



Resource Management, Inc.

May 2, 2016

Michael Rainey
N. H. Department of Environmental Services
Residuals Management Section
29 Hazen Drive, P. O. Box 95
Concord, N. H. 03302-0095

RE: New London Lagoon Closure Plan

Dear Mr. Rainey,

On behalf of the Town of New London, Resource Management, Inc. is submitting a Lagoon Closure Plan as required in Env-Wq 807.09. New London would like to begin work in June 2016 to close the lagoons that have been inactive since 1980. An electronic copy has also provided to DES via email.

If you have any questions please feel free to contact me.

Sincerely,

Felicia Morrissette
Project Manager: Compliance & GIS

Enclosure: *New London Lagoon Closure Plan*

Copy: *Richard Lee, Town of New London*

New London Lagoon Closure Plan

May 2016



**Frothingham Road
New London, NH**

Prepared by:



**Resource
Management, Inc.**

1171 NH RT 175 Holderness, NH 03245
Toll Free: (888) 536-8998 Fax: (603) 536-8998

CLOSURE PLAN

New London Lagoons Frothingham Road

Facility Identification

Facility Name: New London Lagoons
Location: Frothingham Road, New London, NH
Mailing Address: 186 South Pleasant Street, New London, NH 03257
Tax Map #: 96
Lot #: 40

Activity Description

The Town of New London (Town) used to operate a wastewater treatment facility at this site. It was closed down in 1980 when the Town began to send all their wastewater to Sunapee for treatment. As a result, this site has not been in use as a wastewater management facility since that time. There are four areas at this site that need to be closed for compliance with NH Department of Environmental Services (NH-DES), including three lagoons and one sludge drying pit. Due to funding considerations, the Town will be performing the closure in two phases over the next two years. The Town, however, reserves the ability to complete this project on an accelerated schedule based upon the availability of funding or other considerations.

Lagoons

The lagoon area consists of three treatment lagoons that currently have water and some amount of solids in them. It is the intent to first remove all water and remaining solids, and then fill them in with clean fill.

Excavated solids will either be taken off-site to the Town's gravel pit located on Mountain Road and blended with sand to make a manufactured topsoil, or retained on-site to create the final, vegetative cover to stabilize the site. The solids will be blended with sand at a 1:1 ratio by volume to create manufactured topsoil.

Samples were obtained and analyzed for the solids that are contained in all three lagoons. The results indicate the solids easily meet Class A standards (See attachment II). Additional analysis for pathogens may be performed based on input from NH-DES.

Sludge Drying Pit

The sludge drying pit was covered with soil years ago and contains an unknown amount of dried solids. After the lagoons have been completed, solids will be removed from the former sludge drying pit and similarly refilled with clean fill. Excavated solids will be temporarily stockpiled on the open area adjacent to the disposal site and blended into manufactured topsoil to revegetate the site. Upon completion of the mixing and spreading activities, the site will be restored to a natural vegetated state.

Map Delineation of Site Impact

The extent of the footprint of the four areas including three lagoons and a sludge drying pit is delineated on the attached map: "*New London Lagoon Closure*" prepared by Nobis Engineering dated June 20, 2015. Based upon this map, the four areas will be excavated and the remaining solids will be removed and the areas restored with clean fill and a natural vegetated state.

Site Work Description

Prior to beginning the actual dewatering and solids removal activities, some site work will need to be performed to provide appropriate access to the lagoons and to address potential erosion. The culverts on the access road will be replaced prior to the closure, and gravel will be installed for an improved access road. The ditch line that is located upslope of the lagoons will be cleaned in order to divert surface water that is shed from the upland area during any rain events that may occur during the project. The down slope berms on lagoons #2 and #3 will be reinforced to prevent failure during the closure operation and to protect Lyons Brook.

This project will be completed in two phases during 2016 and 2017.

