R E P O R T

May 5, 2017
17-0217 E

Environmental Consulting Services

Sediment Sampling & Testing
Peaks Island Ice Pond
Seashore Avenue
Peaks Island, Maine

PREPARED FOR:
Peaks Island Land Preserve
Attention: John Whitman, President
P.O. Box 99
Peaks Island, ME 04108

PREPARED BY:
S. W. Cole Engineering, Inc.
Gary W. Bucklin, C.G.
286 Portland Road
Gray, ME 04039
(207) 517-4870
Gary.bucklin@swcole.com

S.W.COLE
ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing and Special Inspections*
- *GeoEnvironmental Services*
- *Test Boring Explorations*

www.swcole.com

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17-0217 E

May 5, 2017

Peaks Island Land Preserve
Attention: John Whitman, President
P.O. Box 99
Peaks Island, ME 04108

Subject: Report
Pond Sediment Sampling and Testing Services
Peaks Island Ice Pond
Seashore Avenue
Peaks Island, Maine

1.0 INTRODUCTION

In accordance with our Proposal dated March 22, 2017, S. W. Cole Engineering, Inc. (S.W.COLE) has provided Sediment Sampling & Testing Services for the Peaks Island Ice Pond dam repair project on Seashore Avenue in Peaks Island, Maine. The approximate location of the pond is shown on the Site Location Map attached as Sheet 1.

The pond dam repair project will reportedly require dredging 300 cubic yards or more of sediment that has accumulated directly behind the dam. Dredging the entire pond will reportedly involve the removal of about 7,000 cubic yards of sediment.

The purpose of the services is to meet the sampling and testing requirements of Maine Department of Environmental Protection (MeDEP) Maine Solid Waste Management Rules Chapter 418: *Reduced Procedure Beneficial Use of De-watered Dredge Material as Fill Standards* in order for dredged pond sediment to be used as fill at an off-site upland location on Peaks Island.

This report is subject to the Limitations attached as Appendix A.

S.W.COLE ENGINEERING, INC.

2.0 SEDIMENT SAMPLE LOCATION PLAN

Based on correspondence with Eric Hamlin of the MeDEP on March 21, 2017, the collection and testing of 4 sediment samples would meet the requirements of Chapter 418 if the project involved dredging only in the area of the dam or if it involved dredging the entire pond. Therefore, we selected 4 pond sediment sample locations (S-1 through S-4) by establishing a plan of the pond with 12 numbered sample grids on it, and then using a random number generator program to select which 4 grids the samples would be collected from. The Sample Location Plan showing the 4 randomly selected sample locations is attached as Sheet 2. Table 1 below presents the coordinates for each of the 4 sample locations.

TABLE 1
SEDIMENT SAMPLE LOCATION COORDINATES

Sample	Latitude	Longitude
S-1	43.667131	-70.184626
S-2	43.666895	-70.184914
S-3	43.666998	-70.185191
S-4	43.667124	-70.185037

3.0 SEDIMENT SAMPLE COLLECTION

On April 18, 2017, S.W.COLE used a small, motorless boat provided by Peaks Island Land Preserve to collect pond sediment samples S-1 through S-4 at the locations shown on the Sample Location Plan. The sampling locations were established using a hand-held GPS unit. We used a Wildco 4-foot long sediment corer with extensions to collect a sediment sample throughout the total depth of pond sediment (to hard bottom) encountered at each location.

At each sample location, the sediment was removed from sample corer and temporarily placed in a clear plastic bag. We observed that the saturated samples generally consisted of a homogeneous mixture of gray to brown fine sand and silt with some

organics and trace gravel. Each sample was thoroughly mixed in the plastic bags to form a composite sample.

4.0 SEDIMENT SAMPLE TESTING

4.1 Analytical Laboratory Testing

Portions of the four composite sediment samples were removed from the plastic bags, placed in laboratory-provided glass sample containers and submitted to Maine Environmental Laboratory (MEL) in Yarmouth, Maine for analysis of the following parameters listed in Chapter 418 5.A(3): Total metals (Arsenic, Cadmium, Chromium, Lead and Mercury), semi-volatiles, and PCBs. MEL subcontracted the semi-volatiles and PCBs analyses to Eastern Analytical, Inc. of Concord, NH. Mr. Eric Hamlin of the Maine Department of Environmental Protection (MeDEP) Department of Waste Management informed us by email on March 21, 2017 that for this project, the MeDEP waived the requirement for the sediment samples to be tested for Dioxins.

The MEL laboratory test report indicates the metals Arsenic, Chromium, Lead, and Mercury were detected in all 4 sediment samples. Cadmium was not detected in any of the samples. The MEL laboratory test report is attached in Appendix B. Table 2, below presents a summary of the concentrations of metals reported for the sediment samples.

TABLE 2
SEDIMENT SAMPLE TOTAL METALS ANALYSIS TEST RESULTS (PPM)

Metal	**Sample**			
	S-1	S-2	S-3	S-4
Arsenic	12	16	16	11
Chromium	26	**55**	**51**	**40**
Lead	20	40	40	30
Cadmium	ND	ND	ND	ND
Mercury	0.10 J	0.26	0.24 J	0.15 J

PPM = parts per million
Bold Result indicates concentration exceeds beneficial reuse upper limit concentration listed in Solid Waste Rules Chapter 418.
J = laboratory estimated concentration
ND = not detected

The concentrations of Chromium reported for samples S-2, S-3 and S-4 (55 ppm, 51 ppm and 40 ppm, respectively) slightly exceed the *beneficial use of de-watered dredge material as fill standard* upper concentration limit of 38 ppm for Chromium listed in Chapter 418. None of the reported chromium concentrations exceed the upper concentration limit by a factor of two, and none of the reported Chromium concentrations qualify the sediment as a potential hazardous waste. Therefore, according to the Chapter 418, de-watered sediment dredged from the Peaks Island Ice Pond may be beneficially used as fill provided that the dredged sediment is combined with borrow material at a proportion which will lower the Chromium concentration levels in the sediment below 38 ppm.

The EAI laboratory test report indicates that neither semi-volatiles nor PCBs were detected in any of the sediment samples. The EAI laboratory test report is attached in Appendix B.

4.2 Laboratory Gradation Testing

The remaining portions of samples S-1 through S-4 were submitted to the S.W.COLE Gray, Maine Office soils laboratory for gradation testing. Table 3, below presents the sediment sample gradation test results, and a description of the sediment samples based on the gradation test results.

TABLE 3
SEDIMENT SAMPLE GRADATION RESULTS AND DESCRIPTIONS

Sample	Gradation Result	Sediment Description
S-1	13% Gravel 73.4% Sand 13.6% Fines	Gray to brown fine SAND, little Silt, little Gravel
S-2	8.2% Gravel 73.3% Sand 18.6% Fines	Gray to brown fine SAND, little Silt, trace Gravel
S-3	3% Gravel 45.2% Sand 51.8% Fines	Gray to brown SILT and fine Sand, trace Gravel
S-4	2.6% Gravel 35.4% Sand 62% Fines	Gray to brown SILT and fine Sand, trace Gravel

The gradation reports are attached in Appendix C.

The gradation test results indicate the pond sediment is predominately fine-grained material, with a trend of the sediments being finest (SILT and fine Sand, trace Gravel) at the west end of the pond, and increasing slightly in coarseness (fine SAND, little Silt, little Gravel) in an easterly direction toward the dam at the pond outlet.

