices: Water

Carrier name: Client

- |   |   |                             |   |
|---|---|-----------------------------|---|
| Shipping container/cooler in good condition?            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/>            |
| Custody seals intact on shipping container/cooler?      | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Custody seals intact on sample bottles?                 | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| Chain of custody present?                               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Chain of custody agrees with sample labels?             | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Samples in proper container/bottle?                     | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Sample containers intact?                               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Sufficient sample volume for indicated test?            | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| All samples received within holding time?               | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| Container/Temp Blank temperature in compliance?         | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |

Temperature(s)/Thermometer(s):

Cooler(s)/Kiln(s):

Date/Time sample(s) sent to storage:

Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted

Water - pH acceptable upon receipt? Yes  No  N/A

pH adjusted? Yes  No  N/A

pH adjusted by:

Login Notes:

-----

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:



13-Jun-2013

Kurt Koella  
Lakeshore Environmental, Inc.  
803 VerHoeks St  
Grand Haven, MI 49417

Re: **Melching Inc 10-339 6/3-6/4/13**

Work Order: **1306102**

Dear Kurt,

ALS Environmental received 4 samples on 04-Jun-2013 04:37 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 10.

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

Sincerely,

A handwritten signature in cursive script that reads "Ann Preston".

Electronically approved by: Ann Preston

Ann Preston  
Project Manager



Certificate No: MN 532786

### Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185  
ALS GROUP USA, CORP Part of the ALS Group An ALS Limited Company

Environmental ALS

[www.alsglobal.com](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER

Client: Lakeshore Environmental, Inc.  
Project: Melching Inc 10-339 6/3-6/4/13  
Work Order: 1306102

**Work Order Sample Summary**

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1306102-01	LMW-4d	Water		6/3/2013 16:35	6/4/2013 16:37	<input type="checkbox"/>
1306102-02	LMW-4i2	Water		6/3/2013 17:05	6/4/2013 16:37	<input type="checkbox"/>
1306102-03	LMW-8d	Water		6/4/2013 11:50	6/4/2013 16:37	<input type="checkbox"/>
1306102-04	LMW-9d	Water		6/4/2013 12:55	6/4/2013 16:37	<input type="checkbox"/>

**Client:** Lakeshore Environmental, Inc.  
**Project:** Melching Inc 10-339 6/3-6/4/13  
**WorkOrder:** 1306102

**QUALIFIERS,  
ACRONYMS, UNITS**

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

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
TDL	Target Detection Limit
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
mg/L	Milligrams per Liter

**ALS Group USA, Corp**

Date: 13-Jun-13

**Client:** Lakeshore Environmental, Inc.  
**Work Order:** 1306102  
**Project:** Melching Inc 10-339 6/3-6/4/13  
**Lab ID:** 1306102-01

**Client Sample ID:** LMW-4d  
**Collection Date:** 6/3/2013 4:35:00 PM  
**Matrix:** WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual Units	Dilution Factor	Date Analyzed
<b>METALS BY ICP-MS</b>			<b>SW6020A</b>		Prep Date: <b>6/7/2013</b>	Analyst: <b>ML</b>
Arsenic	0.13	0.0050	0.0050	mg/L	1	6/7/2013
Chromium	0.099	0.010	0.010	mg/L	1	6/7/2013

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 13-Jun-13

**Client:** Lakeshore Environmental, Inc.  
**Work Order:** 1306102  
**Project:** Melching Inc 10-339 6/3-6/4/13  
**Lab ID:** 1306102-02

**Client Sample ID:** LMW-4i2  
**Collection Date:** 6/3/2013 5:05:00 PM  
**Matrix:** WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual Units	Dilution Factor	Date Analyzed
<b>METALS BY ICP-MS</b>			<b>SW6020A</b>		Prep Date: 6/7/2013	Analyst: ML
Arsenic	0.012	0.0050	0.0050	mg/L	1	6/7/2013
Chromium	0.053	0.010	0.010	mg/L	1	6/7/2013

