

March 31, 2017

Mr. Eric Skoglund
NHDES
PO Box 95 - 29 Hazen Drive
Concord, NH 03302-0095

Re: ***Letter of Deficiency #DWGB 16-085***
TTHM Mitigation Evaluation
New Castle, New Hampshire

Dear Mr. Skoglund:

Pursuant to the Letter of Deficiency #DWGB 16-085 issued to the Town of New Castle dated November 17, 2016, and the approved deadline extension of March 31, 2017, Underwood Engineers is providing the attached engineering report on behalf of the Town of New Castle. The report provides a review of existing information, an evaluation of alternatives, and recommendations to correct TTHM violations.

We trust this approach meets the intent of the required actions identified in the Letter of Deficiency.

Please call if there are any questions.

Very truly yours,

UNDERWOOD ENGINEERS, INC.



Keith A. Pratt, P.E.
President

UNDERWOOD ENGINEERS, INC.



Michael C. Unger, P.E.
Project Manager

Encl.

Cc: William Stewart, Town of New Castle (w/ encl.)
Pamela Cullen, Town of New Castle (w/ encl.)
Brian Goetz, City of Portsmouth (w/ encl.)



25 Vaughan Mall
Portsmouth, NH, 03801-4012
Tel: 603-436-6192 Fax: 603-431-4733

Technical Memo

DATE: 3/13/17

UE #2136

TO: WILLIAM STEWART, SELECTMAN, TOWN OF NEW CASTLE

CC:

FROM: MICHAEL C. UNGER, P.E., MEAGAN L. MCCOWAN, E.I.T.

RE: THM MITIGATION EVALUATION

BACKGROUND

The Town of New Castle was issued a Letter of Deficiency (LOD) by the New Hampshire Department of Environmental Services (NHDES) dated November 17, 2016 for exceeding the Total Trihalomethane (TTHM) maximum contaminant level (MCL) for quarter (Q) Q4-2016. The Town also exceeded the MCL Q1-2016, Q2-2016, and Q3-2016 and was issued Notices of Violation (NOV) on May 10, 2016, July 8, 2016 and October 6, 2016.

The Town of New Castle receives its water from the City of Portsmouth. The City's water supplies include the Madbury surface water treatment plant and several groundwater wells. The interaction of natural organic matter in the Madbury Reservoir with chlorine disinfectant is assumed to be the source of the trihalomethanes (THMs). Per City officials, the City hired a consultant in 2014 to assist the water operations staff with optimizing treatment system operations to lower levels of THMs. In addition, the City is currently designing an aeration system for the Newington Booster Tank to treat THMs. The City anticipates the system will be put into operation in early 2018. It is expected that New Castle will benefit from the aeration system, and that once implemented, New Castle TTHM levels will be lowered enough to bring the Town into compliance with the MCL.

The purpose of this technical memorandum is to recommend interim THM mitigation strategies prior to the scheduled April 2017 compliance sampling event to help bring the Town of New Castle into compliance for TTHMs until the aeration system is implemented. **This memo should be submitted to NHDES prior to the March 31, 2017 deadline to respond to the LOD.**

THM SAMPLING DATA AND ANALYSIS

Two locations in New Castle are monitored quarterly for compliance with the 0.08 mg/L limit for TTHMs: The Shapleigh Island Meter Pit and the Maude H. Trefethen Elementary School. Figures



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1 and 2 show historical sampling results at these two sampling locations. Compliance is based on the running annual average (RAA), which is the average of the current and previous three quarters' samples. Figure 1 shows that the RAA for TTHMs at the Shapleigh Island Meter Pit has been consistently between 0.060 mg/L and 0.073 mg/L since January 2015 (below the MCL). However, as seen on Figure 2, the RAA at the school has climbed steadily since February 2015, and has exceeded the TTHM MCL each quarter in 2016 since January. While the TTHM result at the school during the most recent sampling event was lower than the previous three quarters, it was not low enough to bring New Castle into compliance for the January 2017 sampling event. By example, a 0.056 or lower mg/L result at the school in the next sampling round should bring New Castle into compliance.