After de-watering, the fine-grained dredge sediment from the pond will likely remain relatively high in moisture content. This may make it unsuitable for use as construction fill in applications requiring densification by mechanical compaction methods. Mixing the dredged sediment with other materials such as coarse sand or gravel will increase the quality of it for use as construction fill.

5.0 FINDINGS AND CONCLUSIONS

S.W.COLE has provided sampling and testing services needed to determine if sediment dredged from the Peaks Island Ice Pond during a proposed dam repair project meets the requirements of Maine Department of Environmental Protection (MeDEP) Maine Solid Waste Management Rules Chapter 418: *Reduced Procedure Beneficial Use of De-watered Dredge Material as Fill Standards.*

Analytical laboratory testing of 4 randomly selected pond sediment samples document that concentrations of the metal Chromium in 3 of the samples (55 ppm, 51 ppm and 40 ppm) slightly exceed the upper limit Chromium concentration of 38 ppm listed in the Solid Waste Management Rules.

According to the Solid Waste Management Rules, since none of the sediment sample chromium concentrations exceed the Solid Waste Management Rules upper limit Chromium concentration by a factor of two, and since none of the sediment sample Chromium concentrations qualify the sediment as a potential hazardous waste, sediment dredged from the Peaks Island Ice Pond may be beneficially used as fill provided that the dredged sediment is combined with borrow material at a proportion which will lower the Chromium concentration levels in the sediment below 38 ppm.

Gradation testing of the 4 samples indicates that the pond sediment consists predominately of fine sand and silt. Therefore, the de-watered dredged pond sediment will likely have an elevated moisture content that potentially makes it unsuitable for use as construction fill in applications requiring densification by mechanical compaction methods. Combining the dredged sediment with other materials such as coarse sand or gravel will increase the quality of it for use as construction fill.

6.0 CLOSING

It has been a pleasure to be of assistance to you with this phase of your project. If you have any questions or we may be of further assistance, please do not hesitate to contact us.

Sincerely,

S. W. COLE ENGINEERING, INC.

Gary W. Bucklin, C.G.
Senior Geologist

N
W E
S

2,000 0 2,000 4,000

Scale in Feet

S.W.COLE ENGINEERING, INC.

PEAKS ISLAND LAND PRESERVE

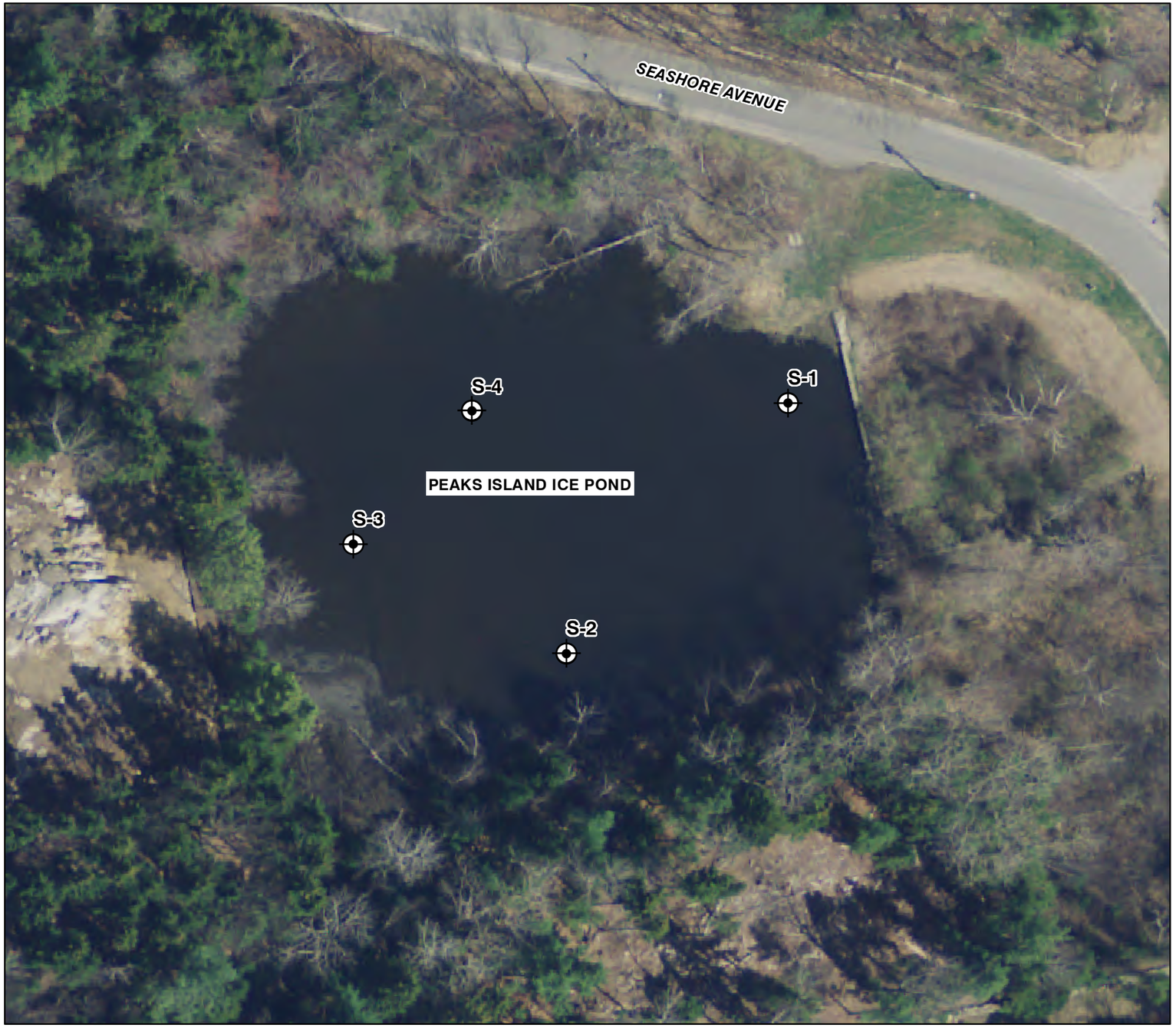
SITE LOCATION MAP

PEAKS ISLAND ICE POND
SEASHORE AVE
PEAKS ISLAND, MAINE

Job No.	17-0217	Scale	1:24000
Date:	05/04/2017	Sheet	1

NOTE:
SITE LOCATION MAP PREPARED FROM ESRI ArcGIS ONLINE AND DATA PARTNERS INCLUDING USGS AND © 2007 NATIONAL GEOGRAPHIC SOCIETY.

R:\2017\17-0217\GIS\MXDs\17-0217 SLM.mxd, 5/4/2017 9:50:02 AM, 1:24,000,



LEGEND

APPROXIMATE SEDIMENT SAMPLE LOCATION

NOTES:

1. SEDIMENT SAMPLE LOCATION PLAN PREPARED FROM IMAGERY FROM STATE OF MAINE AERIAL ORTHOPHOTOS ENTITLED "GEOLIBRARY_6IN_2012," PROVIDED BY THE STATE OF MAINE, MAINE OFFICE OF GIS AND MAINE GEOLIBRARY BOARD.
2. THE SEDIMENT SAMPLES WERE LOCATED IN THE FIELD BY S. W. COLE ENGINEERING, INC. USING A MAPPING GRADE TRIMBLE GPS RECEIVER.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. ENVIRONMENTAL SERVICES REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE SEDIMENT SAMPLES IN RELATION TO THE EXISTING CONDITIONS.

