



REGION 1

NEW ENGLAND REGIONAL LABORATORY
NORTH CHELMSFORD, MA 01863

Finalized Date: Dated as shown on electronic signature(s)

Subject: Reconnaissance and Sampling Inspection Report
Clean Water Act – National Pollutant Discharge Elimination System
City of Nashua, NH

From: Nafisah Ali, Inspector
Laboratory Services and Applied Science Division (LSASD)
Field Services Branch (FSB)

**Ali,
Nafisah**

Digitally signed by
Ali, Nafisah
Date: 2024.09.09
12:29:32 -04'00'

Reviewed

By: Jerome Keefe, Investigations Team Leader
LSASD-FSB

JEROME KEEFE

Digitally signed by JEROME
KEEFE
Date: 2024.09.09 16:01:28
-04'00'

To: Todd Borci, Manager,
Enforcement and Compliance Assurance Division (ECAD)
Water Compliance Section 1

I. Facility Information

- A. Facility Name: City of Nashua, NH
- B. Facility Location: 9 Riverside Street, Nashua, NH 03062
- C. Facility Contact: Lisa Fauteux, Director of Public Works, (603)589-3140,
fauteuxl@nashuanh.gov
- D. NPDES Permit ID: NHR041021 (MS4)

II. Background Information

- A. Date/Start time of recon inspection: 06/27/2024 11:45
- B. Weather conditions: Sunny, 77°F
- C. USEPA Representatives: Nafisah Ali, Anna Hatke, Ryan Leo
- D. State/Local Representatives: None
- A. Date/Start time of sampling inspection: 07/02/2024 08:17
- B. Weather conditions: Sunny, 69°F
- C. USEPA Representatives: Nafisah Ali, Anna Hatke, Ryan Leo
- D. State/Local Representatives: None
- E. Federally Enforceable Requirements Investigated: Stormwater discharges and certain.

non stormwater discharges from the City of Nashua, NH (the city) Municipal Separate Storm Sewer Systems (MS4) are authorized by the National Pollutant Discharge Elimination System (NPDES) General Permit for the Discharge of Stormwater from Small MS4 (hereinafter, the Permit), issued by the Environmental Protection Agency (EPA) Region 1. The City obtained coverage under the Permit with NPDES Permit ID NHR04102.

F. Pollutants Sampled: Pharmaceuticals and Personal Care Products (PPCPs), E. coli/Enterococcus, Ammonia (nitrogen), Total Chlorine, and Surfactants

III. Disclaimer:

Unless otherwise noted, this report describes conditions at the facility/property as observed by EPA inspector(s), and/or through records provided to and/or information reported to EPA inspector(s) by facility representatives and as understood by the inspector(s). This report may not capture all operations or activities ongoing at the time of the inspection. This report does not make final determinations on potential areas of concern. Nothing in this report affects EPA's authorities under federal statutes and regulations to pursue further investigation or action.

IV. Type and Purpose of Inspection(s)

The purpose of the reconnaissance inspection was to locate stormwater outfalls, associated manholes, and/or catch basins which discharge into the Nashua River and Salmon Brook, while noting appearance, presence of flow, and access requirements for one or more sampling inspections.

The purpose of the compliance sampling inspection was to identify potential illicit connections or illegal discharges within the City of Nashua, NH MS4 that may adversely impact the water quality in the Nashua River and Salmon Brook. Samples were collected from 5 (five) outfall locations and 2 in-stream in accordance with the FSB Investigations Team Stormwater Program Plan. Sample sites were identified during a reconnaissance inspection conducted on 06/27/2024.

V. Permittee Details

The City of Nashua, NH occupies approximately 31.9 square miles in Hillsborough County, NH, approximately 35 miles south of Concord, NH. The city shares borders with the municipalities of Amherst, NH, Merrimack, NH, and Litchfield, NH to the north, Hudson, NH to the east, Tyngsboro, MA and Dunstable, MA to the south, and Hollis, NH to the west. According to the 2022 U.S. Census, the population of Nashua was 91,161. The city consists primarily of household residences with some downtown mixed use, as well as industrial areas. There are nine (9) combined sewer outfalls permitted to discharge into the receiving waters of the Merrimack and Nashua Rivers, in accordance with NPDES Permit No. NH0100170. For the scope of this inspection, Salmon Brook, Nashua River, and Merrimack River are listed as MS4 receiving waters in the city's Notice of Intent (NOI) for coverage under the permit.

