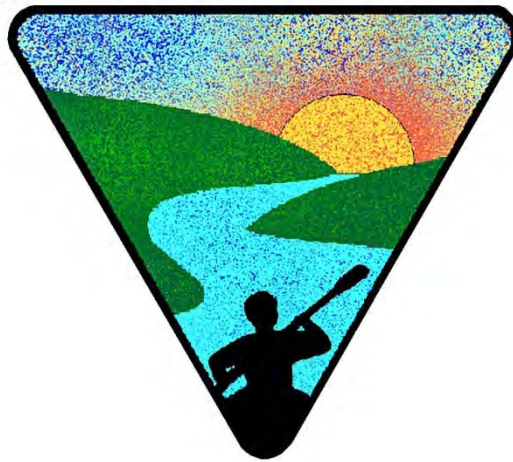


French River Connection



2018 Water Quality Monitoring Report

December 15, 2018

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Introduction

This report summarizes the findings of the French River Connection sampling from our 2018 water quality monitoring campaign utilizing the TROLL 9500. Our goal continues to be to assess and improve the water quality of the French River. Methods to calibrate and to maintain quality control are contained in Program Plans published by The Last Green Valley, who owns the equipment and provided the necessary calibration materials. We partnered with the Shepherd Hill Envirothon Team for the April sampling.

Problems with the Last Green Valley TROLL 9500 resulted in significant data gaps for the April, May, and June sampling. For the remainder of the sampling period the Town of Charlton Troll 9500 was utilized. We did limited E. Coli and chloride sampling this year. E.Coli and chloride samples were analyzed by Microbac Laboratories. Test reports are appended to this report.

This year's report includes the duplicate sample results which are indicated in appropriate site data table.

The following volunteers made our water quality work possible, and we thank them:

Devon Avery
Dillon Ducharme
Darien Gauthier
Carolyn Josti

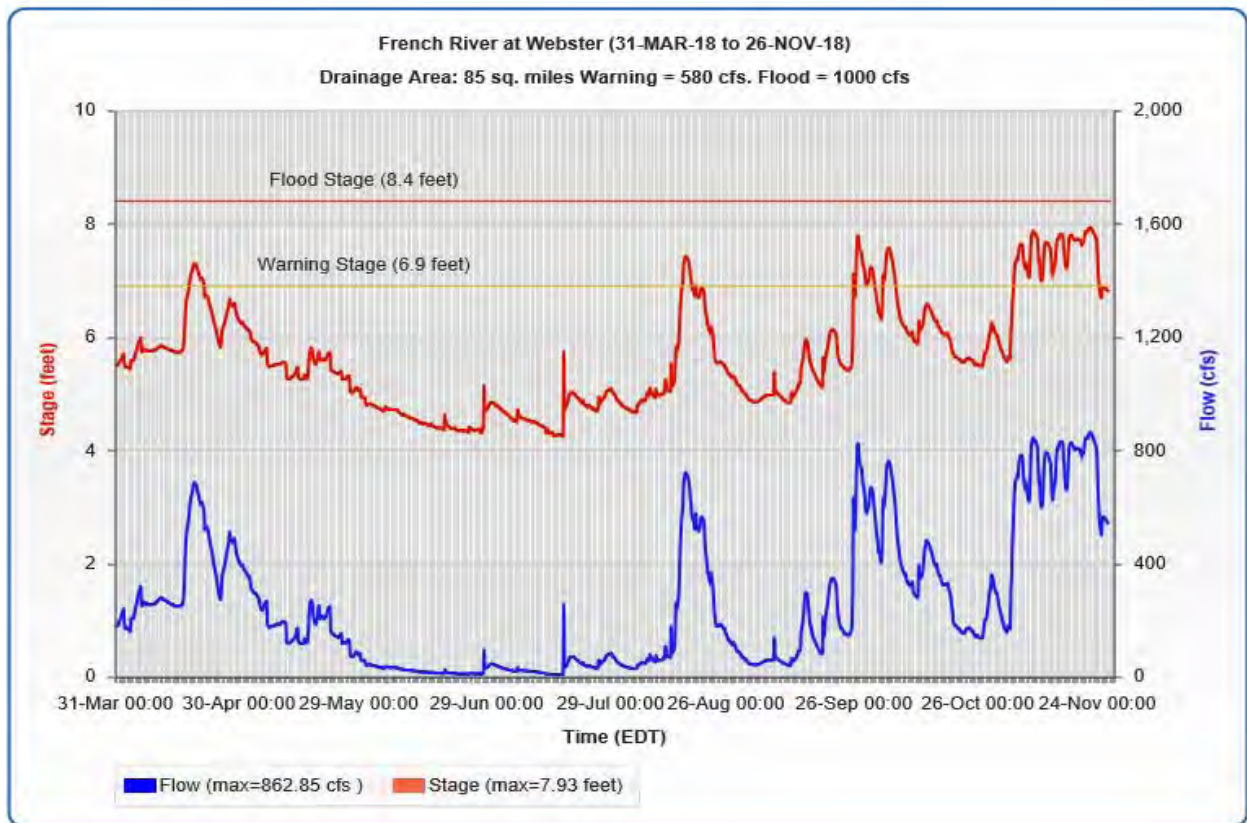
Thomas Dziechciarz
Billie Porter
Jack Josti

