Lowell Wastewater Utility

Downstream Notification Report
NPDES Permit No: MA0100633

Date of Event:
Tue, Feb 16, 2021

Dear Environmental Professionals and Interested Parties:

This report describes high-flow treatment performed at Lowell's Duck Island Clean Water Facility, as well as discharges of untreated Combined Sewer Overflows (CSOs) at the Utility's diversion structures.

High-flow treatment refers to combined stormwater and sewage that receives screening and clarification before being mixed with water receiving biological treatment. This mixture is then disinfected and discharged into the Merrimack River in full compliance with secondary treatment standards.

CSO diversions are an untreated mixture of stormwater and dilute sewage that is discharged directly into nearby receiving waters when the capacity of the treatment and transport systems are exceeded as a result of heavy rain. These diversions occur only when necessary to protect public health and safety.

Please refer to the final two pages of this report for an explanation of terms.

Wastewater Flow to Duck Island		
Daily Flow Rate (MGD)	Peak Hourly Flow Rate (MGD)	Instantaneous Peak Flow Rate (MGD)
48.48	104.09	110.49

	Rainfall			
	Daily Rainfall (in)	Duration Total (hr)	Max Hourly Rainfall (in/hr)	Peak Intensity (in/15-min)
Warren	1.15	11	0.30	0.09
Duck Island	1.02	8	0.27	0.09

Rain data may be inaccurate during cold weather

High-Flow Treatment Summary	
Duration (Hours)	Volume (MG)
5.07	9.50

Combined Sewer Overflows Summary	
Duration (Hours)	Volume (MG)

Person Reporting Event: Clifton Hall - Lowell Water Engineering

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Tue, Feb 16, 2021

High-Flow Treatment Duck Island			
Time	Duration (Minutes)	Volume (MG)	Duck Island Rain (in)
01:00			
02:00			
03:00			
04:00			0.04
05:00			0.12
06:00			0.22
07:00			0.27
08:00	10	0.20	0.10
09:00	45	1.22	0.12
10:00	60	2.17	0.13
11:00	60	2.23	0.02
12:00	60	2.08	
13:00	43	1.41	
14:00	24	0.13	
15:00	2	0.06	
16:00			
17:00			
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

Barasford Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Beaver Brook Station Diversion to Beaver Brook		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

High-Flow Treatment Duck Island			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
	304	9.50	1.02

Barasford Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Beaver Brook Station To Beaver Brook		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Tue, Feb 16, 2021

Merrimack Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Read Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Tilden Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Merrimack Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Read Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Tilden Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Tue, Feb 16, 2021

Walker Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Warren Station Diversion to Concord River			
Time	Duration (Minutes)	Volume (MG)	Warren Rain (in)
01:00			
02:00			
03:00			
04:00			
05:00			0.09
06:00			0.26
07:00			0.30
08:00			
09:00			0.13
10:00			0.17
11:00			0.07
12:00			0.04
13:00			0.04
14:00			0.03
15:00			0.01
16:00			
17:00			0.01
18:00			
19:00			
20:00			
21:00			
22:00			
23:00			
24:00			

West Station Diversion to Merrimack River		
Time	Duration (Minutes)	Volume (MG)
01:00		
02:00		
03:00		
04:00		
05:00		
06:00		
07:00		
08:00		
09:00		
10:00		
11:00		
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00		
19:00		
20:00		
21:00		
22:00		
23:00		
24:00		

Walker Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Warren Station To Concord River			
24 Hour	Total Duration (Minutes)	Total Volume (MG)	Total Rainfall (in)
			1.15

West Station To Merrimack River		
24 Hour	Total Duration (Minutes)	Total Volume (MG)

Lowell Wastewater Utility

Downstream Notification Report

NPDES Permit No: MA0100633

Date of Event:

Tue, Feb 16, 2021

Definitions and Abbreviations:

Flow Reporting Terms:

MG:
Volume in million gallons, (e.g. 2 MG = 2 million gallons)

MGD:
Flow rate in million gallons per day (e.g. a rate of 1 MGD sustained for 1 day would result in a volume of 1 MG)