40 0 40 80
Scale in Feet

S.W.COLE ENGINEERING, INC.

PEAKS ISLAND LAND PRESERVE

SEDIMENT SAMPLE LOCATION PLAN

PEAKS ISLAND ICE POND
SEASHORE AVE
PEAKS ISLAND, MAINE

Job No.	17-0217	Scale	1"=40'
Date:	05/04/2017	Sheet	2

R:\2017\17-0217\GIS\MXDs\17-0217 Base.mxd, 5/4/2017 9:47:08 AM, 1:480,

APPENDIX A
LIMITATIONS

This Phase I ESA report has been prepared for the use of Peaks Island Land Preserve for specific application to the proposed Peaks Island Land Preserve dam repair project on Seashore Avenue on Peaks Island, Maine. We have endeavored to prepare this report in accordance with generally accepted practices. No other warranty, expressed or implied, is made.

This report cannot reflect undetected variations which may occur at the site over time. S. W. Cole Engineering, Inc. has made no attempt to verify the compliance of the past or present owners and/or occupants of the property with local, state, or federal laws and regulations.

The S. W. Cole Engineering, Inc. scope of work has not included the investigation, detection, or prevention of any Biological Pollutants at the Site or in any existing or proposed structure at the Site. The term “Biological Pollutants” includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

It must be noted that our findings do not represent scientific certainties and are based on professional judgement. S. W. Cole Engineering, Inc. does not represent that the subject Site contains no hazardous substances or other latent conditions beyond that noted or observed by S. W. Cole Engineering, Inc. during this assessment.

APPENDIX B

Maine Environmental Laboratory

One Main Street, Yarmouth, ME 04096 Tel.: 207-846-6569 FAX: 207-846-9066 Email: melab@mel-lab.com

Report of Analyses

Report Prepared for:

Gary Bucklin
SW Cole Engineering
287 Portland Road
Gray, ME 04039

Report Information:

Batch ID: 480
Report ID: 480-170502-1136
Date of Issue: May 2, 2017

The complete report consists of the following parts:
Maine Environmental Laboratory report
Chain of Custody form
Eastern Analytical, Inc report

REPORT NARRATIVE:
Enclosed are results of the analyses for your samples as received by the laboratory. Results are for the exclusive use of the client named on the report and will not be released to a third party without written consent. This report shall not be reproduced except in full without the written consent of the laboratory.

Maine Environmental Laboratory is certified by the States of Maine (Cert. #2017007) and New Hampshire (NH ELAP) (Cert. #2031) and is TNI/NELAP accredited. Our USEPA Lab ID is ME00028. A list of certified parameters is available on request. Any subcontracted parameters were produced by a laboratory certified for the fields of testing performed, when available.

Unless otherwise noted:
-Samples were received in acceptable condition and analyzed within method hold times.
-All quality control data demonstrated acceptable limits.
-The results reported herein conform to the most current NELAP standards where applicable.
-Analysis of solids for pH, flash point, ignitability, paint filter, corrosivity, alkalinity, conductivity and specific gravity are reported on an “as-received” basis.
-Results for “immediate” field parameters tested at the lab such as pH were run outside of the EPA-recommended hold time.

DEFINITIONS:
LOQ / RL - The Limit of Quantitation / Reporting Limit is the minimum level for reporting quantitative data.
LOD / MDL - The Limit of Detection / Method Detection Limit is the minimum level for reporting estimated data.
J - Data reported between the Limit of Quantitation and Limit of Detection is J-flagged as “estimated.”
ND - Not Detected
B – Detected in QC blank
S – Detection Limits increased due to sample matrix
N/A - Relative Percent Difference (RPD) cannot be calculated because the sample result was below the LOQ.

METHOD REFERENCES:
SM2540G: Standard Methods for the Examination of Water and Wastewater, 20th edition, APHA,AWWA,WPCF, 1998.
SW3050B: SW846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, USEPA, third edition. Updates I-IV, 2007.
SW6010B: SW846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, USEPA, third edition. Updates I-IV, 2007.
SW7471B: SW846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, USEPA, third edition. Updates I-IV, 2007.

This report has been reviewed and authorized by Jacquelyn R. Villinski, Laboratory Director: Jacquelyn R. Villinski

Maine Environmental Laboratory

Report of Analyses

One Main Street, Yarmouth, ME 04096 Tel.: 207-846-6569 FAX: 207-846-9066 Email: melab@mel-lab.com

Gary Bucklin
SW Cole Engineering
287 Portland Road
Gray, ME 04039

May 2, 2017

Report ID:	480-170502-1136	Sample ID:	S-1	
Batch ID:	480	Sample date & time:	04/18/17	12:00
Date received:	04/19/17	Sample matrix:	SD - composite	
Project ID:	Peaks Island Ice Pond	Laboratory ID:	170419J011	

Parameter	Results	Units	Date Analyzed	Time Analyzed	LOD	LOQ	Method	Tech
Total Solids	38.34	%	04/19/17	14:45		0.01	SM2540G	DJC
Arsenic, total	12	mg/kg	05/01/17	12:00	0.78	2.6	SW3050B/SW6010B	DWS
Cadmium, total	ND	mg/kg	05/01/17	12:00	0.78	2.6	SW3050B/SW6010B	DWS
Chromium, total	26	mg/kg	05/01/17	12:00	2.6	7.8	SW3050B/SW6010B	DWS
Lead, total	20	mg/kg	05/01/17	12:00	2.6	7.8	SW3050B/SW6010B	DWS
Mercury, total	0.10 J	mg/kg	04/25/17	10:05	0.052	0.13	SW7471B	DWS

Notes:

Maine Environmental Laboratory

Report of Analyses

One Main Street, Yarmouth, ME 04096 Tel.: 207-846-6569 FAX: 207-846-9066 Email: melab@mel-lab.com

Gary Bucklin
SW Cole Engineering
287 Portland Road
Gray, ME 04039

May 2, 2017

Report ID:	480-170502-1136	Sample ID:	S-2	
Batch ID:	480	Sample date & time:	04/18/17	12:50
Date received:	04/19/17	Sample matrix:	SD - composite	
Project ID:	Peaks Island Ice Pond	Laboratory ID:	170419J012	

Parameter	Results	Units	Date Analyzed	Time Analyzed	LOD	LOQ	Method	Tech
Total Solids	18.89	%	04/19/17	14:45		0.01	SM2540G	DJC
Arsenic, total	16	mg/kg	05/01/17	12:00	1.6	5.3	SW3050B/SW6010B	DWS
Cadmium, total	ND	mg/kg	05/01/17	12:00	1.6	5.3	SW3050B/SW6010B	DWS
Chromium, total	55	mg/kg	05/01/17	12:00	5.3	16	SW3050B/SW6010B	DWS
Lead, total	40	mg/kg	05/01/17	12:00	5.3	16	SW3050B/SW6010B	DWS
Mercury, total	0.26	mg/kg	04/25/17	10:05	0.11	0.26	SW7471B	DWS

Notes:

Maine Environmental Laboratory

Report of Analyses

One Main Street, Yarmouth, ME 04096 Tel.: 207-846-6569 FAX: 207-846-9066 Email: melab@mel-lab.com

Gary Bucklin
SW Cole Engineering
287 Portland Road
Gray, ME 04039

May 2, 2017

Report ID:	480-170502-1136	Sample ID:	S-3	
Batch ID:	480	Sample date & time:	04/18/17	13:05
Date received:	04/19/17	Sample matrix:	SD - composite	
Project ID:	Peaks Island Ice Pond	Laboratory ID:	170419J013	