Phase I - 2016

Lagoon #3 will be dewatered with a pumping system that will move the water directly to the settling basin or the Imhoff tanks at the pump station for transfer to the Sunapee Wastewater Treatment Facility for treatment. Solids from lagoon #1 will be excavated and trucked in a water tight trailer to the Town's gravel pit located off Mountain Road where the solids will be blended with soil to create a topsoil for use in other Town projects. While the solids are being removed from the lagoon, sand from the Town's gravel pit will be used to fill the lagoon. When solids are removed down to the bottom of the lagoon, samples will be obtained and analyzed for metals to confirm complete removal off all solids under NH-DES supervision. Material will be graded to drain and prepared for application of manufactured topsoil generated from the excavated solids.

Phase II - 2017

Lagoons #1 & #2 will be dewatered with a pumping system that will move the liquid material from one lagoon to the next to allow for settling of any solids which may get mixed with the liquid. The liquid would then be pumped to the settling basin or the Imhoff tanks at the pump station for transfer to the Sunapee Wastewater Treatment Facility for treatment. Solids from lagoons #1 & #2 will be excavated and trucked in a water tight trailer to the Town's gravel pit for mixing with sand to create a manufactured soil. When solids are removed down to the bottom of the lagoon, samples will be obtained and analyzed for metals to confirm complete removal off all solids under NH-DES supervision. As the material is being removed from the lagoons, sand from the Town's gravel pit will be used to fill the lagoons. Material will be graded to drain and prepared for application of manufactured topsoil generated from the excavated material.

After the lagoons have been completed, solids will be removed from the former sludge drying pit and similarly refilled with clean fill after testing for metals to demonstrate complete removal of solids under NH-DES supervision. Excavated solids will be temporarily stockpiled on the open area adjacent to the disposal site and blended into manufactured topsoil to revegetate the site. Upon completion of the filling activities, the site will be restored to a natural vegetated state

Temporary Groundwater Discharge permit for Settling Basin

During closure activities it may be desirable to pump the water from the lagoons to the settling basin that was constructed adjacent to the old treatment facility. While it is not anticipated needing to use the settling basin, the Town respectfully requests a temporary groundwater discharge permit in case the basin needs to be used for overflow due to limitations at the Sunapee WWTF.

Projected Closure Activity Schedule

Phase I

April 2016	Facility Closure Permitting Process
April 25, 2016	Begin site preparation, construct road, remove trees, begin dewatering of lagoon #3 to Sunapee WWTF
May 2016	Begin solids removal, transport to Town gravel pit for blending, test for metals, fill lagoon with sand.
July 2016	Topsoil placement and seeding Phase I complete
August 2016	Shut site down for the season

Phase II*

June 2017	Begin removal operations for lagoons #1 & #2; transport solids to Town gravel pit; test for metals, fill in with sand; place manufactured soil and seed.
July 2017	Begin removal of solids from former sludge drying pit; test for metals, mix solids with sand to make manufactured soil for revegetation.
August, 2017	Complete filling and final grading of former sludge drying pit; use manufactured topsoil for final vegetative cover; remove any excess solids to Town gravel pit; complete final seeding of site.

* - Please note that the Town may elect to finish the entire project in 2016, if funding can be achieved.

General Facility Closure Requirements

During closure activities the facility shall be operated in a clean and orderly fashion in order to minimize odors and the attraction of vectors. Access to the site shall be restricted through the use of signage and physical gates, as appropriate.

Completion of Site Activities

Prior to completion of the lagoon closure, the Town shall:

1. Ensure the grade on the final slopes in the extraction areas do not exceed 2:1.
2. All other slopes existing at the time of permit issuance may be maintained.
3. Cover all disturbed areas with a layer of manufactured topsoil not to exceed 12" in depth in order to establish a vegetative layer;
4. All slopes (pre-existing or in the extraction area) shall be vegetated as appropriate to ensure slope stability and erosion control.

Termination Notification

No notifications to users of the facility regarding termination of operations is required. There are no current users of the facility as it has been inactive since 1980.

Notification of Completion

The Town of New London shall provide written notification to the NH Department of Environmental Services upon completion of all closure activities at this facility.