Underwood Engineers (UE) also implemented a sampling plan in order to collect TTHM data for additional locations in the water system. The purpose of the plan was to provide additional sampling data to gain insight into TTHM trends and help determine whether certain mitigation strategies would be feasible. Sampling took place on Friday, February 17 at six locations. These locations along with the TTHM sampling results are shown on Figure 3. All samples were taken consistent with New Hampshire's Drinking Water Sample Collection & Preservation Standard Operating Procedure for TTHMs (rev. February 2011). Laboratory results are attached.

Results showed an increase in TTHMs between the Shapleigh Meter Pit and the New Castle School (~0.017 mg/L increase). This is consistent with historical data for the last 8 sampling events where TTHM increases have ranged between 0.013 and 0.024 mg/L between these two locations. On the Wentworth side, it was noted that TTHM increases were negligible between the Sagamore Ave. sampling location and Wentworth by the Sea, but increased by ~0.008 mg/L between Wentworth by the Sea and the Recreation Center.

There are a couple of possibilities for the increases in TTHMs seen on the New Castle Island. The first could be water age. If consumption is low on the island, the water remains in the system longer, allowing for more reaction time for TTHMs to form. This could explain why TTHMs did not increase between Sagamore Avenue and Wentworth by the Sea, since the hotel has a large water demand. Another possibility is the growth of a biofilm. Biofilms can form when the water flow is not fast enough to impede microbial growth in the pipe, and also in old pipes where tuberculation (corrosion) has occurred. Tuberculation can form "pockets", allowing for protected areas for microbes to grow. Biofilms are a source of organic matter that could react with chlorine in the pipeline to form additional TTHMs. Since the pipe between Sagamore Avenue and Wentworth by the Sea is new (2015), and much of the remaining pipe on New Castle is over 40 years old and may have tuberculation/biofilms, this could explain why the TTHMs do not increase between Sagamore Avenue and the hotel but do increase after the hotel. Biofilms can also occur in plumbing systems in buildings and homes which cannot usually be addressed by the Water Department.

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EVALUATION OF ALTERNATIVES

Water Age

UE evaluated the following options to address TTHMs that may be caused by water age:

- **Blending:** Water enters New Castle from both ends of the island: the Shapleigh side and the Wentworth side. Per meter records provided by the City of Portsmouth, approximately 80% of the water is from Shapleigh, while the other 20% comes from Wentworth. If the sampling program data had showed TTHM levels to be much lower on the Wentworth meter side, a potential option would have been to bring in more water from the Wentworth side and blend the water to reduce TTHM levels. However, since TTHMs increased significantly on both sides, and were not much lower on the Wentworth side, it is unlikely that blending will bring levels low enough to bring the Town into compliance.
- **Bleeding:** Bleeding water from the distribution system would increase flow in the pipes and reduce travel time. It can also remove old water from dead ends, which are typically the worst case scenarios for TTHM levels. In order for bleeding to be effective, each dead end would have to be flushed. Since TTHM levels appear to increase quickly (in about six hours) between the Shapleigh meter and the school, bleeding may not be a good option because it would be required constantly and the amount of water lost (and cost associated with it) may be significant. The six-hour travel time was determined using the length of pipe between the Shapleigh Meter and the school (~4,800 ft.), the pipe diameter (8 in.), and the average 2015 & 2016 Shapleigh Meter water consumption data (~49,500 gallons per day). Additional study to determine a TTHM formation curve (TTHM formation vs. time) would be needed to estimate the amount of water that would have to be bled from the system.
- **Distribution System Management:** Another option considered was to close the meter on the Wentworth side, and have all the water flow from the Shapleigh side, which has lower TTHM concentrations at the meter. This would cause the water from Shapleigh to travel more quickly through the distribution system and may reduce TTHM levels at the school. However, this option may increase TTHM levels near the Wentworth meter further along the distribution system. Also, closing the Wentworth meter would reduce fire flow capacity below what is needed in the system.

Biofilms

UE evaluated the following options to address TTHMs that may be caused by biofilms:

- **Directional Flushing:** Flushing can remove biofilms, sediment and stagnant water from distribution systems, thereby reducing THM formation potential. The Town currently flushes all hydrants at least once per year, which is a good practice. However, directional flushing can increase flushing velocities and may be more effective at scouring biofilm. A

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directional flushing program should be designed whereby valves would be closed temporarily to induce one-way flow from a clean source to the flushing hydrant(s). Unidirectional flushing at a water velocity of 3-5 ft/s is recommended for this option.