Parameter	Results	Units	Date Analyzed	Time Analyzed	LOD	LOQ	Method	Tech
Total Solids	16.57	%	04/19/17	14:45		0.01	SM2540G	DJC
Arsenic, total	16	mg/kg	05/01/17	12:00	1.8	6	SW3050B/SW6010B	DWS
Cadmium, total	ND	mg/kg	05/01/17	12:00	1.8	6	SW3050B/SW6010B	DWS
Chromium, total	51	mg/kg	05/01/17	12:00	6	18	SW3050B/SW6010B	DWS
Lead, total	40	mg/kg	05/01/17	12:00	6	18	SW3050B/SW6010B	DWS
Mercury, total	0.24 J	mg/kg	04/25/17	10:05	0.12	0.3	SW7471B	DWS

Notes:

Maine Environmental Laboratory

Report of Analyses

One Main Street, Yarmouth, ME 04096 Tel.: 207-846-6569 FAX: 207-846-9066 Email: melab@mel-lab.com

Gary Bucklin
SW Cole Engineering
287 Portland Road
Gray, ME 04039

May 2, 2017

Report ID:	480-170502-1136	Sample ID:	S-4	
Batch ID:	480	Sample date & time:	04/18/17	14:50
Date received:	04/19/17	Sample matrix:	SD - composite	
Project ID:	Peaks Island Ice Pond	Laboratory ID:	170419J014	

Parameter	Results	Units	Date Analyzed	Time Analyzed	LOD	LOQ	Method	Tech
Total Solids	26.24	%	04/19/17	14:45		0.01	SM2540G	DJC
Arsenic, total	11	mg/kg	05/01/17	12:00	1.1	3.8	SW3050B/SW6010B	DWS
Cadmium, total	ND	mg/kg	05/01/17	12:00	1.1	3.8	SW3050B/SW6010B	DWS
Chromium, total	40	mg/kg	05/01/17	12:00	3.8	11	SW3050B/SW6010B	DWS
Lead, total	30	mg/kg	05/01/17	12:00	3.8	11	SW3050B/SW6010B	DWS
Mercury, total	0.15 J	mg/kg	04/25/17	10:05	0.076	0.19	SW7471B	DWS

Notes:

MAINE ENVIRONMENTAL LABORATORY- Chain of Custody

One Main Street Yarmouth, ME 04096-6716 Tel: (207) 846-6569 Fax: (207) 846-9066
Email: melab@mel-lab.com Web: MaineEnvironmentalLaboratory.com

REPORT TO: GARY BUCHLIN
TELEPHONE: 207-615-2761
EMAIL: GBUCHLIN@SWCOLE.COM
COMPANY: S.W. COLE ENG. INC.
BILL TO / PURCHASE ORDER #: 17-02176
ADDRESS: 286 PORTLAND ROAD, GRAY, ME 04039
PROJECT NAME: PEAKS ISLAND ICE POND
SAMPLER NAME: GARY BUCHLIN

ANALYSES (Specify Method: RCRA, NPDES, DW, etc.)

FOR LAB USE ONLY
LABORATORY REPORT # 480 SWE

SAMPLE RECEIVING
Within Hold Time? ☒ Yes ☐ No ☐ N/A
Good Condition? ☒ Yes ☐ No ☐ N/A
Preserved? ☒ Yes ☐ No ☐ N/A
Custody Seal? ☒ Yes ☐ No ☐ N/A
Del. by: GB
Temp. °C 4.9

SAMPLE IDENTIFICATION	# CONTAINERS	TYPE OF CONTAINERS	FIELD FILTRATION YES	FIELD FILTRATION NO	SAMPLE TYPE	GRAB	COMP.	METHOD PRESERVED	SAMPLING DATE	SAMPLING TIME	Tot. Arsenic, Cadmium, Chromium, Lead	Tot. Mercury	PCB	PAH Compounds: benz(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a) pyrene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene						LAB ID/SUBCONTRACTOR	
S-1	1	G		X	Dredge Sediment		X	≤6°C	4-18-17	12:00	X	X								170419J011	1A
↓	1	G		↓	↓		↓	≤6°C	↓	↓			X	X						↓	EAI
S-2	1	G							4-18-17	12:50	X	X								170419J012	2A
↓	1	G							↓	↓			X	X						↓	EAI
S-3	1	G							4-18-17	13:05	X	X								170419J013	3A
↓	1	G							↓	↓			X	X						↓	EAI
S-4	1	G							4-18-17	14:50	X	X								170419J014	4A
↓	1	G		↓	↓		↓	↓	↓	↓			X	X						↓	EAI

TURNAROUND REQUEST
☒ Standard
☐ Priority (SURCHARGE)

REPORTING REQUIREMENTS?
☒ Standard Report
☐ ME DEP EDD
☐ DW Compliance (sent to State)
☐ CC Results to

COMMENTS: POND BOTTOM SEDIMENT (MUCK)

RELINQUISHED BY SAMPLER: Gary W. Buchlin	DATE 4-19-17	TIME 09:30	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE 4-19-17	TIME 0930	RECEIVED BY LABORATORY: L Bellegi

 It is the client's responsibility to check for accuracy prior to relinquishing samples. By executing this COC, the client has read and agrees to be bound by MEL's Terms & Conditions. page ____ of ____

Eastern Analytical, Inc.

professional laboratory and drilling services

Jackie Villinski
Maine Environmental Laboratory
One Main Street
Yarmouth , ME 04096

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 167854
Client Identification: 480 SWE
Date Received: 4/20/2017

Dear Ms. Villinski :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director | 5.2.17 Date | 10 # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **167854**

Client: **Maine Environmental Laboratory**

Client Designation: **480 SWE**

Temperature upon receipt (°C): 2.0 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
167854.01	S-1	4/20/17	4/18/17	soil	54.9	Adheres to Sample Acceptance Policy
167854.02	S-2	4/20/17	4/18/17	soil	19.8	Adheres to Sample Acceptance Policy
167854.03	S-3	4/20/17	4/18/17	soil	16.9	Adheres to Sample Acceptance Policy
167854.04	S-4	4/20/17	4/18/17	soil	21.3	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.
Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.
All results contained in this report relate only to the above listed samples.
References include:
1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater,20th Edition, 1998 and 22nd Edition, 2012
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 2nd edition, 1992

Eastern Analytical, Inc. www.easternanalytical.com | 800.287.0525 | customerservice@easternanalytical.com

LABORATORY REPORT

EAI ID#: **167854**

Client: **Maine Environmental Laboratory**
Client Designation: **480 SWE**

Client Sample ID:	S-1
Lab Sample ID:	167854.01
Matrix:	soil
Date Sampled:	4/18/17
Date Received:	4/20/17

	Result	RL	Dilution Factor	Units	Date / Time Analyzed		Date Prepared	Method	Analyst
Benzo[a]anthracene	< 0.5	0.5	7	mg/kg	4/21/17	19:55	4/21/17	8270D	JMR
Chrysene	< 0.5	0.5	7	mg/kg	4/21/17	19:55	4/21/17	8270D	JMR
Benzo[b]fluoranthene	< 0.5	0.5	7	mg/kg	4/21/17	19:55	4/21/17	8270D	JMR
Benzo[k]fluoranthene	< 0.5	0.5	7	mg/kg	4/21/17	19:55	4/21/17	8270D	JMR
Benzo[a]pyrene	< 0.5	0.5	7	mg/kg	4/21/17	19:55	4/21/17	8270D	JMR
Indeno[1,2,3-cd]pyrene	< 0.5	0.5	7	mg/kg	4/21/17	19:55	4/21/17	8270D	JMR
Dibenz[a,h]anthracene	< 0.5	0.5	7	mg/kg	4/21/17	19:55	4/21/17	8270D	JMR
p-Terphenyl-D14 (surr)	**78 %R**			%	4/21/17	19:55	4/21/17	8270D	JMR

Detection limits elevated due to low solids content and in response to the lower initial mass used for analysis. A lower initial mass was used due to the nature of the sample matrix.