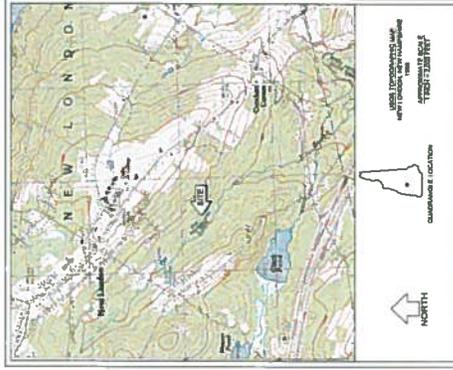
Attachment I

New London Lagoon Closure Site Plans



NEW LONDON LAGOON CLOSURE

LYON BROOK DRIVE NEW LONDON, NEW HAMPSHIRE



JUNE 2015

SHEET INDEX

I.D.	NO.	DRAWING NAME
CS		COVER SHEET
C-1	2	SITE OVERVIEW
C-2	3	SITE PLAN
C-3	4	LANDING PLAN
C-4	5	GRADING PLAN
C-5	6	CONSTRUCTION DETAILS
C-6	7	CONSTRUCTION DETAILS



Nobis Engineering & Construction, Inc.
18 Chatham Drive
New London, NH 03257
Tel: (603) 231-1122
www.nobiseng.com