- **Ice Pigging:** Ice pigging is a pipe cleaning method that uses an ice slurry to remove biofilms, sediment and other foreign matter from the water distribution system. It must be performed by a specialty contractor. This method is more aggressive than flushing and could be used if flushing is not effective at cleaning the pipes.
- **Pipe Replacement:** Replacing old pipes would remove existing biofilms and reduce the potential for new biofilms to grow. The Town is already planning on replacing pipes in their distribution system, pending funding approval at the Town Meeting in May, as recommended in the report *Water System Evaluation, New Castle, New Hampshire* (UE, November 2016). However, if this project is approved, the replacement will take at least a year or two and will not be an immediate solution to TTHM violations.

Treatment

UE evaluated the following options to remove TTHMs that have already formed in the distribution system:

- **Tank Aeration:** Aeration is a method that can be used to strip THMs from water after they have already formed. Aeration is typically performed in water storage tanks. Strategically placed storage tank aeration can reduce THM levels further along in the distribution system after levels have already risen, helping to reduce levels at the far ends of the system. An aeration system is already planned for the City of Portsmouth's Newington Tank, which is expected to be completed in 2018. Since New Castle will benefit from the aeration system, it is anticipated that the THM treatment supplied by this system (assuming a ~15% reduction or more) should bring New Castle into compliance for THMs once the system is online.
- **In-line Aeration:** In-line aeration is a new treatment method currently under study at the University of New Hampshire that has been designed to aid communities with high THM levels at the far ends of the distribution system and that do not have a strategically placed storage tank for tank aeration. The University has offered to work with the Town to set up a pilot program for this technology if needed. In-line aeration has been shown to be effective at reducing TTHMs in small scale pilot tests in the laboratory and may be effective for reducing TTHM levels in New Castle.

RECOMMENDATIONS

Tank aeration at the City of Portsmouth's Newington tank is in the process of being implemented and is expected to bring the Town of New Castle into compliance for TTHMs when placed in