VI. 06/27/2024 Reconnaissance Inspection Summary

On June 27th, 2024, EPA employees Nafisah Ali, Anna Hatke and Ryan Leo ("the EPA Inspection Team") conducted an unannounced reconnaissance inspection of the City of Nashua, NH MS4. They were not

accompanied by any city or state representatives. The inspection started in 19 Perry Ave at approximately 11:45. At the time of the inspection, the weather was sunny, 77°F.

According to the National Weather Service for the Manchester Airport (MAN) the last precipitation event prior to the inspection occurred on 06/24/2024, with 0.18 inches recorded. There was 0.18 inches precipitation recorded within the 72 hours before the inspection. According to the NWS, in the month (to date) of June, the area observed 2.22 inches of rain, which is approximately 182% of the 30-year normal value of 4.04 inches. According to the US Drought Monitor, as of 08/26/2024, Hillsborough County is experiencing no drought conditions.

None of the locations visited during this inspection were field screened with the test kits or the YSI quality meter. Locations visited were noted for appearance, presence of flow, and access requirements. Photographs taken during the inspection are listed in Appendix A.

VII. 07/02/2024 Sampling Inspection Summary

On July 2nd, 2024, EPA employees Nafisah Ali, Anna Hatke and Ryan Leo (“the EPA Inspection Team”) conducted an unannounced compliance sampling inspection of the City of Nashua, MS4 at the locations described in Section VIII. They were not accompanied by any city or state representatives. The inspection started at 16 Riverside Street at approximately 08:15. At the time of the inspection, the weather was sunny, 69°F.

According to the National Weather Service (NWS) for the Manchester Airport (MAN), the last precipitation event prior to the inspection occurred on 06/29/2024, with 0.05 inches recorded. There was 0.05 inches precipitation recorded within the 72 hours before the inspection. According to the NWS, in the month (to date) of July, the area observed 1.50 inches of rain, which is approximately 220% of normal of the 30-year normal value of 3.30 inches. According to the US Drought Monitor, as of 08/26/2024, Hillsborough County is experiencing no drought conditions.

The EPA Inspection Team field screened the sampling locations described in Section VIII using test kits for ammonia (nitrogen), surfactants, and total chlorine. In-situ measurements for specific conductivity, salinity, and temperature were also measured by the EPA Inspection Team using a YSI water quality meter and recorded. The EPA Inspection Team recorded field data on field data sheets. The EPA Inspection Team delivered samples to the EPA New England Regional Laboratory (NERL) in North Chelmsford, MA. The NERL will analyze the samples for E. coli, Enterococcus, and PPCPs. Table 1 below summarizes the sampling and analytical data.

VIII. Description of Sampling Locations (in order of collection time)

Photographs depicting each sample location are included in Appendix A of this report.

- **Conway1:** An elliptical concrete outfall approximately 36 inches across, with the circular pipe about 24 inches in diameter. Discharge flow was approximately <1 gallons per minute (GPM) into Mill Pond. Sample was collected at the mouth of the outfall. A sewer odor was detected. The color of the discharge was slightly yellow. Turbidity was medium, with organic particulate floatables. Observed rocks directly under outfall is orange stained with bubbles and oily sheen.

- **D2226:** In-stream sample collected at mouth of culvert and approximately 1 foot from left bank of stream. Stream flows west to Harris Pond. No odor was detected. The color of the sample was slightly yellowish. Turbidity was low with organic particulate floatable. Observed an oily sheen in the stream.
- **D2328:** A concrete outfall approximately 36 inches in diameter. Discharge flow was approximately 1 GPM into Pennichuck Pond. Sample was collected at the mouth of the outfall. No odor was detected. The color of the discharge was slightly yellowish. Turbidity was low to medium, with organic floatables.
- **D2617:** In-stream sample collected approximately 15 feet downstream of culvert. Culvert is rectangular shaped under roadway. Stream flows north to Pennichuck Pond. Sample was collected approximately 3 feet from the left bank. The color of the sample was light brown. The turbidity was low with some organic particulate floatables.
- **HarborAve:** A circular concrete outfall approximately 60 inches in diameter. Discharge flow was approximately 5 gallons per minute (GPM) into Salmon Brook. Sample was collected at the mouth of the outfall. Lots of trash was observed downstream. No odor, turbidity or floatable detected. Color of discharge was clear. Observed a metal gate in front of outfall.
- **HassellBr:** A circular concrete outfall approximately 36 inches in diameter. Flow was approximately 4 GPM into Hassells Brook. Sample was collected at the mouth of the outfall. No odor, turbidity or floatable detected. Color of discharge was clear.
- **PineStE:** A circular concrete outfall approximately 24 inches in diameter. Flow was approximately <1 GPM into Nashua River. Sample was collected at the mouth of the outfall. No odor, turbidity or floatable detected. Color of discharge was clear.