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 13-Jun-13

**Client:** Lakeshore Environmental, Inc. **Client Sample ID:** LMW-8d  
**Work Order:** 1306102 **Collection Date:** 6/4/2013 11:50:00 AM  
**Project:** Melching Inc 10-339 6/3-6/4/13  
**Lab ID:** 1306102-03 **Matrix:** WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual Units	Dilution Factor	Date Analyzed
<b>METALS BY ICP-MS</b>			<b>SW6020A</b>		Prep Date: <b>6/7/2013</b>	Analyst: <b>ML</b>
Arsenic	ND	0.0050	0.0050	mg/L	1	6/7/2013
Chromium	ND	0.010	0.010	mg/L	1	6/7/2013

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**ALS Group USA, Corp**

Date: 13-Jun-13

**Client:** Lakeshore Environmental, Inc.  
**Work Order:** 1306102  
**Project:** Melching Inc 10-339 6/3-6/4/13  
**Lab ID:** 1306102-04

**Client Sample ID:** LMW-9d  
**Collection Date:** 6/4/2013 12:55:00 PM  
**Matrix:** WATER

Analyses	Result	Report Limit	MDEQ OP Memo 2 TDL	Qual Units	Dilution Factor	Date Analyzed
<b>METALS BY ICP-MS</b>			<b>SW6020A</b>		Prep Date: <b>6/7/2013</b>	Analyst: <b>ML</b>
Arsenic	ND	0.0050	0.0050	mg/L	1	6/7/2013
Chromium	ND	0.010	0.010	mg/L	1	6/7/2013

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 13-Jun-13

Client: Lakeshore Environmental, Inc.  
 Work Order: 1306102  
 Project: Melching Inc 10-339 6/3-6/4/13

QC BATCH REPORT

Batch ID: 48920 Instrument ID ICPMS1 Method: SW6020A

MBLK		Sample ID: MBLK-48920-48920			Units: mg/L		Analysis Date: 6/7/2013 08:20 PM			
Client ID:		Run ID: ICPMS1_130607A			SeqNo: 2343375		Prep Date: 6/7/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.0050								
Chromium	ND	0.0050								

LCS		Sample ID: LCS-48920-48920			Units: mg/L		Analysis Date: 6/7/2013 08:26 PM			
Client ID:		Run ID: ICPMS1_130607A			SeqNo: 2343376		Prep Date: 6/7/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1048	0.0050	0.1	0	105	80-120	0			
Chromium	0.09979	0.0050	0.1	0	99.8	80-120	0			

MS		Sample ID: 1306099-02AMS			Units: mg/L		Analysis Date: 6/7/2013 08:50 PM			
Client ID:		Run ID: ICPMS1_130607A			SeqNo: 2343380		Prep Date: 6/7/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1077	0.0050	0.1	0.001314	106	75-125	0			
Chromium	0.09988	0.0050	0.1	0.0005054	99.4	75-125	0			

MSD		Sample ID: 1306099-02AMSD			Units: mg/L		Analysis Date: 6/7/2013 08:56 PM			
Client ID:		Run ID: ICPMS1_130607A			SeqNo: 2343381		Prep Date: 6/7/2013		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1076	0.0050	0.1	0.001314	106	75-125	0.1077	0.0929	20	
Chromium	0.09951	0.0050	0.1	0.0005054	99	75-125	0.09988	0.371	20	

The following samples were analyzed in this batch: 1306102-01A 1306102-02A 1306102-03A  
 1306102-04A

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



ALS Laboratory Group

10450 Standiff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

Page 1 of 1

ALS Laboratory Group

3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 398 6070
Fax: +1 616 398 6185

ALS Project Manager: ALS Work Order #: 1306107

Customer Information, Project Information, Parameter/Method Request for Analysis. Includes fields for Purchase Order, Work Order, Company Name (BLEI), Send Report To (Kurt Koella), Address (803 Ver Hoeck), City/State/Zip (Grand Haven, MI, 49417), Phone (616-844-5050), Fax, e-Mail Address, Project Name (Melching Inc), Project Number (10-339), Bill To Company, Invoice Attn, Address (2400 Lakeshore Dr.), City/State/Zip (Muskegon, MI, 49441), Phone, Fax, e-Mail Address. Analysis requests: A Total arsenic, B Total chromium.