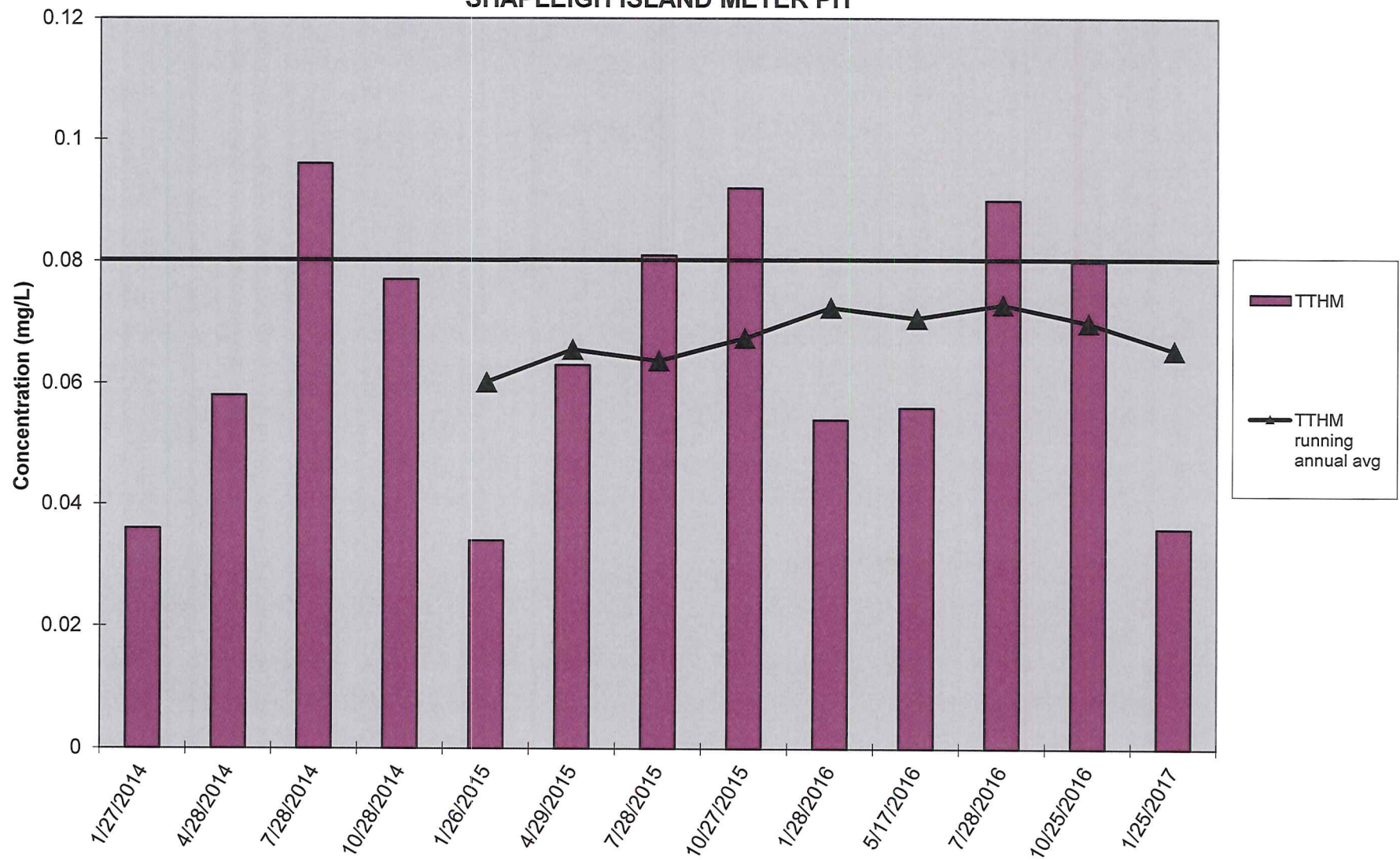
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service (anticipated 2018). If passed, New Castle's pipe replacement project may also have a positive effect on TTHM levels. However, this is a multi-phase program that may take several years to complete. In the meantime, the following interim options for TTHM mitigation are listed in order of suggested implementation based on cost and ease of implementation:

- Directional Flushing – this option can be performed by the Town itself and is likely the lowest cost option. UE recommends unidirectional flushing at a water velocity of 3-5 ft/s at least twice per year. **We recommend flushing as soon as possible and prior to the scheduled April 2017 2nd quarter compliance sampling.**
- Ice pigging – if flushing is unsuccessful, ice pigging should be considered as a more aggressive cleaning method once per year.
- Bleeding – if pipe cleaning has no effect on TTHM levels at the school, it can be assumed that water age is the cause of the high levels. If this is the case, further study is needed to determine if bleeding water from dead ends could be a reasonable, cost effective solution. Further study would include the development of a TTHM formation curve showing TTHM levels vs. water age. This would involve collecting a water sample at the water treatment facility and testing TTHM levels over time. A water model may also be required to determine bleeding requirements.