LABORATORY REPORT

EAI ID#: **167854**

Client: **Maine Environmental Laboratory**
Client Designation: **480 SWE**

Client Sample ID:	S-2
Lab Sample ID:	167854.02
Matrix:	soil
Date Sampled:	4/18/17
Date Received:	4/20/17

	Result	RL	Dilution Factor	Units	Date / Time Analyzed		Date Prepared	Method	Analyst
Benzo[a]anthracene	< 2	2	22	mg/kg	4/21/17	20:17	4/21/17	8270D	JMR
Chrysene	< 2	2	22	mg/kg	4/21/17	20:17	4/21/17	8270D	JMR
Benzo[b]fluoranthene	< 2	2	22	mg/kg	4/21/17	20:17	4/21/17	8270D	JMR
Benzo[k]fluoranthene	< 2	2	22	mg/kg	4/21/17	20:17	4/21/17	8270D	JMR
Benzo[a]pyrene	< 2	2	22	mg/kg	4/21/17	20:17	4/21/17	8270D	JMR
Indeno[1,2,3-cd]pyrene	< 2	2	22	mg/kg	4/21/17	20:17	4/21/17	8270D	JMR
Dibenz[a,h]anthracene	< 2	2	22	mg/kg	4/21/17	20:17	4/21/17	8270D	JMR
p-Terphenyl-D14 (surr)	**69 %R**			%	4/21/17	20:17	4/21/17	8270D	JMR

Detection limits elevated due to low solids content and in response to the lower initial mass used for analysis. A lower initial mass was used due to the nature of the sample matrix.

LABORATORY REPORT

EAI ID#: **167854**

Client: **Maine Environmental Laboratory**
Client Designation: **480 SWE**

Client Sample ID:	S-3
Lab Sample ID:	167854.03
Matrix:	soil
Date Sampled:	4/18/17
Date Received:	4/20/17

	Result	RL	Dilution Factor	Units	Date / Time Analyzed		Date Prepared	Method	Analyst
Benzo[a]anthracene	< 2	2	27	mg/kg	4/21/17	20:40	4/21/17	8270D	JMR
Chrysene	< 2	2	27	mg/kg	4/21/17	20:40	4/21/17	8270D	JMR
Benzo[b]fluoranthene	< 2	2	27	mg/kg	4/21/17	20:40	4/21/17	8270D	JMR
Benzo[k]fluoranthene	< 2	2	27	mg/kg	4/21/17	20:40	4/21/17	8270D	JMR
Benzo[a]pyrene	< 2	2	27	mg/kg	4/21/17	20:40	4/21/17	8270D	JMR
Indeno[1,2,3-cd]pyrene	< 2	2	27	mg/kg	4/21/17	20:40	4/21/17	8270D	JMR
Dibenz[a,h]anthracene	< 2	2	27	mg/kg	4/21/17	20:40	4/21/17	8270D	JMR
p-Terphenyl-D14 (surr)	**71 %R**			%	4/21/17	20:40	4/21/17	8270D	JMR

Detection limits elevated due to low solids content and in response to the lower initial mass used for analysis. A lower initial mass was used due to the nature of the sample matrix.

LABORATORY REPORT

EAI ID#: **167854**

Client: **Maine Environmental Laboratory**
Client Designation: **480 SWE**

Client Sample ID:	S-4
Lab Sample ID:	167854.04
Matrix:	soil
Date Sampled:	4/18/17
Date Received:	4/20/17

	Result	RL	Dilution Factor	Units	Date / Time Analyzed		Date Prepared	Method	Analyst
Benzo[a]anthracene	< 1	1	19	mg/kg	4/21/17	21:02	4/21/17	8270D	JMR
Chrysene	< 1	1	19	mg/kg	4/21/17	21:02	4/21/17	8270D	JMR
Benzo[b]fluoranthene	< 1	1	19	mg/kg	4/21/17	21:02	4/21/17	8270D	JMR
Benzo[k]fluoranthene	< 1	1	19	mg/kg	4/21/17	21:02	4/21/17	8270D	JMR
Benzo[a]pyrene	< 1	1	19	mg/kg	4/21/17	21:02	4/21/17	8270D	JMR
Indeno[1,2,3-cd]pyrene	< 1	1	19	mg/kg	4/21/17	21:02	4/21/17	8270D	JMR
Dibenz[a,h]anthracene	< 1	1	19	mg/kg	4/21/17	21:02	4/21/17	8270D	JMR
p-Terphenyl-D14 (surr)	**60 %R**			%	4/21/17	21:02	4/21/17	8270D	JMR

Detection limits elevated due to low solids content and in response to the lower initial mass used for analysis. A lower initial mass was used due to the nature of the sample matrix.

LABORATORY REPORT

EAI ID#: **167854**

Client: **Maine Environmental Laboratory**
Client Designation: **480 SWE**

Client Sample ID:	S-1
Lab Sample ID:	167854.01
Matrix:	soil
Date Sampled:	4/18/17
Date Received:	4/20/17

	Result	RL	Dilution Factor	Units	Date / Time Analyzed		Date Prepared	Method	Analyst
PCB-1016	< 0.08	0.08	5	mg/kg	4/25/17	13:42	4/24/17	8082A	SS
PCB-1221	< 0.08	0.08	5	mg/kg	4/25/17	13:42	4/24/17	8082A	SS
PCB-1232	< 0.08	0.08	5	mg/kg	4/25/17	13:42	4/24/17	8082A	SS
PCB-1242	< 0.08	0.08	5	mg/kg	4/25/17	13:42	4/24/17	8082A	SS
PCB-1248	< 0.08	0.08	5	mg/kg	4/25/17	13:42	4/24/17	8082A	SS
PCB-1254	< 0.08	0.08	5	mg/kg	4/25/17	13:42	4/24/17	8082A	SS
PCB-1260	< 0.08	0.08	5	mg/kg	4/25/17	13:42	4/24/17	8082A	SS
PCB-1262	< 0.08	0.08	5	mg/kg	4/25/17	13:42	4/24/17	8082A	SS
PCB-1268	< 0.08	0.08	5	mg/kg	4/25/17	13:42	4/24/17	8082A	SS
TMX (surr)	**99 %R**			%	4/25/17	13:42	4/24/17	8082A	SS
DCB (surr)	**94 %R**			%	4/25/17	13:42	4/24/17	8082A	SS

Acid clean-up was performed on the samples and associated batch QC. Detection limits elevated due to sample matrix, a low solids content and in response to the lower initial mass used for analysis. A lower initial mass was used due to the nature of the sample matrix.