Table with columns: No., Sample Description, Date, Time, Matrix, Pres., # Bottles, A, B, C, D, E, F, G, H, I, J, Hold. Contains 4 rows of data for LMW samples.

Sampler(s) Please Print & Sign: Ryan VandeBriend. Shipment Method, Required Turnaround Time: (Check Box) [X] STD 10 Wk Days, [ ] 5 Wk Days, [ ] 2 Wk Days, [ ] 24 Hour. Results Due Date.

Relinquished by: [Signature], Date: 6/4/13, Time: 1550. Received by: [Signature], Date: 6/4/13, Time: 1550. Logged by (Laboratory): [Signature], Date: 6/4/13, Time: 1637. Checked by (Laboratory): [Signature]. Notes: Cooler ID, Cooler Temp: 4.8. QC Package: (Check One Box Below) [ ] Level II Std QC, [ ] TRRP Checklist, [ ] Level III Std QC/Raw Data, [ ] TRRP Level IV, [ ] Level IV SW846/CLP, [ ] Other.

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4°C 9-5035
Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.
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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: LAKESHOREENV

Date/Time Received: 04-Jun-13 16:37

Work Order: 1306102

Received by: AB

Checklist completed by *Sashley Beard* 04-Jun-13  
eSignature Date

Reviewed by: *Anna Preaton* 05-Jun-13  
eSignature Date

Matrices: water

Carrier name: Client

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No

Temperature(s)/Thermometer(s): 4.8c

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage: 6/4/2013 4:39:27 PM

Water - VOA vials have zero headspace? Yes  No  No VOA vials submitted

Water - pH acceptable upon receipt? Yes  No  N/A

pH adjusted? Yes  No  N/A

pH adjusted by:

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Location Muskegon, MI Date 6/3/2013 <sup>27</sup>  
Project / Client Melching/SAPPI  
10-339

Melching Inc.  
Muskegon, MI

Groundwater + Lake Sampling

LEI # 10-339  
Ryan Vande Griend, Steve C.  
Caitlin Callow

Grey Escape  
Sunny 70° wind NW @ 10

1100 Arrive on site  
1130 Boat launched on Muskegon Lake  
1145 Sample AMP-25  
1200 Sample AMP-35  
1220 Sample WS-A  
1240 Sample WS-B  
1300 Sample WS-C  
1310 Sample WS-D  
1445 Commence purging LMW-4d @ 400ml/hr  
1545 commence purging LMW-4I2 @ 500ml/hr  
1635 Sample LMW-4d

Location Muskegon, MIDate 6/3/2013Project / Client Melching Inc.

10-339

RNB

Sample ID	Temp	pH	D.O	COND	ORP	Turb
AMP-25	18.7	8.47	8.07	269.0	108	2.15
AMP-35	18.7	8.20	8.40	258.3	54	2.01
WS-A	18.3	8.24	8.34	261.8	41	2.05
WS-B	18.7	8.24	8.16	258.3	56	1.98
WS-C	18.7	8.34	8.68	255.9	57	2.20
WS-D	18.2	8.18	8.09	259.5	48	2.23

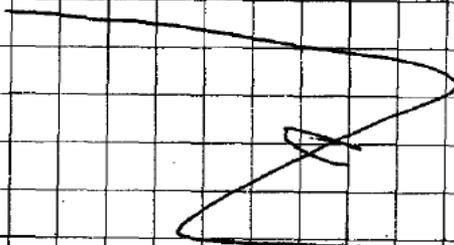
Well ID	Temp	pH	D.O	COND	ORP	TUR
LMW-4d	14.8	10.58	0.00	3.49	-375	3.0
LMW-4IZ	14.0	10.11	0.00	1883	-371	5.0
LMW-8d	12.8	7.57	0.74	1555	-227	1.8
LMW-9d	15.5	7.33	1.18	1461	-196	2.6

Well ID	DTW	TD
LMW-4d	11.73	60.0
LMW-4IZ	11.44	40.0
LMW-8d	10.86	50.0
LMW-9d	13.22	67.0

Location Muskegon, MIDate 6/3/13Project / Client Melching, Inc.