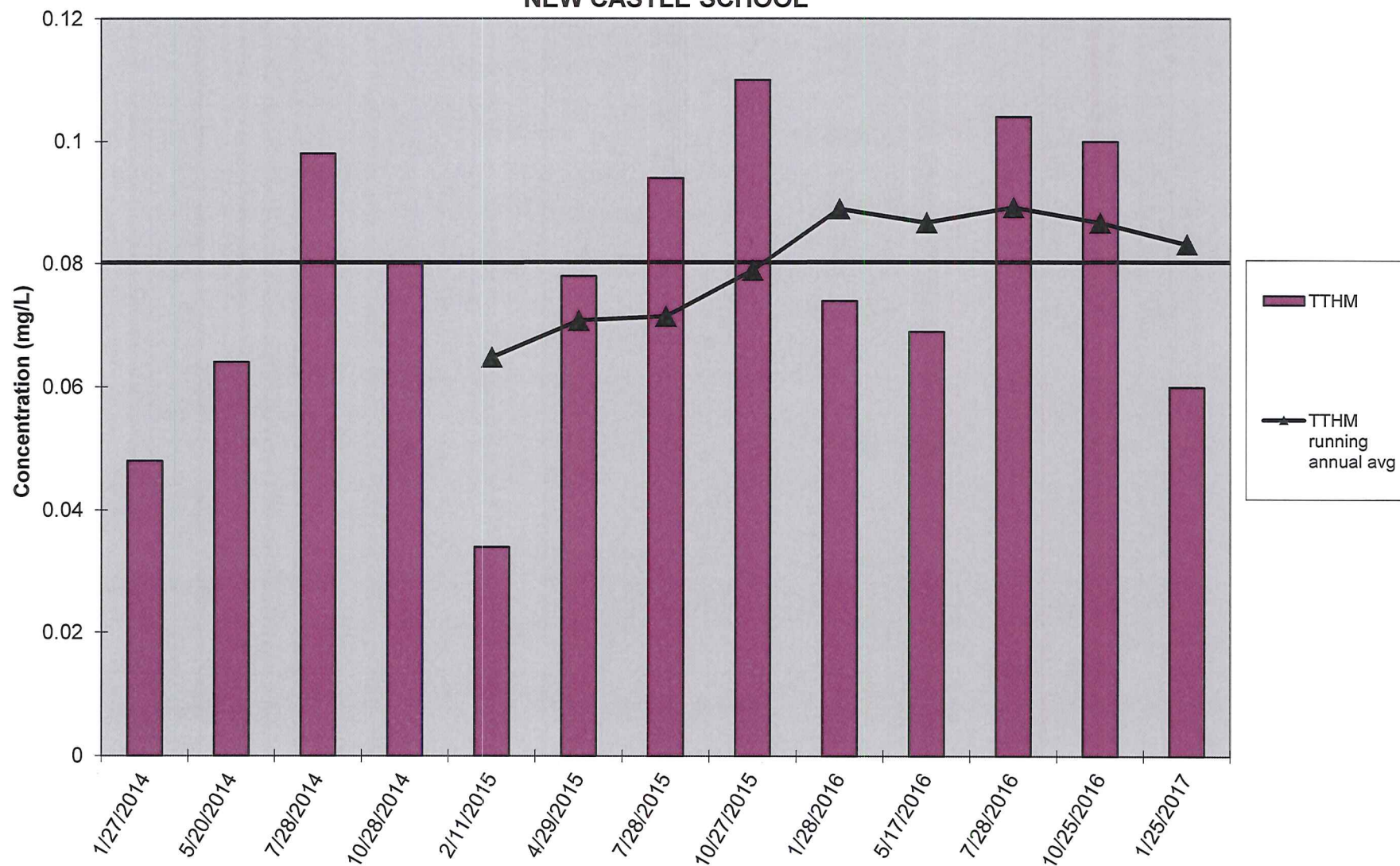
UE does not recommend blending, as this option will likely have a negligible effect on TTHM levels at the school. Bringing all water to the island from the Shapleigh side is also not recommended because it would decrease available fire flow to the Town. At this time, UE does not recommend pursuing the in-line aeration pilot program, due to the fact that it may take time to get the pilot system running and that the tank aeration system is expected to be online in 2018. It should be noted that the interim solutions indicated above appear reasonable until the water main and aeration system are completed, especially given the fact that reductions of only ~15% are needed to bring the system into compliance.