Map of Sample Locations

Note: the locations on the map were estimated using Google Earth and are used for display purposes only.



Table 1: Summary of Sampling and Analytical Data

Location	Site ID	Conway1	D2266	D2328	D2617	HarborAve	HassellBr	PineStE
	Sample Date	07/02/2024	07/02/2024	07/02/2024	07/02/2024	07/02/2024	07/02/2024	07/02/2024
	Sample Time	08:30	09:25	10:00	11:05	12:15	12:40	13:05
Coordinates ¹ (decimal degrees)	North	42.748555	42.785000	42.803838	42.804347	42.752315	42.741180	42.760240
	West	-71.500426	-71.51000	-71.543036	-71.543244	-71.456391	-71.480397	-71.476144
YSI Meter	Salinity, ppt.	0.2	0.4	0.1	0.1	0.7	0.2	0.1
	Temperature, °C	16.8	23.2	19.5	23.2	16.3	16.3	16.2
	Conductivity,	376.2	843	208.3	248.4	1149	378.2	375.2
Field Test Kits (mg/L)	Ammonia	0.25	0.25	0.25	0.15	0.05	0.25	0.25
	Total Chlorine	0.03	0.08	0.07	0.04	0.02	0.04	0.03
	Surfactants	1.0	0.25	3	0.50	0.50	0.25	0.25
Bacteria (MPN/100mL)	E. coli	430	241	1164	231	1230	8	29
	Enterococcus	266	537	379	262	528	ND	201
PPCPs (ng/L)	Cotinine	25	3.3	110	0.67	ND	2.1	4.5
	Acetaminophen	14	ND	1200	ND	ND	ND	ND
	Paraxanthine	3.6	ND	160	ND	ND	5.0	ND
	Atenolol	ND	ND	3.0	ND	ND	ND	ND
	Caffeine	240	22	3200	5.7	ND	ND	17
	Metoprolol	ND	ND	3.4	ND	ND	ND	ND
	Diphenhydramine	ND	ND	3.3	ND	ND	0.70	ND
	Carbamazepine	ND	ND	ND	ND	2.3	0.46	3.1

Abbreviations and Notes:

1. The coordinates listed in Table 1 were derived from the map created in Google Earth, therefore the coordinates are estimates of the actual locations.

N/A: Not Analyzed

ND: Not Detected above Reporting Limit

E. Coli/Fecal Coliform: Red ≥ 10,000 col/100ml, Orange ≥ 1,260 col/100ml, Yellow ≥ 235 col/100ml, Black < 235 col/100ml

Entero: Red ≥ 1,000 col/100ml, Orange ≥ 350, Yellow ≥ 61 col/100ml, Black < 61 col/100ml

NH₃: Red ≥ 6 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0.25 mg/L, Black < 0.25 mg/L

Cl₂: Red ≥ 1.0 mg/L, Orange ≥ 0.3 mg/L, Yellow ≥ 0.02 mg/L, Black < 0.02 mg/L

Surfactants: Red ≥ 1.0 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0.25 mg/L, Black < 0.25 mg/L (may give false positive at salinity greater than 1 ppt)

PPCPs: Red $\geq 100\times$ the RL, Orange $\geq 10\times$ the RL, Yellow $\geq 3\times$ the RL; Black $< 3\times$ the RL*

*See Reporting Limit (RL) values for each compound in attached Laboratory Report for Source Tracking

EPA notes while there are currently no numerical standards to compare pharmaceutical results against, it is EPA's experience that acetaminophen is the single best bacterial source tracking compound of those listed above, and any detection of this compound may indicate a source of sanitary sewage. With respect to all of the above compounds, when a sanitary sewage source is present, depending on the type of source, distance from the sample location, and the strength of the source, concentrations of these compounds may range from the low ng/l range up to thousands of ng/L.