10-339

1705	sample LMW-4IZ
1715	leave site
6/4/2013	
1030	Arrive on site
1035	To LMW-8d + measured SW
1050	commenced purging LMW-
1150	sampled LMW-8d
1200	To LMW-9d + measure SWL
1205	commence purging LMW-9d
1255	sample LMW-9d
1300	Began to survey w/Cat
1320	survey boat slip
1340	survey drain field
1400	survey pond
1420	Leave site.



October 22, 2013

Mr. Kurt Koella  
Lakeshore Environmental, Inc.  
803 Verhoeks Street  
Grand Haven, MI 49417

Phone: (616) 844-5050  
Fax: (616) 844-5053

RE: Trace Project T13J220  
Client Project Sappi 10-339

Dear Mr. Koella:

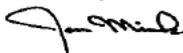
Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

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](mailto:jmink@trace-labs.com).

Sincerely,



Jon Mink  
Senior Project Manager

Enclosures



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

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phone 231.773.5998  
toll-free 800.733.5998  
fax 231.773.6537

Trace Analytical Laboratories, Inc.  
2241 Black Creek Road  
Muskegon, MI 49444-2673  
info@trace-labs.com  
www.trace-labs.com

### SAMPLE SUMMARY

Trace Project ID: T13J220  
Client Project ID: Sappi 10-339

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13J220-01	AMP 35	Aqueous	rv	10/11/13 14:45	10/11/13 15:52
T13J220-02	AMP 25	Aqueous	rv	10/11/13 15:00	10/11/13 15:52

### 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.

**CERTIFICATE OF ANALYSIS**

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phone 231.773.5998  
 toll-free 800.733.5998  
 fax 231.773.6537

Trace Analytical Laboratories, Inc.  
 2241 Black Creek Road  
 Muskegon, MI 49444-2673  
 info@trace-labs.com  
 www.trace-labs.com

**ANALYTICAL RESULTS**

Trace Project ID: T13J220  
 Client Project ID: Sappi 10-339

Trace ID: T13J220-01 Date Collected: 10/11/13 14:45 Matrix: Aqueous  
 Sample ID: AMP 35 Date Received: 10/11/13 15:52

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

**METALS, TOTAL**

Analysis Method: EPA 6020  
Batch: T040723

Arsenic	<0.0050 mg/L	0.0050	5	10/17/13	rlb	10/21/13	kim
Chromium	<0.010 mg/L	0.010	5	10/17/13	rlb	10/21/13	kim

**CERTIFICATE OF ANALYSIS**

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 toll-free 800.733.5998  
 fax 231.773.6537

Trace Analytical Laboratories, Inc.  
 2241 Black Creek Road  
 Muskegon, MI 49444-2673  
 info@trace-labs.com  
 www.trace-labs.com

**ANALYTICAL RESULTS**

Trace Project ID: T13J220  
 Client Project ID: Sappi 10-339

Trace ID: T13J220-02 Date Collected: 10/11/13 15:00 Matrix: Aqueous  
 Sample ID: AMP 25 Date Received: 10/11/13 15:52

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

**METALS, TOTAL**

Analysis Method: EPA 6020  
Batch: T040723

Arsenic	<0.0050	mg/L	0.0050	5	10/17/13	rib	10/21/13	klm
Chromium	<0.010	mg/L	0.010	5	10/17/13	rib	10/21/13	klm