French River Flow

One of the major differences in the river year to year is the flow, measured in cubic feet /second. Average daily flow is provided to us by the Army Corp of Engineers.

https://reservoircontrol.usace.army.mil/NE/pls/cwmsweb/cwms_web.cwmsweb.cwmsindex

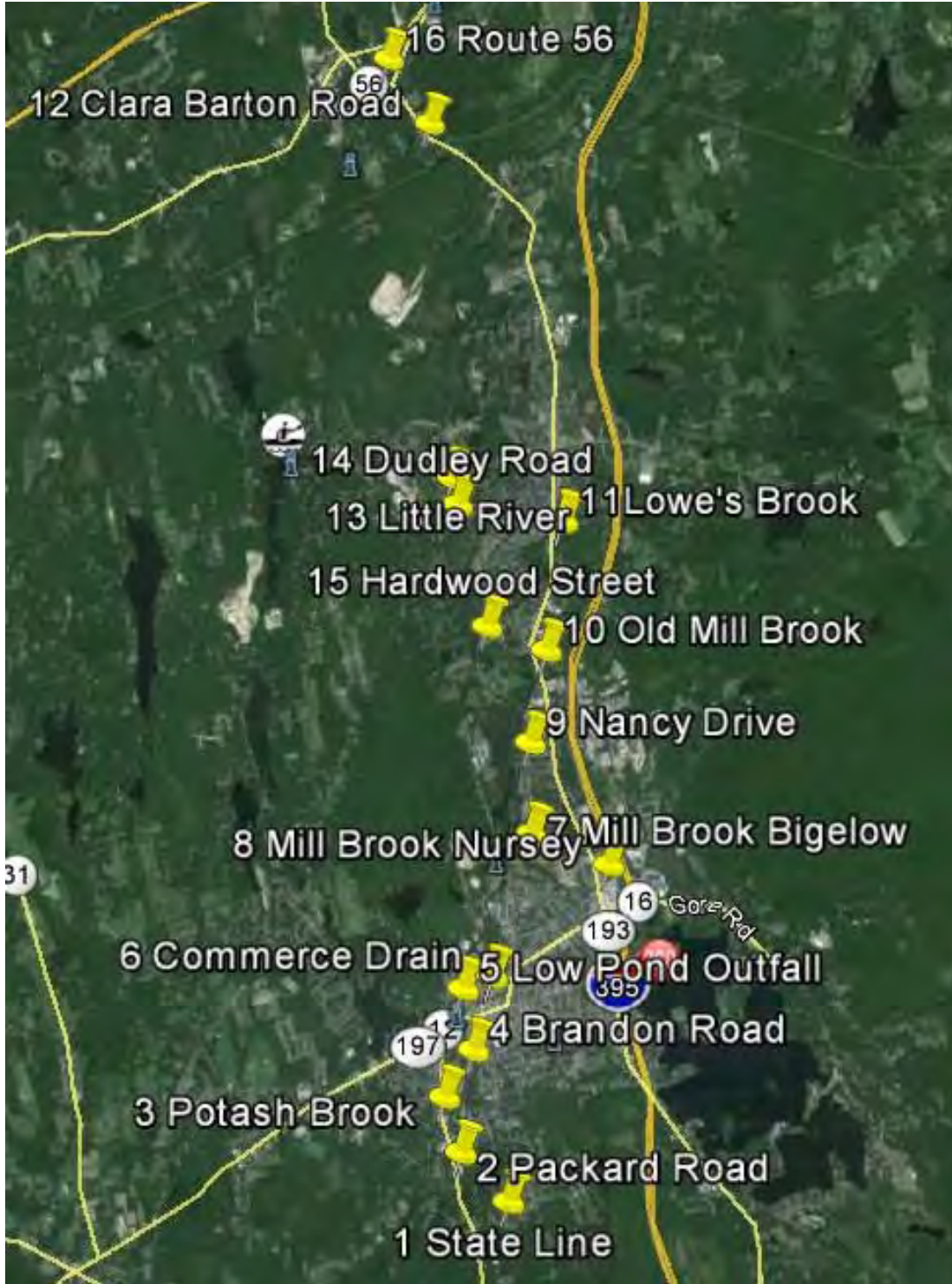
The flow rate at the time of sampling can possibly impact parameter values. The flow rate of the French River at the Army Corp of Engineers gage site in Webster, MA is illustrated in the graph below. The flow rate at this gage station is in general indicative of the flow rate at all sample sites.