LABORATORY REPORT

EAI ID#: **167854**

Client: **Maine Environmental Laboratory**
Client Designation: **480 SWE**

Client Sample ID:	S-2
Lab Sample ID:	167854.02
Matrix:	soil
Date Sampled:	4/18/17
Date Received:	4/20/17

	Result	RL	Dilution Factor	Units	Date / Time Analyzed		Date Prepared	Method	Analyst
PCB-1016	< 0.2	0.2	14	mg/kg	4/25/17	13:51	4/24/17	8082A	SS
PCB-1221	< 0.2	0.2	14	mg/kg	4/25/17	13:51	4/24/17	8082A	SS
PCB-1232	< 0.2	0.2	14	mg/kg	4/25/17	13:51	4/24/17	8082A	SS
PCB-1242	< 0.2	0.2	14	mg/kg	4/25/17	13:51	4/24/17	8082A	SS
PCB-1248	< 0.2	0.2	14	mg/kg	4/25/17	13:51	4/24/17	8082A	SS
PCB-1254	< 0.2	0.2	14	mg/kg	4/25/17	13:51	4/24/17	8082A	SS
PCB-1260	< 0.2	0.2	14	mg/kg	4/25/17	13:51	4/24/17	8082A	SS
PCB-1262	< 0.2	0.2	14	mg/kg	4/25/17	13:51	4/24/17	8082A	SS
PCB-1268	< 0.2	0.2	14	mg/kg	4/25/17	13:51	4/24/17	8082A	SS
TMX (surr)	**98 %R**			%	4/25/17	13:51	4/24/17	8082A	SS
DCB (surr)	**91 %R**			%	4/25/17	13:51	4/24/17	8082A	SS

Acid clean-up was performed on the samples and associated batch QC. Detection limits elevated due to sample matrix, a low solids content and in response to the lower initial mass used for analysis. A lower initial mass was used due to the nature of the sample matrix.

LABORATORY REPORT

EAI ID#: **167854**

Client: **Maine Environmental Laboratory**
Client Designation: **480 SWE**

Client Sample ID:	S-3
Lab Sample ID:	167854.03
Matrix:	soil
Date Sampled:	4/18/17
Date Received:	4/20/17

	Result	RL	Dilution Factor	Units	Date / Time Analyzed		Date Prepared	Method	Analyst
PCB-1016	< 0.3	0.3	16	mg/kg	4/25/17	14:01	4/24/17	8082A	SS
PCB-1221	< 0.3	0.3	16	mg/kg	4/25/17	14:01	4/24/17	8082A	SS
PCB-1232	< 0.3	0.3	16	mg/kg	4/25/17	14:01	4/24/17	8082A	SS
PCB-1242	< 0.3	0.3	16	mg/kg	4/25/17	14:01	4/24/17	8082A	SS
PCB-1248	< 0.3	0.3	16	mg/kg	4/25/17	14:01	4/24/17	8082A	SS
PCB-1254	< 0.3	0.3	16	mg/kg	4/25/17	14:01	4/24/17	8082A	SS
PCB-1260	< 0.3	0.3	16	mg/kg	4/25/17	14:01	4/24/17	8082A	SS
PCB-1262	< 0.3	0.3	16	mg/kg	4/25/17	14:01	4/24/17	8082A	SS
PCB-1268	< 0.3	0.3	16	mg/kg	4/25/17	14:01	4/24/17	8082A	SS
TMX (surr)	**99 %R**			%	4/25/17	14:01	4/24/17	8082A	SS
DCB (surr)	**94 %R**			%	4/25/17	14:01	4/24/17	8082A	SS

Acid clean-up was performed on the samples and associated batch QC. Detection limits elevated due to sample matrix, a low solids content and in response to the lower initial mass used for analysis. A lower initial mass was used due to the nature of the sample matrix.

LABORATORY REPORT

EAI ID#: **167854**

Client: **Maine Environmental Laboratory**
Client Designation: **480 SWE**

Client Sample ID:	S-4
Lab Sample ID:	167854.04
Matrix:	soil
Date Sampled:	4/18/17
Date Received:	4/20/17

	Result	RL	Dilution Factor	Units	Date / Time Analyzed		Date Prepared	Method	Analyst
PCB-1016	< 0.2	0.2	13	mg/kg	4/25/17	14:11	4/24/17	8082A	SS
PCB-1221	< 0.2	0.2	13	mg/kg	4/25/17	14:11	4/24/17	8082A	SS
PCB-1232	< 0.2	0.2	13	mg/kg	4/25/17	14:11	4/24/17	8082A	SS
PCB-1242	< 0.2	0.2	13	mg/kg	4/25/17	14:11	4/24/17	8082A	SS
PCB-1248	< 0.2	0.2	13	mg/kg	4/25/17	14:11	4/24/17	8082A	SS
PCB-1254	< 0.2	0.2	13	mg/kg	4/25/17	14:11	4/24/17	8082A	SS
PCB-1260	< 0.2	0.2	13	mg/kg	4/25/17	14:11	4/24/17	8082A	SS
PCB-1262	< 0.2	0.2	13	mg/kg	4/25/17	14:11	4/24/17	8082A	SS
PCB-1268	< 0.2	0.2	13	mg/kg	4/25/17	14:11	4/24/17	8082A	SS
TMX (surr)	**97 %R**			%	4/25/17	14:11	4/24/17	8082A	SS
DCB (surr)	**89 %R**			%	4/25/17	14:11	4/24/17	8082A	SS

Acid clean-up was performed on the samples and associated batch QC. Detection limits elevated due to sample matrix, a low solids content and in response to the lower initial mass used for analysis. A lower initial mass was used due to the nature of the sample matrix.

EAI

MAINE ENVIRONMENTAL LABORATORY- Chain of Custody

One Main Street Yarmouth, ME 04096-6716 Tel: (207) 846-6569 Fax: (207) 846-9066
Email: melab@mel-lab.com Web: MaineEnvironmentalLaboratory.com

FOR LAB USE ONLY: 167854

10

REPORT TO: J. Villinski
TELEPHONE:
EMAIL:
COMPANY:
BILL TO / PURCHASE ORDER #:
ADDRESS:
PROJECT NAME: 480 SWE
SAMPLER NAME:

ANALYSES (Specify Method: RCRA, NPDES, DW,)

SAMPLE IDENTIFICATION	# CONTAINERS	TYPE OF CONTAINERS	FIELD FILTRATION YES	FIELD FILTRATION NO	SAMPLE TYPE	GRAB	COMP.	METHOD PRESERVED	SAMPLING DATE	SAMPLING TIME	PCB	PAH compounds: benz(a)anthracene	benzo(b)fluoranthene	benzo(k)fluoranthene	benzo(a)pyrene	chrysene	dibenz(a,h)anthracene	indeno[1,2,3-c,d]pyrene			LAB ID/SUBCONTRACTOR
S-1	1	8oz G		X	SD		X	4°C	4-18-17	1200	X	X									
S-2	1	↓		X	↓		X	↓	↓	1250	X	X									
S-3	1	↓		X	↓		X	↓	↓	1305	X	X									
S-4	1	↓		X	↓		X	↓	↓	1450	X	X									

Within Hold Time? ☐Yes ☐No ☐N/A
Good Condition? ☐Yes ☐No ☐N/A
Preserved? ☐Yes ☐No ☐N/A
Custody Seal? ☐Yes ☐No ☐N/A
Del. by:
Temp. °C 2.0

TURNAROUND REQUEST
☒ Standard 5/1
☐ Priority (SURCHARGE)
MEL3120101-35

REPORTING REQUIREMENTS?
☒ Standard Report
☐ ME DEP EDD
☐ DW Compliance (sent to State)
☐ CC Results to

COMMENTS

	DATE	TIME	
RELINQUISHED BY SAMPLER:			RECEIVED BY:
RELINQUISHED BY: J Bahger	4-20-17	1205	RECEIVED BY: R. M. Farland
RELINQUISHED BY: R. M. Farland	4-20-17	1450	RECEIVED BY LABORATORY:

COC 12/14 It is the client's responsibility to check for accuracy prior to relinquishing samples. By executing this COC, the client has read and agrees to be bound by MEL's Terms & Conditions.