Client: Portsmouth, Hampshire - Owned

NOBIS PROJECT NO. 85360.00

NOT ISSUED
 FOR
 CONSTRUCTION

**NEW LONDON
 LAGOON CLOSURE**
 LYON BROOK DRIVE
 NEW LONDON,
 NEW HAMPSHIRE

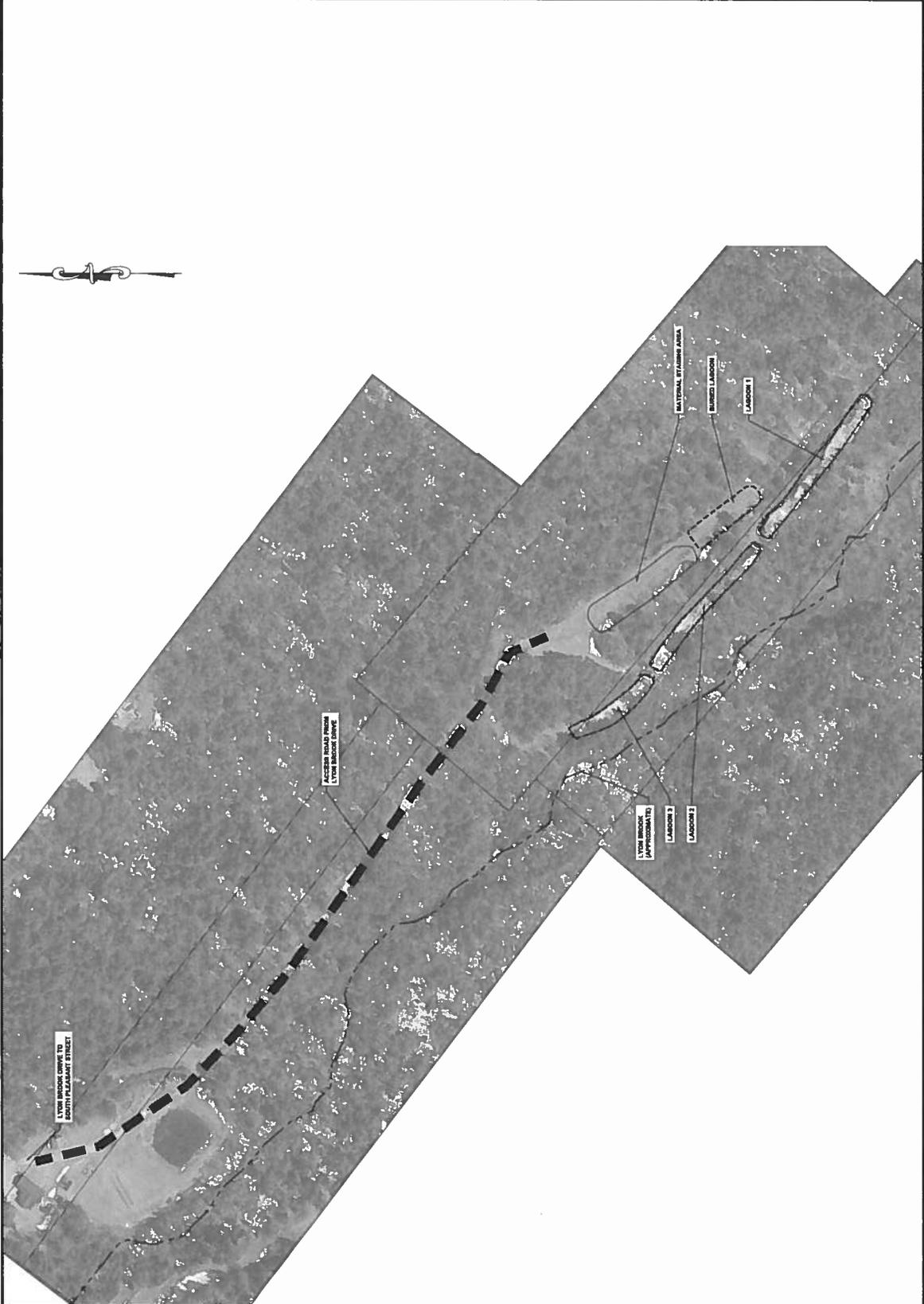
NO.	DATE	DESCRIPTION



DATE: JUNE 2015
 NOBIS PROJECT NO: B080 03
 DRAWN BY: MP
 CHECKED BY: EL
 PROJECT NO: 15-00000000000000000000
 SHEET TITLE: NEW LONDON LAGOON CLOSURE

SITE OVERVIEW

SHEET
C-1





Client - Fossil, Employees + Client

NOT ISSUED FOR CONSTRUCTION

NEW LONDON LAGOON CLOSURE

LYON BROOK DRIVE
NEW LONDON,
NEW HAMPSHIRE

NO.	DATE	DESCRIPTION

DATE	JUNE 2015
MOBILE PROJECT NO.	8880 00
DRAWN BY	MP
CHECKED BY	EL
DATE OF LAST REVISION	06/10/15
PROJECT TITLE	NEW LONDON LAGOON CLOSURE