IX. Appendix

Appendix A: Photograph Log

X. Attachments

Attachment A: Laboratory Report for PPCPs (Source Tracking) Analysis

Attachment B: Laboratory Report for E. coli Analysis

Attachment C: Laboratory Report for Enterococcus Analysis

End of Report

Appendix A
Photograph Log



Photo 1: Conway1 (photo taken 07/02/2024 at approx. 08:30) Outfall located near 6 Riverside St, discharging into the Mill Pond. Sample points are indicated by a red X.



Photo 2: D2226 (photo taken 07/02/2024 at approx. 09:25) Outfall located near 402 Amherst St, discharging into the Harris Pond. Sample points are indicated by a red X.



Photo 3: D2328 (photo taken 07/02/2024 at approx. 10:00) Outfall located near 650 Amherst St, discharging into the Pennichuck Pond. Sample points are indicated by a red X.



Photo 4: D2617 (photo taken 07/02/2024 at approx. 11:05) Outfall located near 647 NH-101A, discharging into the Pennichuck Pond. Sample points are indicated by a red X.



Photo 5: HarborAve (photo taken 07/02/2024 at approx. 12:15) Outfall located near 300 Main St, discharging into the Salmon Brook. Sample points are indicated by a red X.



Photo 6: HassellsBr (photo taken 07/02/2024 at approx. 12:40). Outfall located near 120 Fairview Ave, discharging into the Hassells Brook. Sample points are indicated by a red X.



Photo 7: PineStE (photo taken 07/02/2024 at approx. 13:05) Outfall located near 1 Pine St, discharging into the Nashua River. Sample points are indicated by a red X.

Attachment A
Laboratory Report for
Source Tracking Analysis

Author: LSASD Laboratory Services Branch
Pages: 16

Laboratory Report

July 25, 2024

Nafisah Ali
Shannon Shea
US EPA New England R1

Project Number: 24070006
Project: MS4 Nashua, NH
Analysis: HPLC/MS/MS Source Tracking Analysis
EPA Chemist: Peter Philbrook

Date Samples Received by the Laboratory: 07/02/2024

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I SOP, LSBSOP-LCMS_STA3.

The SOP is based on an EPA Regional Analytical Method developed at the EPA New England Laboratory.

Data were reviewed in accordance with the internal verification procedures described in the EPA New England Quality Manual for NERL.

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

If you have any questions please call me at 617-918-8340 .

Sincerely,

24070006\$STA

Qualifiers:

RL = Reporting limit

ND = Not Detected above Reporting limit

NA = Not Applicable due to high sample dilutions or sample interferences

NC = Not calculated since analyte concentration is ND.

J = Estimated value

J1 = Estimated value due to MS recovery outside acceptance criteria

J2 = Estimated value due to LFB result outside acceptance criteria

J3 = Estimated value due to RPD result outside acceptance criteria

J4 = Estimated value due to LCS result outside acceptance criteria

E = Estimated value exceeds the calibration range

L = Estimated value is below the calibration range

B = Analyte is associated with the lab blank or trip blank contamination. Values are qualified when the observed concentration of the contamination in the sample extract is less than 10 times the concentration in the blank.

R = No recovery was calculated since the analyte concentration is greater than four times the spike level.

P = The confirmation value exceeded 35% difference and is less than 100%. The lower value is reported.

C = The identification has been confirmed by GC/MS.

A = Suspected Aldol condensation product.

N = Tentatively identified compound.

24070006\$STA

MS4 Nashua, NH

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	Conway 1	Lab Sample ID:	AC14139
Date of Collection:	7/02/2024	Matrix:	Stormwater
Date of Preparation:	7/03/2024	Amount Prepared:	500 mL
Date of Analysis:	7/16/2024	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	25	1	0.40	
103-90-2	Acetaminophen	14	1	2.0	
611-59-6	Paraxanthine	3.6	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	240	1	4.0	J
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	J

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	20	26 - 133
Diphenhydramine-D3	60	56 - 113

Comments: Surrogate recovery of phentermine-D5 was below QC criteria, the diphenhydramine-D3 recovery was acceptable