**CERTIFICATE OF ANALYSIS**

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**CHAIN-OF-CUSTODY RECORD**

Report Results To:	Client Name: <u>Lakeshore Environmental Inc</u>				Logged By: <u>JW</u>		Checked By: <u>[Signature]</u>																									
	Contact Person: <u>Kurt Koella</u>				Received on ice: <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																									
	Mailing Address: <u>803 VerHoeks St</u>				Soil Volatiles Preserved: <input type="checkbox"/> MeOH <input type="checkbox"/> Low Level <input type="checkbox"/> Lab <input type="checkbox"/> Sampling Time:																											
	City, State, Zip Code: <u>Grand Haven MI 49417</u>				<table border="1"> <tr> <th>Regulatory Requirements</th> <th>Turnaround Requirements</th> <th colspan="2">Matrix Key</th> </tr> <tr> <td>MERA TMDL's <input type="checkbox"/></td> <td>Standard <input checked="" type="checkbox"/></td> <td>S = Soil</td> <td>WI = Wipes</td> </tr> <tr> <td>Drinking Water <input type="checkbox"/></td> <td>3-4 Day (RUSH)* <input type="checkbox"/></td> <td>W = Water</td> <td>LW = Liquid Waste</td> </tr> <tr> <td>NPDES <input type="checkbox"/></td> <td>24-48 Hour (RUSH)* <input type="checkbox"/></td> <td>SE = Sediment</td> <td>A = Air</td> </tr> <tr> <td>USACE <input type="checkbox"/></td> <td>* Requires prior approval</td> <td>OI = Oil</td> <td>D = Drinking Water</td> </tr> <tr> <td>Special <input type="checkbox"/></td> <td></td> <td>SO = Solid Waste</td> <td>SL = Sludge</td> </tr> </table>				Regulatory Requirements	Turnaround Requirements	Matrix Key		MERA TMDL's <input type="checkbox"/>	Standard <input checked="" type="checkbox"/>	S = Soil	WI = Wipes	Drinking Water <input type="checkbox"/>	3-4 Day (RUSH)* <input type="checkbox"/>	W = Water	LW = Liquid Waste	NPDES <input type="checkbox"/>	24-48 Hour (RUSH)* <input type="checkbox"/>	SE = Sediment	A = Air	USACE <input type="checkbox"/>	* Requires prior approval	OI = Oil	D = Drinking Water	Special <input type="checkbox"/>		SO = Solid Waste	SL = Sludge
	Regulatory Requirements	Turnaround Requirements	Matrix Key																													
MERA TMDL's <input type="checkbox"/>	Standard <input checked="" type="checkbox"/>	S = Soil	WI = Wipes																													
Drinking Water <input type="checkbox"/>	3-4 Day (RUSH)* <input type="checkbox"/>	W = Water	LW = Liquid Waste																													
NPDES <input type="checkbox"/>	24-48 Hour (RUSH)* <input type="checkbox"/>	SE = Sediment	A = Air																													
USACE <input type="checkbox"/>	* Requires prior approval	OI = Oil	D = Drinking Water																													
Special <input type="checkbox"/>		SO = Solid Waste	SL = Sludge																													
Phone: <u>616 844 5050</u>		Fax: <u>" " 5053</u>																														
Email Address: <u>KurtK@lakeshoreenvironmental.com</u>																																
Cell #: _____				Sampled by: <u>Ryan V.</u>																												
Project Name & #: <u>Sappi 10-339</u>																																
Bill To:	Billing Address (if different) _____				ANALYSIS REQUESTED <u>Total Arsenic</u> <u>Total Chromium</u> Possible Health Hazard																											
	City, State, Zip Code _____																															
	Attn: _____		Phone: _____						PO #: _____																							
Request for Analytical Services	TRACE NO.	DATE TAKEN	TIME TAKEN	METALS FIELD FILTERED	CLIENT SAMPLE ID	MATRIX	NUMBER OF CONTAINERS	REMARKS																								
	<u>01</u>	<u>10/11/13</u>	<u>1445</u>		<u>AMP 35</u>	<u>N</u>	<u>1</u>	<u>X X</u>																								
	<u>02</u>	<u>10/11/13</u>	<u>1530</u>		<u>AMP 25</u>	<u>W</u>	<u>1</u>	<u>X X</u>																								
Please Sign	Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME																						
	1)	<u>[Signature]</u>	<u>[Signature]</u>	<u>10/11/13</u>	<u>1545</u>	3)																										
2)						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/cocterm.php>