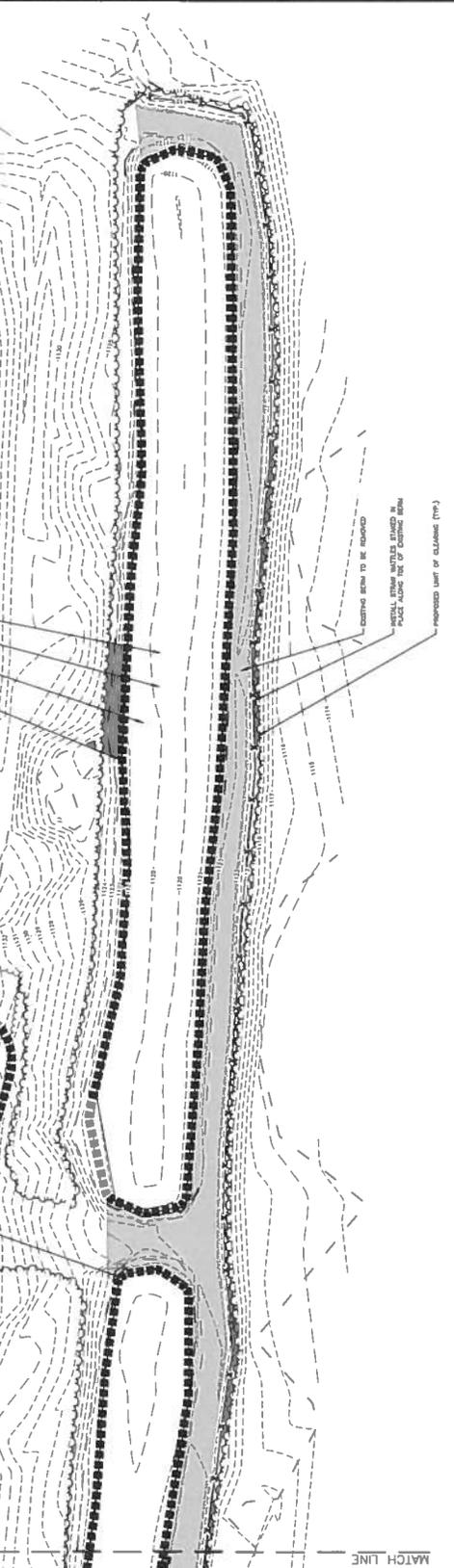
SITE PLAN
SHEET
C-2

NOTES:

- THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED CLOSURE OF FOUR LAGOONS AND TO SHOW THE PROPOSED CONSTRUCTION OF THE LAGOON WALLS. THE LAGOON WALLS WILL BE CONSTRUCTED IN TWO STAGES. THE FIRST STAGE WILL BE THE CONSTRUCTION OF THE WALLS AND THE SECOND STAGE WILL BE THE CONSTRUCTION OF THE FILL MATERIALS.
- THE LAGOON WALLS WILL BE CONSTRUCTED IN TWO STAGES. THE FIRST STAGE WILL BE THE CONSTRUCTION OF THE WALLS AND THE SECOND STAGE WILL BE THE CONSTRUCTION OF THE FILL MATERIALS.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF NEW LONDON AND THE STATE OF NEW HAMPSHIRE.
- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF NEW LONDON AND THE STATE OF NEW HAMPSHIRE.

PLAN REFERENCES:

- APPROXIMATE LAGOON 1 BOUNDARY
- APPROXIMATE LAGOON 2 BOUNDARY
- APPROXIMATE BARRAGED LAGOON BOUNDARY



SHEET C-2

MATCH LINE

SEEK
FOR THE BEST OF THE ORIGINAL NOTES



NOT ISSUED
FOR
CONSTRUCTION

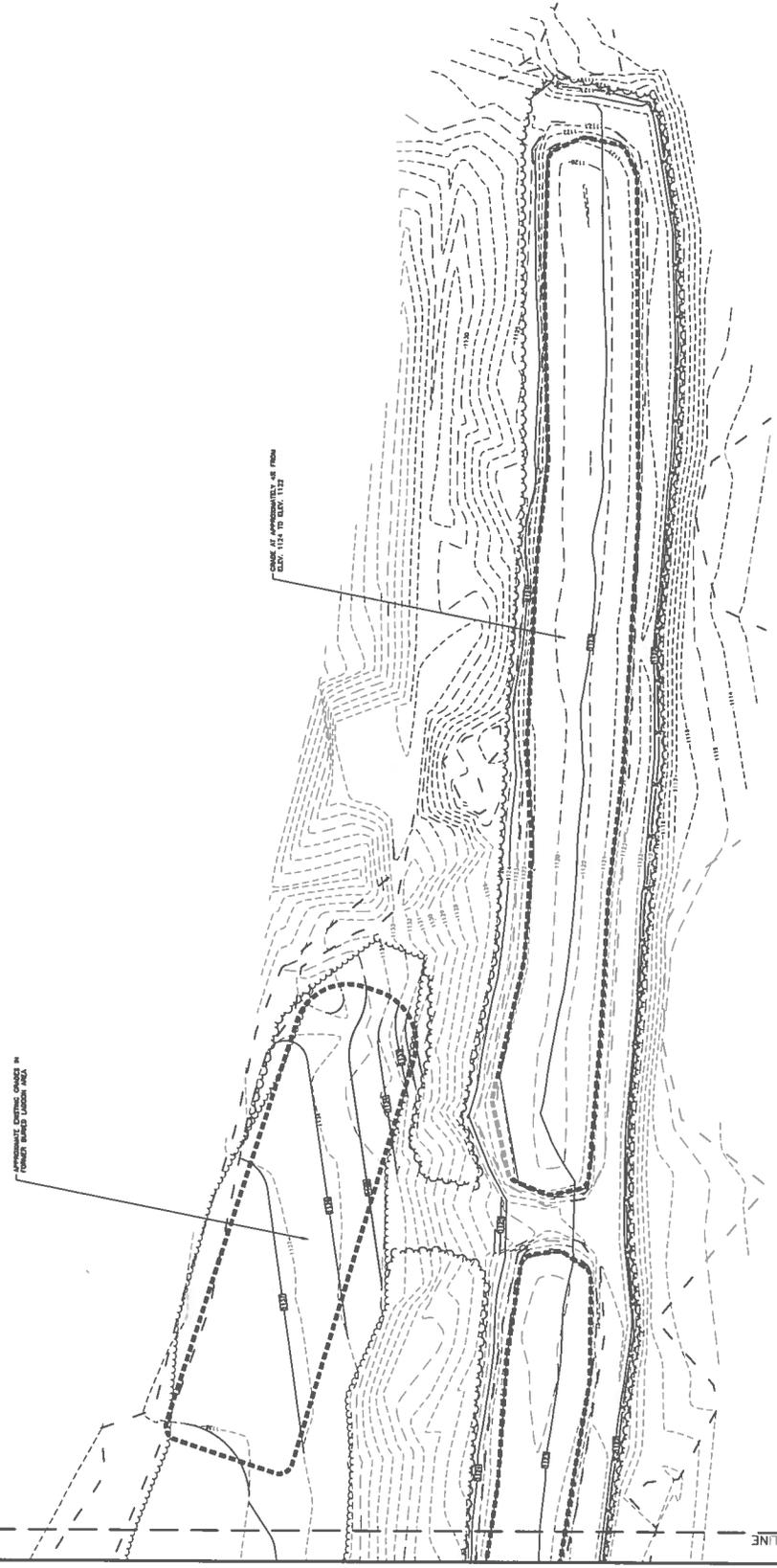
NEW LONDON
LAGOON CLOSURE
LYON BROOK DRIVE
NEW LONDON,
NEW HAMPSHIRE

NO.	DATE	DESCRIPTION

REVISIONS
DATE: JUNE 2016
PROJECT NO: 10000.00
DRAWN BY: MP
CHECKED BY: DJ
CAD DRAWING FILE: 10000-C-306-SITE-040.dwg
SHEET TITLE

GRADING PLAN

SHEET
C-4



SHEET C-5
SHEET C-4

MATCH LINE

Attachment II

Analytical Data





Richard Lee
New London, Town of
375 Main Street
New London , NH 03257



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 154166
Client Identification: New London Lagoons
Date Received: 3/28/2016

Dear Mr. Lee :