J = Estimated value, Internal standard recovery of caffeine was below limits

J = Estimated value, Internal standard recovery of carbamazepine was below limits

MS4 Nashua, NH

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	D2266	Lab Sample ID:	AC14140
Date of Collection:	7/02/2024	Matrix:	Stormwater
Date of Preparation:	7/03/2024	Amount Prepared:	500 mL
Date of Analysis:	7/16/2024	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	3.3	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	22	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	56	26 - 133
Diphenhydramine-D3	97	56 - 113

Comments:

MS4 Nashua, NH

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	D2328	Lab Sample ID:	AC14141
Date of Collection:	7/02/2024	Matrix:	Stormwater
Date of Preparation:	7/03/2024	Amount Prepared:	500 mL
Date of Analysis:	7/16/2024	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	110	10	4.0	
103-90-2	Acetaminophen	1200	10	20	
611-59-6	Paraxanthine	160	10	20	
29122-68-7	Atenolol	3.0	1	2.0	
58-08-2	Caffeine	3200	10	40	J
56392-17-7	Metoprolol	3.4	1	2.0	
58-73-1	Diphenhydramine	3.3	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	31	26 - 133
Diphenhydramine-D3	47	56 - 113

Comments: Sample was re-run at a 10X dilution to quantitate target compounds that were over the calibration curve.

Surrogate recovery of phentermine-D5 was within QC criteria, the diphenhydramine-D3 recovery was below QC criteria

J = Estimated value, Internal standard recovery of caffeine was below limits

MS4 Nashua, NH

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	D2328 DUP	Lab Sample ID:	AC14142
Date of Collection:	7/02/2024	Matrix:	Stormwater
Date of Preparation:	7/03/2024	Amount Prepared:	500 mL
Date of Analysis:	7/16/2024	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	110	10	4.0	
103-90-2	Acetaminophen	1200	10	20	
611-59-6	Paraxanthine	160	10	20	
29122-68-7	Atenolol	3.5	1	2.0	
58-08-2	Caffeine	3200	10	40	J
56392-17-7	Metoprolol	5.0	1	2.0	
58-73-1	Diphenhydramine	3.2	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	31	26 - 133
Diphenhydramine-D3	46	56 - 113

Comments: Surrogate recovery of phentermine-D5 was within QC criteria, the diphenhydramine-D3 recovery was outside of QC limits

J = Estimated value, Internal standard recovery of caffeine was below limits

MS4 Nashua, NH

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	D2617	Lab Sample ID:	AC14143
Date of Collection:	7/02/2024	Matrix:	Stormwater
Date of Preparation:	7/03/2024	Amount Prepared:	500 mL
Date of Analysis:	7/16/2024	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	0.67	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	5.7	1	4.0	J
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	3.0	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	58	26 - 133
Diphenhydramine-D3	85	56 - 113

Comments: J = Estimated value, Internal standard recovery of caffeine was below limits

MS4 Nashua, NH

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	Harbor Ave	Lab Sample ID:	AC14144
Date of Collection:	7/02/2024	Matrix:	Stormwater
Date of Preparation:	7/03/2024	Amount Prepared:	500 mL
Date of Analysis:	7/16/2024	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	ND	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	ND	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	2.3	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	61	26 - 133
Diphenhydramine-D3	85	56 - 113

Comments:

MS4 Nashua, NH

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	Hassel Br	Lab Sample ID:	AC14145
Date of Collection:	7/02/2024	Matrix:	Stormwater
Date of Preparation:	7/03/2024	Amount Prepared:	500 mL
Date of Analysis:	7/16/2024	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	2.1	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	5.0	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	ND	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	0.70	1	0.40	
298-46-4	Carbamazepine	0.46	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	67	26 - 133
Diphenhydramine-D3	92	56 - 113

Comments:

MS4 Nashua, NH

HPLC/MS/MS Source Tracking Analysis

Client Sample ID:	Pine St E	Lab Sample ID:	AC14146
Date of Collection:	7/02/2024	Matrix:	Stormwater
Date of Preparation:	7/03/2024	Amount Prepared:	500 mL
Date of Analysis:	7/16/2024	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	4.5	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	17	1	4.0	J
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	3.1	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	57	26 - 133
Diphenhydramine-D3	88	56 - 113

Comments: J = Estimated value, Internal standard recovery of caffeine was below limits