**Figure 1: TTHM Compliance
Monitoring Quarterly Results
SHAPLEIGH ISLAND METER PIT**

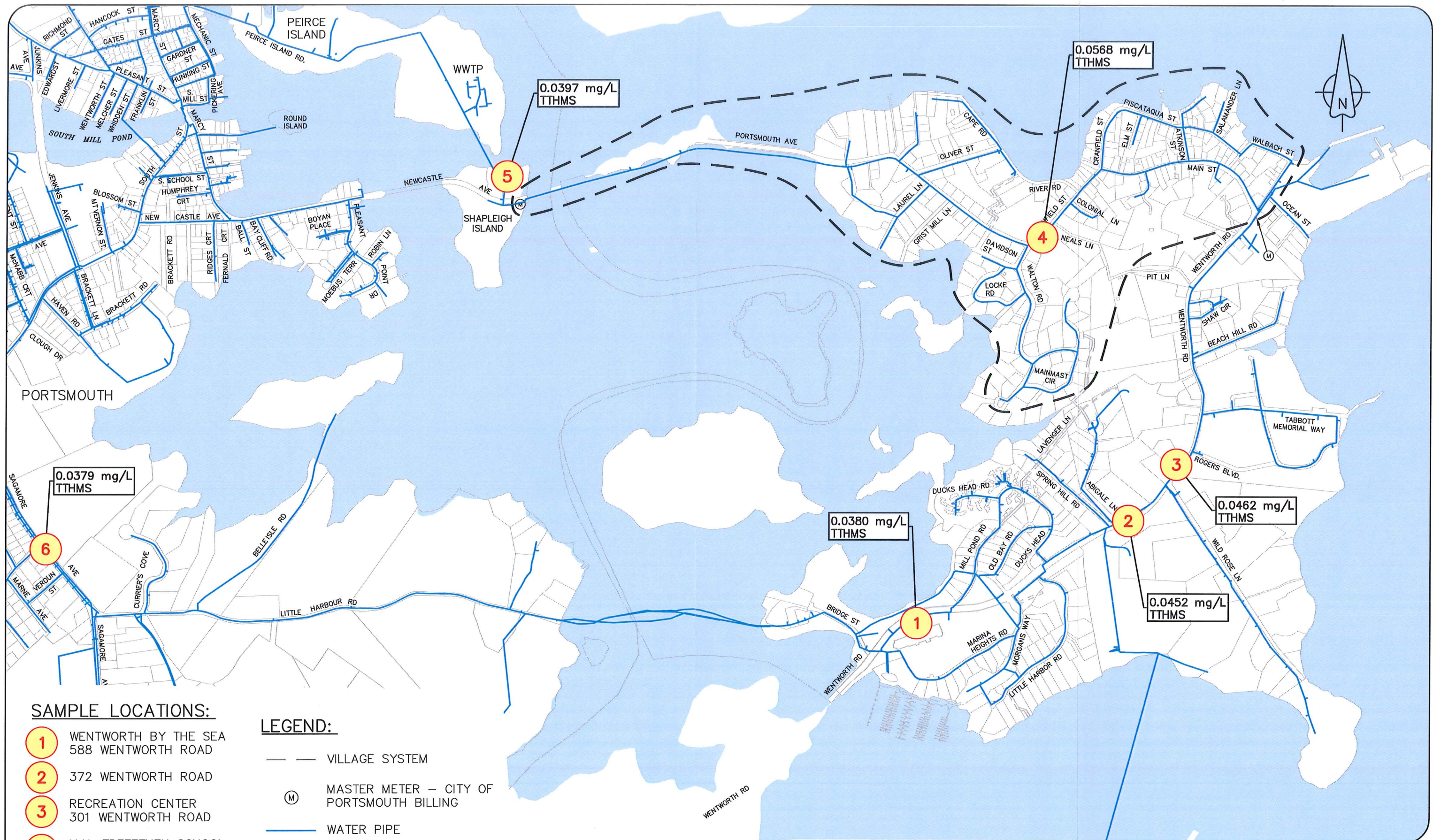


Note: Compliance is based on running annual averages, RAA, (average of current sample and previous 3 quarters' samples), not individual quarterly results.

**Figure 2: TTHM Compliance
Monitoring Quarterly Results
NEW CASTLE SCHOOL**



Note: Compliance is based on running annual averages, RAA, (average of current sample and previous 3 quarters' samples), not individual quarterly results.

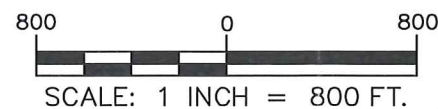


SAMPLE LOCATIONS:

- 1** WENTWORTH BY THE SEA
588 WENTWORTH ROAD
- 2** 372 WENTWORTH ROAD
- 3** RECREATION CENTER
301 WENTWORTH ROAD
- 4** M.H. TREFETHEN SCHOOL
142 CRANFIELD STREET
- 5** SHAPLEIGH METER
- 6** 305 SAGAMORE AVENUE

LEGEND:

- — VILLAGE SYSTEM
- (M) MASTER METER — CITY OF PORTSMOUTH BILLING
- WATER PIPE



DATE
3/8/2017
PROJECT
2136

UNDERWOOD
engineers
25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

TOTAL TRIHALOMETHANE
SAMPLING LOCATIONS & RESULTS
TOWN OF NEW CASTLE, NH

FIG.
3



Eastern Analytical, Inc.

professional laboratory and drilling services

Michael C. Unger
Underwood Engineers, Inc. (Portsmouth)
25 Vaughan Mall, Unit #1
Portsmouth, NH 03801



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 165780
Client Identification: New Castle | 2136
Date Received: 2/17/2017

Dear Mr. Unger :

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,

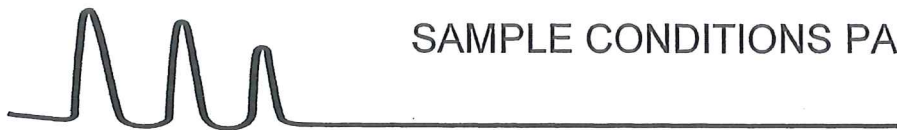
Lorraine Olashaw, Lab Director

2.28.17

Date

4

of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

EAI ID#: 165780

Client: Underwood Engineers, Inc. (Portsmouth)

Client Designation: New Castle | 2136

Temperature upon receipt (°C): 2.5

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)
165780.01	Rec Center	2/17/17	2/17/17	aqueous		Adheres to Sample Acceptance Policy
165780.02	School	2/17/17	2/17/17	aqueous		Adheres to Sample Acceptance Policy
165780.03	Shapleigh	2/17/17	2/17/17	aqueous		Adheres to Sample Acceptance Policy
165780.04	Conklin	2/17/17	2/17/17	aqueous		Adheres to Sample Acceptance Policy
165780.05	Hotel	2/17/17	2/17/17	aqueous		Adheres to Sample Acceptance Policy
165780.06	Rogers	2/17/17	2/17/17	aqueous		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



LABORATORY REPORT

EAI ID#: 165780

Client: Underwood Engineers, Inc. (Portsmouth)

Client Designation: New Castle | 2136

Sample ID:	Rec Center	School	Shapleigh	Conklin	Hotel	Rogers
Lab Sample ID:	165780.01	165780.02	165780.03	165780.04	165780.05	165780.06
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	2/17/17	2/17/17	2/17/17	2/17/17	2/17/17	2/17/17
Date Received:	2/17/17	2/17/17	2/17/17	2/17/17	2/17/17	2/17/17
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Date of Analysis:	2/23/17	2/23/17	2/23/17	2/23/17	2/23/17	2/23/17
Analyst:	BAM	BAM	BAM	BAM	BAM	BAM
Method:	524.2	524.2	524.2	524.2	524.2	524.2
Dilution Factor:	1	1	1	1	1	1
Chloroform	38	49	33	38	31	32
Bromodichloromethane	6.8	7.1	5.7	6.2	5.7	5.1
Dibromochloromethane	1.4	0.7	1.0	1.0	1.3	0.8
Bromoform	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Trihalomethanes	46.2	56.8	39.7	45.2	38	37.9
4-Bromofluorobenzene (surr)	97 %R	95 %R	97 %R	100 %R	98 %R	99 %R
1,2-Dichlorobenzene-d4 (surr)	117 %R	107 %R	112 %R	115 %R	114 %R	115 %R