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

4.8.16
Date

6
of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

EAI ID#: 154166

Client: New London, Town of

Client Designation: New London Lagoons

Temperature upon receipt (°C): 2.9

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)
154166.01	Lagoon 1 North - Surface	3/28/16	3/28/16	aqueous		Adheres to Sample Acceptance Policy
154166.02	Lagoon 1 North - Sludge	3/28/16	3/28/16	sludge	5.8	Adheres to Sample Acceptance Policy
154166.03	Lagoon 1 South - Surface	3/28/16	3/28/16	aqueous		Adheres to Sample Acceptance Policy
154166.04	Lagoon 1 South - Sludge	3/28/16	3/28/16	sludge	10.7	Adheres to Sample Acceptance Policy
154166.05	Lagoon 2 North - Surface	3/28/16	3/28/16	aqueous		Adheres to Sample Acceptance Policy
154166.06	Lagoon 2 North - Sludge	3/28/16	3/28/16	sludge	5.5	Adheres to Sample Acceptance Policy
154166.07	Lagoon 2 South - Surface	3/28/16	3/28/16	aqueous		Adheres to Sample Acceptance Policy
154166.08	Lagoon 2 South - Sludge	3/28/16	3/28/16	sludge	13.7	Adheres to Sample Acceptance Policy
154166.09	Lagoon 3 North - Surface	3/28/16	3/28/16	aqueous		Adheres to Sample Acceptance Policy
154166.1	Lagoon 3 North - Sludge	3/28/16	3/28/16	sludge	3.9	Adheres to Sample Acceptance Policy
154166.11	Lagoon 3 South - Surface	3/28/16	3/28/16	aqueous		Adheres to Sample Acceptance Policy
154166.12	Lagoon 3 South - Sludge	3/28/16	3/28/16	sludge	3.0	Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, 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



LABORATORY REPORT

EAI ID#: 154166

Client: **New London, Town of**
 Client Designation: **New London Lagoons**

Sample ID:	Lagoon 1 North - Surface	Lagoon 1 South - Surface	Lagoon 2 North - Surface	Lagoon 2 South - Surface							
Lab Sample ID:	154166.01	154166.03	154166.05	154166.07							
Matrix:	aqueous	aqueous	aqueous	aqueous							
Date Sampled:	3/28/16	3/28/16	3/28/16	3/28/16							
Date Received:	3/28/16	3/28/16	3/28/16	3/28/16							
					Units	Analysis		Date	Time	Method	Analyst
Nitrate/Nitrite-N	< 0.5	< 0.5	< 0.5	< 0.5	mg/L	03/29/16	9:23		353.2	KD	
TKN	< 0.5	< 0.5	0.5	< 0.5	mg/L	03/30/16	12:18		4500N _{org} C/N	SEL	
Total Phosphorus-P	0.05	0.04	0.07	0.07	mg/L	04/01/16	14:24		365.1	SEL	
Fecal Coliform	< 1	< 1	< 1	< 1	MPN/100ml	03/28/16	14:00		9223B C18	KL	

Sample ID:	Lagoon 3 North - Surface	Lagoon 3 South - Surface									
Lab Sample ID:	154166.09	154166.11									
Matrix:	aqueous	aqueous									
Date Sampled:	3/28/16	3/28/16									
Date Received:	3/28/16	3/28/16									
			Units	Analysis		Date	Time	Method	Analyst		
Nitrate/Nitrite-N	< 0.5	< 0.5	mg/L	03/29/16	9:40		353.2	KD			
TKN	< 0.5	< 0.5	mg/L	03/30/16	12:18		4500N _{org} C/N	SEL			
Total Phosphorus-P	0.06	0.06	mg/L	04/01/16	14:29		365.1	SEL			
Fecal Coliform	3.1	< 1	MPN/100ml	03/28/16	14:00		9223B C18	KL			



LABORATORY REPORT

EAI ID#: 154166

Client: **New London, Town of**
 Client Designation: **New London Lagoons**

Sample ID:	Lagoon 1 North - Sludge	Lagoon 1 South - Sludge	Lagoon 2 North - Sludge	Lagoon 2 South - Sludge							
Lab Sample ID:	154166.02	154166.04	154166.06	154166.08							
Matrix:	sludge	sludge	sludge	sludge							
Date Sampled:	3/28/16	3/28/16	3/28/16	3/28/16							
Date Received:	3/28/16	3/28/16	3/28/16	3/28/16							
					Units	Analysis		Date	Time	Method	Analyst
Nitrate/Nitrite-N	< 5	< 5	< 5	< 5	mg/kg	04/01/16	10:36	353.2	KD		
TKN	11000	9000	19000	6300	mg/kg	03/30/16	14:18	4500N _{org} C/N	SEL		
Fecal Coliform	< 37	< 26	< 33	< 1246	MPN/GDW	03/28/16	15:30	9221E	KL		