MS4 Nashua, NH

Laboratory Blank

Client Sample ID:	N/A	Lab Sample ID:	N/A
Date of Collection:	N/A	Matrix:	Stormwater
Date of Preparation:	7/03/2024	Amount Prepared:	500 mL
Date of Analysis:	7/16/2024	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	1
Wet Weight Prepared:	N/A	pH:	N/A

CAS Number	Compound	Concentration ng/L	Dilution	RL ng/L	Qualifier
486-56-6	Cotinine	ND	1	0.40	
103-90-2	Acetaminophen	ND	1	2.0	
611-59-6	Paraxanthine	ND	1	2.0	
29122-68-7	Atenolol	ND	1	2.0	
58-08-2	Caffeine	ND	1	4.0	
56392-17-7	Metoprolol	ND	1	2.0	
58-73-1	Diphenhydramine	ND	1	0.40	
298-46-4	Carbamazepine	ND	1	0.40	

Surrogate Compounds	Recoveries (%)	QC Ranges
Phentermine-D5	66	26 - 133
Diphenhydramine-D3	67	56 - 113

Comments:

MS4 Nashua, NH

MATRIX SPIKE (MS) RECOVERY

Sample ID: AC14146

PARAMETER	SPIKE ADDED ng/L	SAMPLE CONCENTRATION ng/L	MS CONCENTRATION ng/L	MS % REC	QC LIMITS (% REC)
Acetaminophen	120	ND	101	84	55 - 99
Atenolol	120	ND	108	90	24 - 160
Caffeine	240	17.0	236	91	34 - 131
Carbamazepine	24.0	3.1	24.3	88	61 - 107
Cotinine	24.0	4.5	23.4	79	48 - 112
Diphenhydramine	24.0	ND	19.5	81	17 - 112
Metoprolol	120	ND	106	88	31 - 137
Paraxanthine	120	ND	50.9	42	41 - 132

MS4 Nashua, NH

Laboratory Duplicate Results

Sample ID: AC14145

PARAMETER	SAMPLE RESULT ng/L	SAMPLE DUPLICATE RESULT ng/L	PRECISION RPD %	QC LIMITS
Acetaminophen	ND	ND	NC	50
Atenolol	ND	ND	NC	50
Caffeine	ND	ND	NC	50
Carbamazepine	0.455	0.470	3.2	50
Cotinine	2.1	2.30	9.1	50
Diphenhydramine	0.699	0.793	13	50
Metoprolol	ND	ND	NC	50
Paraxanthine	5.0	4.97	1.0	50

MS4 Nashua, NH

Laboratory Fortified Blank (LFB) Results

PARAMETER	LFB AMOUNT SPIKED ng/L	LFB RESULT ng/L	LFB RECOVERY %	QC LIMITS %
Acetaminophen	120	94.2	79	45 - 106
Atenolol	120	110	92	33 - 129
Caffeine	240	163	68	41 - 120
Carbamazepine	24	19.8	83	63 - 108
Cotinine	24	15.8	66	55 - 106
Diphenhydramine	24	16.4	68	15 - 113
Metoprolol	120	110	92	41 - 122
Paraxanthine	120	97.2	81	52 - 115

Comments:

Samples in Batch: AC14139, AC14140, AC14141, AC14142, AC14143, AC14144, AC14145, AC14146