CHAIN-OF-CUSTODY RECORD

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

165780

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/COMPOSITE	VOC		SVOC		TCMP	METALS		INORGANICS				MICRO	OTHER	# OF CONTAINERS	NOTES MeOH Vial #
				524.2 BTEX 524.2 MTBE ONLY 8240B 624 1,4 DIOXANE	8021B BTEX 8015B GRO 8015B GRO 8270D 625 SYTICS EDB DBCP ABN A BN PAH	TPH8100 LI L2 8015B DRO PEST 608 PEST 8081A OIL & GREASE 1664	TPH 1311 ABN METALS TOC DISSOLVED METALS (LIST BELOW) TOTAL METALS (LIST BELOW)		TS SS TDS SPEC. CON. Br Cl F SO ₄ NO ₃ NO ₂ BOD COD T. ALK.	TKN NH ₃ T. PHOS. O. PHOS. pH T. RES. CHLORINE COD PHENOLS TOC DOC TOTAL CHLORIDE TOTAL SULFIDE REACTIVE CHLORIDE FLASHPOINT IGNITABILITY TOTAL COLIFORM FECAL COLIFORM ENTEROCOCCI HETEROTROPHIC PLATE COUNT	TTHMS							
Rec Center (1 of 2)	2.17.17/8:15 AM DW																2	
Rec Center (2 of 2)	2.17.17/																	
School (1 of 2)	2.17.17/8:45 AM																2	
School (2 of 2)	2.17.17/																	
Shapleigh (1 of 2)	2.17.17/9:00 AM																2	
Shapleigh (2 of 2)	2.17.17/																	
Conklin (1 of 2)	2.17.17/9:30 AM																2	
Conklin (2 of 2)	2.17.17/																	
Hotel (1 of 2)	2.17.17/10:00 AM																2	
Hotel (2 of 2)	2.17.17/																	

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER
PRESERVATIVE: H-HCL; N-HNO₃; S-H₂SO₄; Na-NAOH; M-MEONH

PROJECT MANAGER: Mike Unger
 COMPANY: Underwood Engineers
 ADDRESS: 25 Vaughan Mall
 CITY: Portsmouth STATE: NH ZIP: 03801
 PHONE: 603-436-6192 EXT.:
 FAX:
 E-MAIL: munger@underwoodengineers.com
 SITE NAME: New Castle
 PROJECT #: 2136
 STATE: (NH) MA ME VT OTHER:
 REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
 GWP, OIL FUND, BROWNFIELD OR OTHER:
 QUOTE #:
 PO #:

DATE NEEDED: Standard turnaround timeQA/QC
REPORTING LEVEL

A B C

OR

PRESUMPTIVE CERTAINTY

REPORTING OPTIONS

PRELIMS: (YES) OR NOIF YES: FAX OR (PDF)

ELECTRONIC OPTIONS

NO FAX (E-MAIL) (PDF) EQUISTEMP. 2.5 °CICE? (YES) NOSAMPLER(S): McGowan McCowanRELINQUISHED BY: MLM DATE: 2-17-17 TIME: 12:15 RECEIVED BY: John BantonRELINQUISHED BY: John Banton DATE: 2-17-17 TIME: 14:15 RECEIVED BY: John Banton

RELINQUISHED BY: DATE: TIME: RECEIVED BY:

METALS: 8 RCRA 13 PP Fe, Mn Pb, Cu

OTHER METALS:

SAMPLES FIELD FILTERED? ☐ YES ☐ NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

SITE HISTORY:

SUSPECTED CONTAMINATION:

FIELD READINGS:

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

[illegible]

PROJECT MANAGER: Mike Unger
COMPANY: Underwood Engineers
ADDRESS: 25 Vaughan Mall
CITY: Portsmouth STATE: NH ZIP: 03801
PHONE: 603-436-6192 EXT.:
FAX:
E-MAIL: munger@underwoodengineers.com
SITE NAME: New Castle
PROJECT #: 2136
STATE: NH MA ME VT OTHER:
REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER:
QUOTE #: PO #:

DATE NEEDED: Standard turnaround time

**QA/QC
REPORTING LEVEL**

A B C
OR
PRESUMPTIVE CERTAINTY

SAMPLER(S): Meagan McLowan

MLM 2-17-17 12:15 Jsa Burton
RELINQUISHED BY: DATE: TIME: RECEIVED BY:
Jsa Burton 2-17-17 14:15 [Signature]
RELINQUISHED BY: DATE: TIME: RECEIVED BY:

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____

TEMP. 2.5 °C
ICE? YES No

REPORTING OPTIONS

PRELIMS: YES OR NO
IF YES: FAX OR PDF

ELECTRONIC OPTIONS

No FAX **E-MAIL** **PDF** EQUIS

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS: _____

SAMPLES FIELD FILTERED? ☐ YES ☐ NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

SITE HISTORY: _____

SUSPECTED CONTAMINATION: _____

FIELD READINGS: _____

 **Eastern Analytical, Inc.**
professional laboratory & drilling services

25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMERSERVICE@EAILABS.COM | WWW.EAILABS.COM

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)