**SAMPLE LOG IN CHECKLIST**

Trace ID #: T13J220 Date: 10/11/13 Package Description: COOLER  
Client Name: LEI Time: 15:45 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 #: \_\_\_\_\_

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><b>Type of Coolant Used</b></p> <p>Slurry w/ crushed, cubed, or chip ice? <input type="checkbox"/></p> <p>Multiple bags of ice around samples? <input checked="" type="checkbox"/></p> <p>Ice Packs/ Blue Ice: <input type="checkbox"/></p> <p>No Coolant Present: <input type="checkbox"/></p>	<p><b>Cooler Temperature</b></p> <p>Correction Factor: IR Thermometer <u>0.2</u> °C Digital Stick Thermometer <u>0.0</u> °C</p> <p>Temperature Blank: <u>N/A</u> °C (Use Digital Stick Thermometer)</p> <p>Range of 3 samples: <u>10.3 - 10.6</u> °C (Use IR Thermometer)</p> <p>Melt Water: <u>6.4</u> °C ( IR or Stick Therm. - circle one)</p> <p>Ice still present upon receipt: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
--	--

**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 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: \_\_\_\_\_

**CERTIFICATE OF ANALYSIS**

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October 22, 2013

Mr. Kurt Koella  
Lakeshore Environmental, Inc.  
803 Verhoeks Street  
Grand Haven, MI 49417

Phone: (616) 844-5050  
Fax: (616) 844-5053

RE: Trace Project T13J219  
Client Project Sappi 10-339

Dear Mr. Koella:

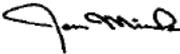
Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

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](mailto:jmink@trace-labs.com).

Sincerely,



Jon Mink  
Senior Project Manager

Enclosures



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

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phone 231.773.5998  
toll-free 800.733.5998  
fax 231.773.6537

Trace Analytical Laboratories, Inc.  
2241 Black Creek Road  
Muskegon, MI 49444-2673  
info@trace-labs.com  
www.trace-labs.com

### SAMPLE SUMMARY

Trace Project ID: T13J219  
Client Project ID: Sappi 10-339

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
T13J219-01	LMW-9D	Aqueous	rv	10/11/13 10:43	10/11/13 15:51
T13J219-02	LMW-8D	Aqueous	rv	10/11/13 11:45	10/11/13 15:51
T13J219-03	LMW-4i2	Aqueous	rv	10/11/13 12:50	10/11/13 15:51
T13J219-04	LMW-4D	Aqueous	rv	10/11/13 12:50	10/11/13 15:51

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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.

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 www.trace-labs.com

**ANALYTICAL RESULTS**

Trace Project ID: T13J219  
 Client Project ID: Sappi 10-339

Trace ID: T13J219-02 Date Collected: 10/11/13 11:45 Matrix: Aqueous  
 Sample ID: LMW-8D Date Received: 10/11/13 15:51

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

**METALS, TOTAL**

Analysis Method: EPA 6020  
Batch: T040723

Arsenic	<0.0050 mg/L	0.0050	5	10/17/13	rlb	10/21/13	klm
Chromium	<0.010 mg/L	0.010	5	10/17/13	rlb	10/21/13	klm

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**ANALYTICAL RESULTS**

Trace Project ID: T13J219  
 Client Project ID: Sappi 10-339

Trace ID: T13J219-03 Date Collected: 10/11/13 12:50 Matrix: Aqueous  
 Sample ID: LMW-4i2 Date Received: 10/11/13 15:51

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

**METALS, TOTAL**

Analysis Method: EPA 6020  
Batch: T040723

Arsenic	0.012 mg/L	0.0050	5	10/17/13	rlb	10/21/13	klm
Chromium	0.058 mg/L	0.010	5	10/17/13	rlb	10/21/13	klm