EPA Project No: 24070006		Project Name & Location: Nashua MS4 Nashua, NH		Sampler's Name and Signature: Nafisah Ali: <i>Nafisah Ali</i> Ana Harte: <i>Ana Harte</i>													
Matrix (insert letter in column below)		Preservative (insert # in box to the right) ---->		Analysis Requested													
A. Drinking water	F. Soil/Sediment/Solid	1. Ice	6. NaOH, pH>12	# of Containers \$1A													
B. Ground/Well water	G. Oil/Solvent/Liquid	2. H ₂ SO ₄ , pH<2	7. Ascorbic Acid														
C. Storm water	H. Soil Gas	3. HNO ₃ , pH<2	8. MeOH														
D. Surface water	I. Air Canister	4. HCl, pH<2	9. Other _____														
E. Wastewater	J. _____	5. Na ₂ S ₂ O ₃	10. Other _____														
Lab ID	Sample ID	Date	Time	Comp	Grab	Matrix	For EPA Staff Only: If after hours or nobody is available, leave cooler(s) and signed COC in the walk-in fridge (Room 190A) and notify appropriate staff for next day check-in.										
	Conway 1	7/2/24	0830		✓	C	1	✓									Sample Specific Comments
	D2266	7/2/24	0925		✓	C	1	✓									
	D2320	7/2/24	1000		✓	C	1	✓									
	D2328 DUP	7/2/24	1000		✓	C	1	✓									
	D2617	7/2/24	1105		✓	C	1	✓									
	Harbor Ave	7/2/24	1215		✓	C	1	✓									
	Hassel Br	7/2/24	1240		✓	C	1	✓									
	Pine STE	7/2/24	1305		✓	C	1	✓									
Relinquished by: (Signature)				Received by: (Signature)				Date		Time		Remarks					
<i>[Signature]</i>				<i>Laura L. Lowack (ESAT)</i>				7/2/24		1420							
Relinquished by: (Signature)				Received by: (Signature)				Date		Time							
Relinquished by: (Signature)				Received for Laboratory by: (Signature)				Date		Time							

**US EPA REGION 1
SAMPLE RECEIPT CHECKLIST**

PROJ #: 24070006	RECEIPT DATE: 7/2/24
SURVEY NAME: MS4 Nashua LOCATION: Nashua, NH	REC'D BY: Laura Glowacki (ESAT)
OSC/PO: Nafisah Ali	SITE ID: SUPERFUND: N

WERE SAMPLES SHIPPED? TRACKING #: _____ DATE/SENT: _____ NO, Hand Delivered ☐ COOLER TEMPERATURE UPON ARRIVAL °C / NA CHAIN OF CUSTODY PRESENT? ☐ Y ☐ COMPLETE? ☐ Y ☐ CUSTODY SEALS PRESENT ON COOLER? ☐ N ☐ SAMPLES? ☐ N ☐ WERE SAMPLE CONTAINERS INTACT? ☐ Y ☐ WAS SAMPLE PRESERVATION DOCUMENTED? COC Sample Container ☐ N ☐ APPROPRIATE SAMPLES VOLUME FOR REQUESTED ANALYSIS? ☐ Y ☐ SAMPLES AND COC MATCH? ☐ Y ☐ IF ANY PROBLEMS WAS PROJECT MANAGER NOTIFIED? BY WHOM? APPROPRIATE SAMPLE CONTAINERS? ☐ Y ☐ SAMPLES WITHIN HOLDING TIMES? ☐ Y ☐ ALL ANALYSIS SPECIFIED ON COC? ☐ Y ☐ DATE/TIME OF COLLECTION ON COC ☐ Y ☐ TURN-AROUND TIME: 4 weeks	COMMENTS: Storm water samples 8 #\$\$STA
--	--

Attachment B
Laboratory Report for
E. coli Analysis

Author: LSASD Laboratory Services Branch
Pages: # 4



United States Environmental Protection Agency
Laboratory Services and Applied Science Division
11 Technology Drive
North Chelmsford, MA 01863-2431

Microbiology Laboratory Report

July 29, 2024

Nafisah Ali
Shannon Shea
US EPA New England R1

Project Number: 24070007
Project: MS4 Nashua, NH
Analysis: E. Coli Defined Substrate
Analyst: Jack Paar

Date Samples Received by the Laboratory: 07/02/2024

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I SOP, TC/ECColilert4.

Data were reviewed in accordance with the internal verification procedures described in the EPA New England LSASD Biology QA Plan.

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

If you have any questions please call me at 617-918-8604.

Sincerely,

Jack A. Paar, III
Biology Laboratory Manager

24070007ECMM

Water Microbiology Laboratory
Data Qualifier Codes

J = Estimate
H = Exceeds holding time
I = Exceeds incubation time
At = Atypical overgrowth
S = Lost sample
V = Insufficient sample volume
TNTC = Too numerous to count
MB = Media blank
+++ = Positive control
--- = Negative control
SP = Spiked Sample
L = Estimated, result below reporting limit (RL)
ND = Not Detected, result less than RL
D = Lab Duplicate
P = Plate counts outside preferred range
FDUP = Field Duplicate collect time not specified on Chain of Custody. Field duplicate
LIMS default time = 12:00AM