One of the observations we make is a judgment about flow at each station, characterized from very low to very high. It's easy for an experienced volunteer who has seen each location many times to make this characterization, but not so for a relative newcomer. Flow velocity, depth of water, bank exposure, and observations such as depth of water over the step dam at the State line are used to characterize the flow rate.

Site reports

The following pages contain a brief report for each of the sixteen sites we monitor, as shown on the map.



In these reports, we take note of pH values below 6.5 and DO below 5 mg/l which are the state standards, conductivity above 300 uSm/cm, and over 5 for turbidity.

State Line, Webster N 42°02'27.5" W 71°53'02"

Stateline (boundary): this is a measure of water quality, below the Webster WWTP, as the main stem leaves the state. This site is chosen because it is on the state line. It is reached by parking where the P&W active rail line crosses Perryville Road in Webster and walking diagonally downstream until the river is reached.



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	mg/l	Col/100ml
4/16/2018	6.65	6.85	278.2	2.2	11.54	NT
5/24/2018	19.1	6.95	247.1	1.6	8.92	NT
6/26/2018	19.82	6.97	410.7	1.3	7.89	NT
7/30/2018	23.9	7.85	247.1	1.5	7.97	63.7
8/27/2018	22.32	7.87	218.7	0.7	8.29	54.7
10/7/2018#	16.34/16.34	8.03/8.0	180.3*/180.3*	1.7/2.1	9.54/9.54	NT

* Conductivity did not pass Post calibration check. Data not qualified

Duplicate samples

Water at this site is clear and odorless. Elevated conductivity has been observed in previous years, and was also the case this year. Chloride sampling was conducted on 8/1 and 8/27 with the following results. 67.2 ppm on 8/1 and 63.1 ppm on 8/27.

Packard Pond Outflow, Dudley N 42°01'1.0" W 71°53'25.5"

Packard Pond (impact): carries a significant volume of water and drains Ardlock Acres conservation area and an area behind the Dudley transfer station, which may be a source of pollution. Park at the junction of Carpenter Road and Route 12 in Dudley, and monitored on the west side of the culvert.



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	mg/l	Col/100 ml
4/16/2018	7.39	6.72	282.0	4.0	11.26	NT
5/24/2018	18.77	6.64	183.8	3.8	8.06	NT
6/26/2018	20.0	6.39	211.3	2.5	6.81	NT
6/27/2017	20.94	6.49	217.5	2.1	6.5	NT
7/30/2018	23.11	7.9	166.9	7.9	4.51	NT
8/27/2018	21.06	7.91	174.8	1.5	5.61	NT
10/7/2018	16.80	7.95	171.0*	2.7	6.74	NT

* Conductivity did not pass Post calibration check. Data not qualified

Water at this site is normally clear and odorless. There are small articles of trash scattered about, and plants along the sides of the channel. DO reading was below State standards once.

Potash Brook, Dudley N 42°02'13.5" W 71°53'33.3"

Potash Brook : carries a significant volume of water and drains an area west of Merino Pond which is partly residential and partly agricultural and may be a source of nutrient runoff. Turn off Route 12 onto New Boston Road and then right into the Dudley Pumping Station, and monitor on the south side of the bridge.



Date	Water Temp C	pH	Specific Conductivity uS/cm	Turbidity NTUs	DO mg/l	E. Coli col/100 ml
4/16/2018	3.66	6.83	344.5	7.8	12.02	NT
5/24/2018	18.0	7.08	323.0	3.7	9.11	NT
6/26/2018	18.32	7.19	362.4	2.7	8.92	NT
7/30/2018	18.75	7.74	233.5	1.7	8.57	NT
8/27/2018	19.21	7.72	274.6	1.9	8.43	NT
10/7/2018	14.37	7.80	255.2*	0.9	9.48	NT

. * Conductivity did not pass Post calibration check. Data not qualified

Water here is clear and odorless. Water temperatures here are generally the lowest we observe. High Conductivity was observed three times this year.