APPENDIX C

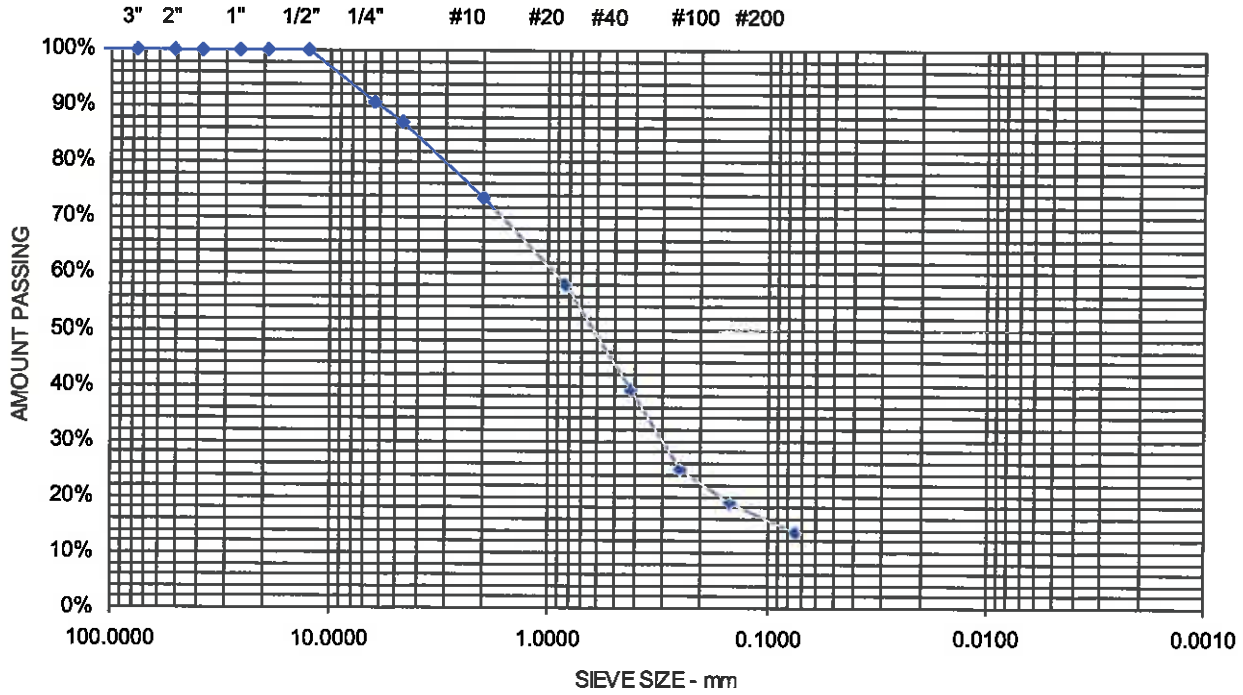
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PEAKS ISLAND ME - PEAKS ISLAND ICE POND - DREDGE SEDIMENT SAMPLING AND TESTING	Project Number	17-0217
Client	PEAKS ISLAND LAND PRESERVE	Lab ID	22198G
		Date Received	4/19/2017
		Date Completed	4/21/2017
Material Source	**POND SEDIMENT (S-1)**	Tested By	PAUL SHAFFER

STANDARD DESIGNATION (mm/um)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	91	
4.75 mm	No. 4	87	13% Gravel
2.00 mm	No. 10	74	
850 um	No. 20	58	
425 um	No. 40	39	73.4% Sand
250 um	No. 60	25	
150 um	No. 100	19	
75 um	No. 200	13.6	13.6% Fines



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S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

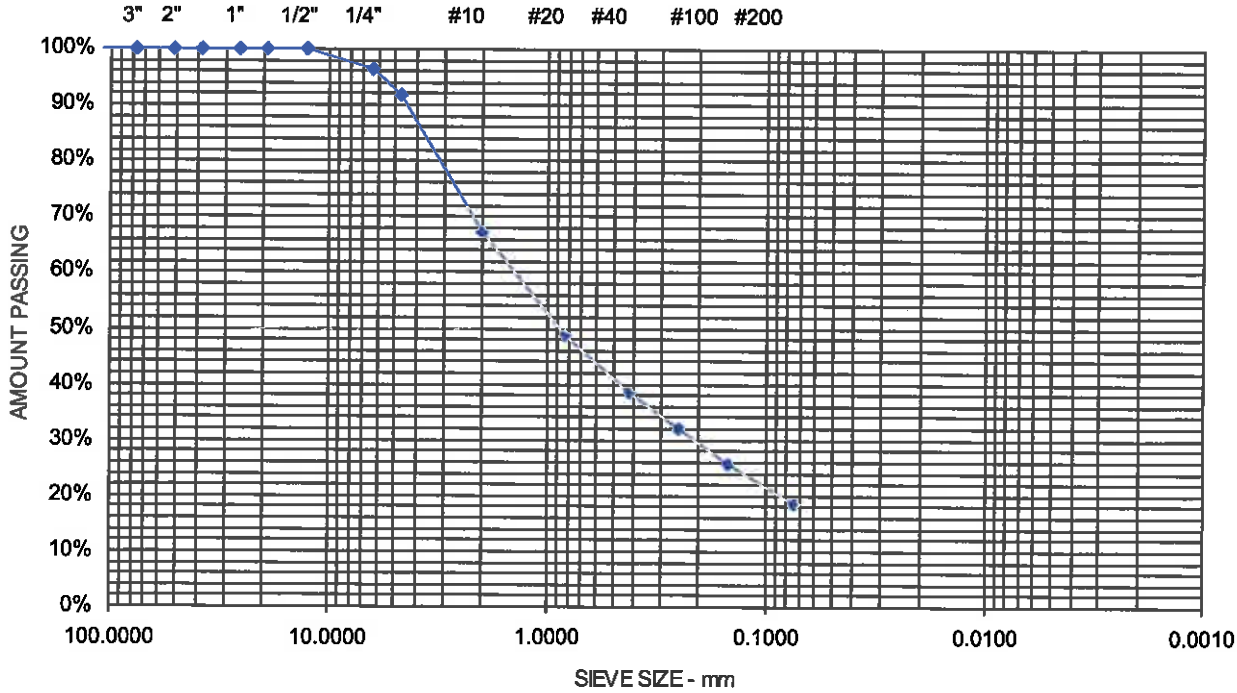
Project Name: PEAKS ISLAND ME - PEAKS ISLAND ICE POND - DREDGE SEDIMENT SAMPLING AND TESTING