24070007ECMM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1 - NEW ENGLAND
LABORATORY SERVICES BRANCH
MS4 Nashua, NH
E. Coli Defined Substrate

Matrix: Stormwater

Sample Number	Lab ID	Date/Time of Collection	Date/Time of Analysis	Compound	Concentration MPN/100 mL	RL MPN/100 mL	Qualifier
Conway1	AC14147	07/02/24 8:30 am	07/02/24 2:20 pm	E. Coli Defined Substrate	430	4	
D2266	AC14148	07/02/24 9:25 am	07/02/24 2:20 pm	E. Coli Defined Substrate	241	4	
D2328	AC14149	07/02/24 10:00 am	07/02/24 2:20 pm	E. Coli Defined Substrate	1164	4	
D2617	AC14150	07/02/24 11:05 am	07/02/24 2:20 pm	E. Coli Defined Substrate	231	4	
Harbor Ave	AC14151	07/02/24 12:15 pm	07/02/24 2:20 pm	E. Coli Defined Substrate	1230	4	
Hassel Br	AC14152	07/02/24 12:40 pm	07/02/24 2:20 pm	E. Coli Defined Substrate	8	4	
Pine St e	AC14153	07/02/24 1:05 pm	07/02/24 2:20 pm	E. Coli Defined Substrate	29	4	

Number of Samples: 7

CHAIN OF CUSTODY RECORD

[illegible]

Distribution: Original Accompanies Shipment. Copy to Coordinator Field Files.

FSBFORM-CHAINCUSTODY1
Revision 1
05/16/2022

Attachment C
Laboratory Report for
Enterococcus Analysis

Author: LSASD Laboratory Services Branch
Pages: # 4

End of Report



United States Environmental Protection Agency
Laboratory Services and Applied Science Division
11 Technology Drive
North Chelmsford, MA 01863-2431

Microbiology Laboratory Report

July 29, 2024

Nafisah Ali
Shannon Shea
US EPA New England R1

Project Number: 24070007
Project: MS4 Nashua, NH
Analysis: Enterococcus in Water
Analyst: Jack Paar

Date Samples Received by the Laboratory: 07/02/2024

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I SOP, ECA Enterolert3.

Data were reviewed in accordance with the internal verification procedures described in the EPA New England LSASD Biology QA Plan.

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

If you have any questions please call me at 617-918-8604.

Sincerely,

Jack A. Paar, III
Biology Laboratory Manager

24070007ENTERO

Water Microbiology Laboratory
Data Qualifier Codes

J = Estimate
H = Exceeds holding time
I = Exceeds incubation time
At = Atypical overgrowth
S = Lost sample
V = Insufficient sample volume
TNTC = Too numerous to count
MB = Media blank
+++ = Positive control
--- = Negative control
SP = Spiked Sample
L = Estimated, result below reporting limit (RL)
ND = Not Detected, result less than RL
D = Lab Duplicate
P = Plate counts outside preferred range
FDUP = Field Duplicate collect time not specified on Chain of Custody. Field duplicate
LIMS default time = 12:00AM

24070007ENTERO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1 - NEW ENGLAND
LABORATORY SERVICES BRANCH
MS4 Nashua, NH
Enterococcus in Water

Matrix: Stormwater

Sample Number	Lab ID	Date/Time of Collection		Date/Time of Analysis		Compound	Concentration MPN/100mL	RL MPN/100mL	Qualifier
Conway1	AC14147	07/02/24	8:30 am	07/02/24	2:20 pm	Enterococcus in Water	266	10	
D2266	AC14148	07/02/24	9:25 am	07/02/24	2:20 pm	Enterococcus in Water	537	10	
D2328	AC14149	07/02/24	10:00 am	07/02/24	2:20 pm	Enterococcus in Water	379	10	
D2617	AC14150	07/02/24	11:05 am	07/02/24	2:20 pm	Enterococcus in Water	262	10	
Harbor Ave	AC14151	07/02/24	12:15 pm	07/02/24	2:20 pm	Enterococcus in Water	528	10	
Hassel Br	AC14152	07/02/24	12:40 pm	07/02/24	2:20 pm	Enterococcus in Water	ND	10	
Pine St e	AC14153	07/02/24	1:05 pm	07/02/24	2:20 pm	Enterococcus in Water	201	10	

Number of Samples: 7