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**ANALYTICAL RESULTS**

Trace Project ID: T13J219  
 Client Project ID: Sappi 10-339

Trace ID: T13J219-04 Date Collected: 10/11/13 12:50 Matrix: Aqueous  
 Sample ID: LMW-4D Date Received: 10/11/13 15:51

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

**METALS, TOTAL**

Analysis Method: EPA 6020  
Batch: T040723

Arsenic	0.092 mg/L	0.0050	5	10/17/13	rlb	10/21/13	klm
Chromium	0.071 mg/L	0.010	5	10/17/13	rlb	10/21/13	klm

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<b>Report Results To:</b>	Client Name: <u>Lakeshore Environmental, Inc</u>		Logged By: <u>JW</u>		Checked By: <u>[Signature]</u>																																		
	Contact Person: <u>Kurt Koella</u>		Received on Ice: <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																																		
	Mailing Address: <u>803 Ver Hoeks St</u>		Soil Volatiles Preserved: <u>MeOH Low Level Lab</u> Sampling Time:																																				
	City, State, Zip Code: <u>Grand Haven MI 49417</u>		<table border="0"> <tr> <td><b>Regulatory Requirements</b></td> <td><b>Turnaround Requirements</b></td> <td><b>Matrix Key</b></td> </tr> <tr> <td>MERA TMDL's <input type="checkbox"/></td> <td>Standard <input checked="" type="checkbox"/></td> <td>S = Soil</td> </tr> <tr> <td>Drinking Water <input type="checkbox"/></td> <td>3-4 Day (RUSH)* <input type="checkbox"/></td> <td>W = Water</td> </tr> <tr> <td>NPDES <input type="checkbox"/></td> <td>24-48 Hour (RUSH)* <input type="checkbox"/></td> <td>SE = Sediment</td> </tr> <tr> <td>USACE <input type="checkbox"/></td> <td>* Requires prior approval</td> <td>OI = Oil</td> </tr> <tr> <td>Special <input type="checkbox"/></td> <td></td> <td>SO = Solid Waste</td> </tr> <tr> <td></td> <td></td> <td>WI = Wipes</td> </tr> <tr> <td></td> <td></td> <td>LW = Liquid Waste</td> </tr> <tr> <td></td> <td></td> <td>A = Air</td> </tr> <tr> <td></td> <td></td> <td>D = Drinking Water</td> </tr> <tr> <td></td> <td></td> <td>SL = Sludge</td> </tr> </table>				<b>Regulatory Requirements</b>	<b>Turnaround Requirements</b>	<b>Matrix Key</b>	MERA TMDL's <input type="checkbox"/>	Standard <input checked="" type="checkbox"/>	S = Soil	Drinking Water <input type="checkbox"/>	3-4 Day (RUSH)* <input type="checkbox"/>	W = Water	NPDES <input type="checkbox"/>	24-48 Hour (RUSH)* <input type="checkbox"/>	SE = Sediment	USACE <input type="checkbox"/>	* Requires prior approval	OI = Oil	Special <input type="checkbox"/>		SO = Solid Waste			WI = Wipes			LW = Liquid Waste			A = Air			D = Drinking Water			SL = Sludge
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		A = Air																																					
		D = Drinking Water																																					
		SL = Sludge																																					
Phone: <u>616 844 5050</u> Fax: <u>114 5053</u>		Cell #: _____ Sampled by: <u>Ryan V.</u>																																					
Email Address: <u>kurtk@lakeshoreenvironmental.com</u>		<b>ANALYSIS REQUESTED</b>																																					
Project Name & #: <u>Sappi 10-339</u>																																							
<b>Bill To:</b>	Billing Address (if different)		<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Total Arsenic</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Total Chromium</div> </div>																																				
	City, State, Zip Code																																						
	Attn: _____ Phone: _____ PO #: _____																																						
<b>Request for Analytical Services</b>	TRACE NO.	DATE TAKEN	TIME TAKEN	METALS FIELD FILTERED	CLIENT SAMPLE ID	MATRIX	NUMBER OF CONTAINERS	REMARKS		Possible Health Hazard																													
	1	10/11/13	1043	N	LMW-9d	W	1	X X																															
	2	10/11/13	1145	N	LMW-8d	W	1	X X																															
	3	10/11/13	1250	N	LMW-4i2	W	1	X X																															
	4	10/11/13	1250	N	LMW-4d	W	1	X X																															
<b>Please Sign</b>	Item #	RELEASED BY	RECEIVED BY	DATE	TIME	Item #	RELEASED BY	RECEIVED BY	DATE	TIME																													
	1)	<u>Ryan V. [Signature]</u>	<u>[Signature]</u>	10/11/13	1545	3)																																	
	2)					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/cocterm.php>