Client: PEAKS ISLAND LAND PRESERVE

Material Source: **POND SEDIMENT (S-2)**

Project Number: 17-0217
Lab ID: 22199G
Date Received: 4/19/2017
Date Completed: 4/21/2017
Tested By: PAUL SHAFFER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	96	
4.75 mm	No. 4	92	8.2% Gravel
2.00 mm	No. 10	67	
850 um	No. 20	49	
425 um	No. 40	38	73.3% Sand
250 um	No. 60	32	
150 um	No. 100	26	
75 um	No. 200	18.6	18.6% Fines



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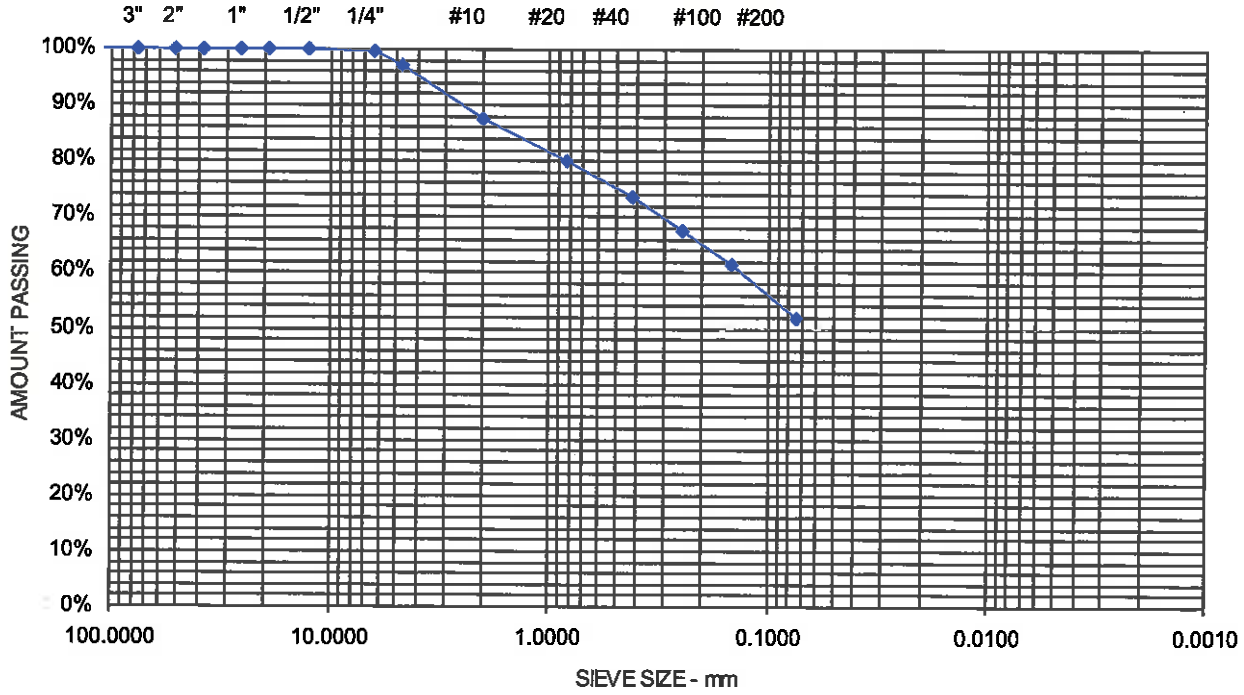
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PEAKS ISLAND ME - PEAKS ISLAND ICE POND - DREDGE SEDIMENT SAMPLING AND TESTING	Project Number	17-0217
Client	PEAKS ISLAND LAND PRESERVE	Lab ID	22200G
		Date Received	4/19/2017
		Date Completed	4/21/2017
Material Source	**POND SEDIMENT (S-3)**	Tested By	PAUL SHAFFER

STANDARD DESIGNATION (mm/um)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	99	
4.75 mm	No. 4	97	3% Gravel
2.00 mm	No. 10	88	
850 um	No. 20	80	
425 um	No. 40	74	45.2% Sand
250 um	No. 60	68	
150 um	No. 100	62	
75 um	No. 200	51.8	51.8% Fines



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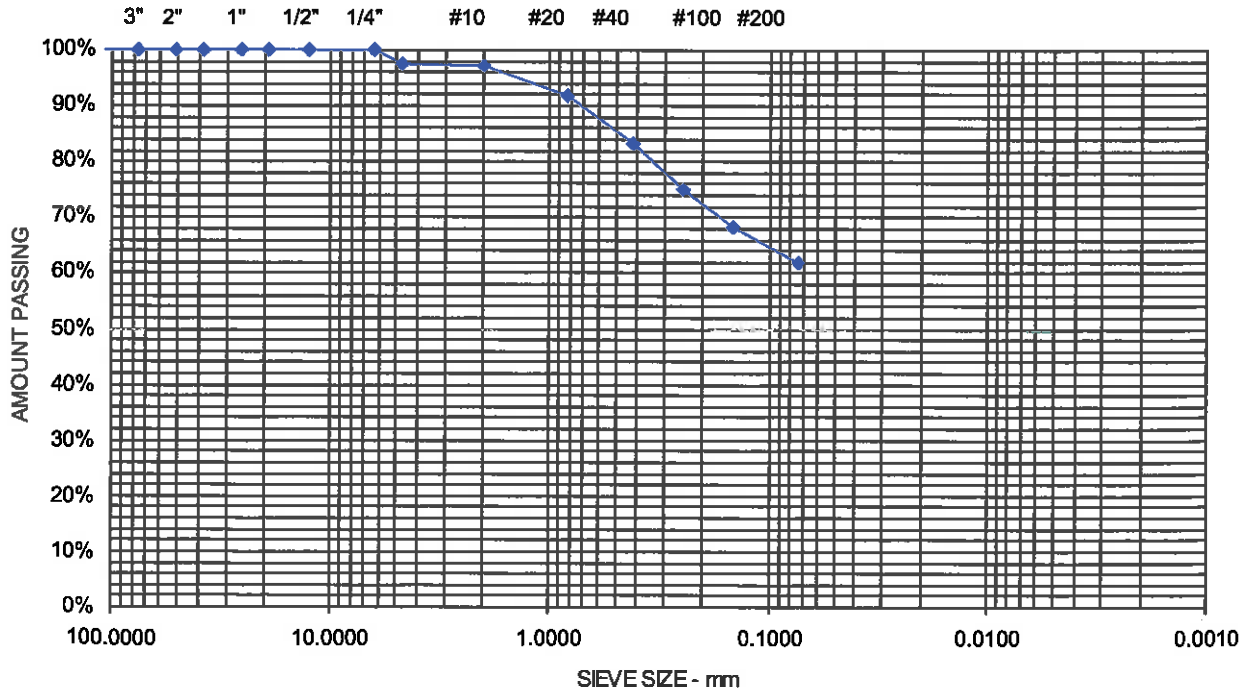
S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name	PEAKS ISLAND ME - PEAKS ISLAND ICE POND - DREDGE SEDIMENT SAMPLING AND TESTING	Project Number	17-0217
Client	PEAKS ISLAND LAND PRESERVE	Lab ID	22201G
		Date Received	4/19/2017
		Date Completed	4/21/2017
Material Source	**POND SEDIMENT (S-4)**	Tested By	PAUL SHAFFER

STANDARD DESIGNATION (mm/um)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	100	
4.75 mm	No. 4	97	2.6% Gravel
2.00 mm	No. 10	97	
850 um	No. 20	92	
425 um	No. 40	83	35.4% Sand
250 um	No. 60	75	
150 um	No. 100	68	
75 um	No. 200	62.0	62% Fines



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