Daily Flow Rate, million gallons per day (MGD):
Million gallons of flow treated at Duck Island

Peak Hourly Flow Rate (MGD):
The highest flow rate treated at Duck Island over a rolling one-hour period

Instantaneous Peak Flow Rate (MGD):
The highest flow rate treated at Duck Island at any moment of the day

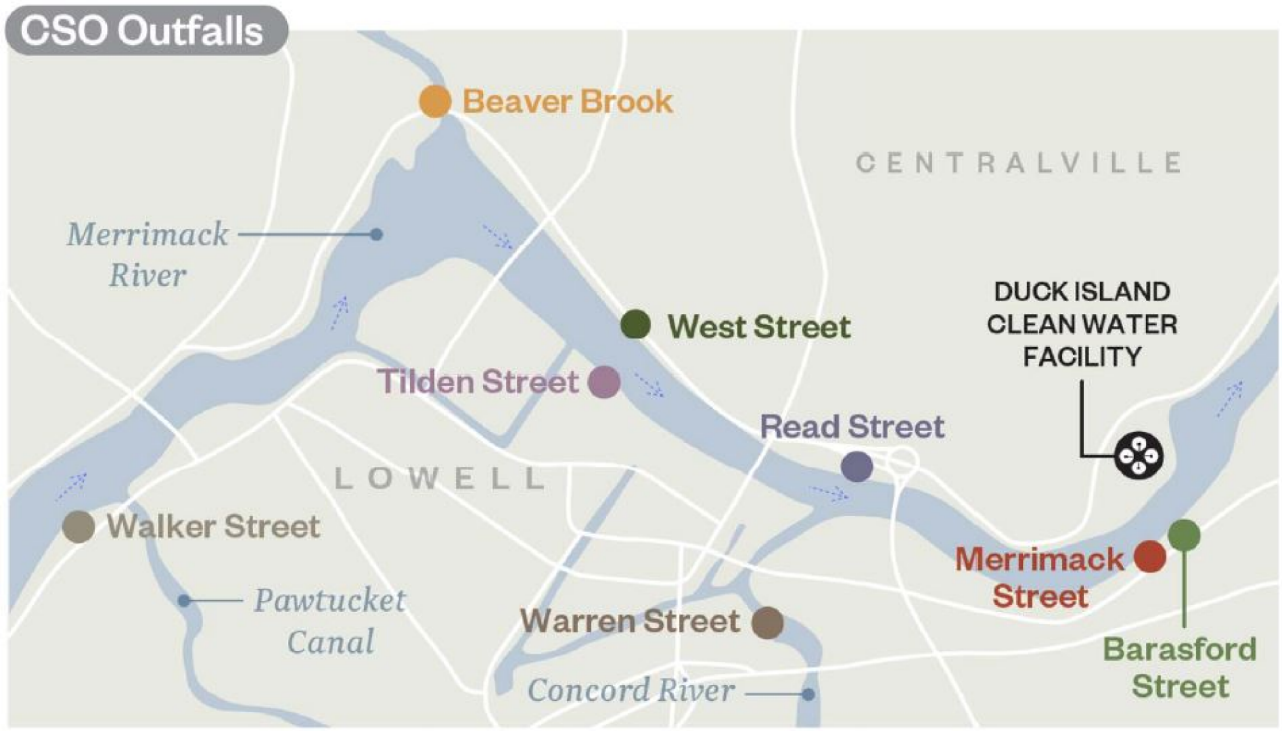
Duration (Minutes):
Number of minutes in a given hour or over the course of the day a flow was measured

Weather Reporting Terms:

Rainfall Measurement:
Rainfall is measured by Lowell's network of rain gauges

Daily Rainfall, inches (in):
The total depth of rainfall measured by each rain gauge over the course of the day

Maximum Hourly Rainfall (in/hr):
The greatest total depth of rainfall measured by a rain gauge in one hour

Peak Intensity, inches per 15 minutes (in/15-min):
The greatest total depth of rainfall received in any 15-minute period.

Duration (Hour):
The number of hours in the day during which it rained.