Sample ID:	Lagoon 3 North - Sludge	Lagoon 3 South - Sludge									
Lab Sample ID:	154166.1	154166.12									
Matrix:	sludge	sludge									
Date Sampled:	3/28/16	3/28/16									
Date Received:	3/28/16	3/28/16									
			Units	Analysis		Date	Time	Method	Analyst		
Nitrate/Nitrite-N	< 5	< 5	mg/kg	04/01/16	10:41	353.2	KD				
TKN	17000	11000	mg/kg	03/30/16	14:18	4500N _{org} C/N	SEL				
Fecal Coliform	< 51	< 66	MPN/GDW	03/28/16	15:30	9221E	KL				

Nitrate/Nitrite-N: The matrix spike and matrix spike duplicate recoveries for sample "Lagoon 3 South - Sludge" deviated below the acceptance criteria indicating a matrix interference.



LABORATORY REPORT

EAI ID#: 154166

Client: New London, Town of

Client Designation: New London Lagoons

Sample ID:	Lagoon 1 North - Sludge	Lagoon 1 South - Sludge	Lagoon 2 North - Sludge	Lagoon 2 South - Sludge					
Lab Sample ID:	154166.02	154166.04	154166.06	154166.08					
Matrix:	sludge	sludge	sludge	sludge					
Date Sampled:	3/28/16	3/28/16	3/28/16	3/28/16	Analytical		Date of		
Date Received:	3/28/16	3/28/16	3/28/16	3/28/16	Matrix	Units	Analysis	Method	Analyst
Arsenic	7	4	6	4	SolTotDry	mg/kg	3/30/16	6020	DS
Cadmium	2	1	2	1	SolTotDry	mg/kg	3/30/16	6020	DS
Chromium	45	28	39	25	SolTotDry	mg/kg	3/30/16	6020	DS
Copper	300	220	290	140	SolTotDry	mg/kg	3/30/16	6020	DS
Lead	54	40	47	30	SolTotDry	mg/kg	3/30/16	6020	DS
Mercury	1.4	1.0	1.0	0.6	SolTotDry	mg/kg	3/30/16	6020	DS
Molybdenum	1	< 1	2	< 1	SolTotDry	mg/kg	3/30/16	6020	DS
Nickel	15	9	13	11	SolTotDry	mg/kg	3/30/16	6020	DS
Phosphorus	15000	13000	11000	6700	SolTotDry	mg/kg	3/30/16	6020	DS
Selenium	1	< 1	1	< 1	SolTotDry	mg/kg	3/30/16	6020	DS
Zinc	210	150	220	170	SolTotDry	mg/kg	3/30/16	6020	DS

Sample ID:	Lagoon 3 North - Sludge	Lagoon 3 South - Sludge							
Lab Sample ID:	154166.1	154166.12							
Matrix:	sludge	sludge							
Date Sampled:	3/28/16	3/28/16			Analytical		Date of		
Date Received:	3/28/16	3/28/16			Matrix	Units	Analysis	Method	Analyst
Arsenic	7	8			SolTotDry	mg/kg	3/30/16	6020	DS
Cadmium	2	3			SolTotDry	mg/kg	3/30/16	6020	DS
Chromium	44	43			SolTotDry	mg/kg	3/30/16	6020	DS
Copper	270	330			SolTotDry	mg/kg	3/30/16	6020	DS
Lead	52	51			SolTotDry	mg/kg	3/30/16	6020	DS
Mercury	1.2	1.2			SolTotDry	mg/kg	3/30/16	6020	DS
Molybdenum	2	2			SolTotDry	mg/kg	3/30/16	6020	DS
Nickel	16	15			SolTotDry	mg/kg	3/30/16	6020	DS
Phosphorus	10000	11000			SolTotDry	mg/kg	3/30/16	6020	DS
Selenium	1	1			SolTotDry	mg/kg	3/30/16	6020	DS
Zinc	240	280			SolTotDry	mg/kg	3/30/16	6020	DS