**SAMPLE LOG IN CHECKLIST**

Trace ID #: T13J219 Date: 10/11/19 Package Description: COOLANT  
Client Name: LEI Time: 15:45 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 #: \_\_\_\_\_  
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><b>Type of Coolant Used</b></p> <p>Slurry w/ crushed, cubed, or chip ice? <input type="checkbox"/></p> <p>Multiple bags of ice around samples? <input checked="" type="checkbox"/></p> <p>Ice Packs/ Blue Ice: <input type="checkbox"/></p> <p>No Coolant Present: <input type="checkbox"/></p>	<p><b>Cooler Temperature</b></p> <p>Correction Factor: IR Thermometer <u>-0.2</u> °C Digital Stick Thermometer <u>0.0</u> °C</p> <p>Temperature Blank: <u>N/A</u> °C (Use Digital Stick Thermometer)</p> <p>Range of 3 samples: <u>7.3 - 8.8</u> °C (Use IR Thermometer)</p> <p>Melt Water: <u>6.4</u> °C (IR or Stick Therm. - circle one)</p> <p>Ice still present upon receipt: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
--	--

**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: \_\_\_\_\_

**CERTIFICATE OF ANALYSIS**

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118  
 Location Muskegon, MI Date 10/11/2013  
 Project / Client Sappi 10-339  
 RUG

119  
 Location Muskegon, MI Date 10/11/2013  
 Project / Client Sappi 10-339  
 RUG

Muskegon, MI  
 Sappi  
 LEI # 10-339

- Semi-Annual AMP + Sentinel Well Sampling Event.
- Survey Boat slip

Ryan Vande Griend (LEI)  
 Steve Czadzeck (LEI)

Sunny, 70° wind S 5-10mph

Well ID	PH	Cond	DO	ORP	Temp	Time	TUC
LMW-9d	6.94	1383	0.14	-196	14.6	1043	2.4
LMW-8d	7.59	1405	0.02	-250	13.0	1135	3.8
LMW-4i2	10.02	1889	0.01	-362	14.5	1250	6.7
LMW-4d	10.75	3300	0.00	-356	14.7	1250	3.9
AMP-25	7.82	336	8.38	44	18.8	1500	3.49
AMP-35	7.98	337	8.27	24	18.2	1445	2.79

Well ID	SWL	TD
LMW-9d	12.60	60.30
LMW-8d	10.90	50.00
LMW-4i2	12.96	39.00
LMW-4d	11.75	50.00

1250 Sample LMW-4i2 + 4d  
 1335 Survey Boat Slip  
 1445 Sample AMP 35  
 1500 Sample AMP 25  
 \*AMP 43.21885° N  
 86.30483° W

- 940 Arrive on site - check in.
- 945 Head to LMW-9d + set up
- 1000 Commence Purging LMW-9d @ 500ml/min
- 1043 Sample LMW-9d
- 1050 Head to LMW-8d + set up
- 1055 Commence Purging LMW-8d @ 500ml
- 1135 Sample LMW-8d
- 1145 To LMW-4i2 + 4d + set up  
 2 parastatics
- 1150 Commence purging LMW-4i2 + LMW-4d