Brandon Road, Dudley N 42°02'30.2" W 71°53'14.8"

Brandon Road (reference): At this location we can take data upstream of the Webster Wastewater Treatment Plant. Drive into the Ethan Allen Mill Complex north of the office and proceed directly to the river, just downstream from the Hill Street bridge



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	mg/l	Col/100ml
4/16/2018	6.46	6.77	259.3	1.7	12.12	NT
5/24/2018	19.53	6.86	228.6	1.2	8.77	NT
6/26/2018	NT	6.97	327.3	1.4	8.29	NT
7/30/2018	24.44	7.72	240.8	1.1	7.70	35
8/27/2018	22.52	7.78	204.2	0.6	7.99	158.5
10/7/2018	16.34	7.94	169.3*	1.1	9.39	NT

* Conductivity did not pass Post calibration check. Data not qualified

Water here is clear and odorless. High Conductivity on 6/26 maybe related to low flow.

Low Pond Outflow, Dudley N 42°02'59.8" W 71°53'16.3"

Low Pond outflow (impact): carries a significant volume of water and drains a string of ponds including Low Pond and Merino Pond, around which there are significant residential developments which may be a source of runoff. Park on the north side of Stevens Linen in Dudley in the large parking lot and proceed to the right to the tailrace. Monitor where it emerges from under the building.



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	mg/l	Col/100ml
5/24/2018	15.44	6.84	129.7	1.8	9.44	NT
7/30/2018	21.01	7.22	138.2	NT	8.29	NT
10/7/2018	16.23	8,13	106.8*	0.6	9.49	NT

. * Conductivity did not pass Post calibration check. Data not qualified

Water here is generally clear and odorless. There is some trash in the channel. The higher levels of pH and low conductivity are characteristic of this site.

Commerce Parking Lot Storm Drain, Webster N 42°03'01.4" W 71°53'00.6"

Commerce parking lot storm drain (impact):
This continually running storm drain in downtown Webster has exuded an odor detectable at times and nearby rocks have exhibited an orange deposit. High E. Coli counts were found at this site. This is a possible point source of pollution. Enter the public parking lot at Tracy Court and go to the southwest corner. Monitor the storm drain outflow.



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	mg/l	Col/100ml
4/16/2018	3.16	6.78	267.3	68.0	12.92	NT
5/27/2018	19.15	7.01	254.4	1.3	9.16	NT
6/26/2018	16.25	7.52	594.6	2.2	9.16	NT
7/30/2018	23.4	7.57	290.1	NT	7.98	75.4

Access to site was blocked a fallen tree on 8/12 and 10/7

There is some trash scattered about. Consistently higher levels of conductivity and pH characterize this site. The odors and deposits that were observed at the site in earlier years have disappeared.

Mill Brook at Bigelow Road, Webster N 42°04'00.8" W 71°52'31.9"

Mill Brook at Bigelow Road (impact): As the outflow from Webster Lake, carries a significant volume of water. This station is downstream from a former stump grinding operation, which operated on raw material of unknown origin and character, and added chemicals to its product, and may have affected the chemistry of Mill Brook. Park near the bridge over Mill Brook on Bigelow Road, and monitor on the east side of the bridge.



Date	Water Temp C	pH	Specific Conductivity uS/cm	Turbidity NTUs	DO mg/l	E. Coli Col/100ml
4/16/2018	6.18	6.45	1027.0	7.0	11.3	NT
5/24/2018	20.24	6.7	197.5	2.3	9.91	NT
6/26/2018	17.47	6.45	669.8	1.7	7.52	NT
7/30/2018	19.73	7.26	728.6	1.0	5.22	NT
8/27/2018	24.87	7.53	261.3	0.1	8.27	NT
10/7/2018	17.77	7.82	175.15*	0.7	9.11	NT

. * Conductivity did not pass Post calibration check. Data not qualified

Water here is very clear and odorless. There is considerable trash scattered about, and plants seen throughout the season include milfoil, algae, water lilies, cattails, and many others. Flow here is affected by operation of a dam controlling the level of Webster Lake. Frequent high levels of conductivity correspond to very low flows. This is typical of other years. pH is virtually always lower here than upstream at Webster Nursery, observed over the last twelve years.

Mill Brook at Webster Nursery, Webster N 42°03'45.0" W 71°51'50.3"

Mill Brook at Webster Nursery (reference): measures the quality of water leaving Webster Lake, and serves as a reference point above the former stump grinding operation. Park in the mall parking lot and monitor on the west side of the bridge.



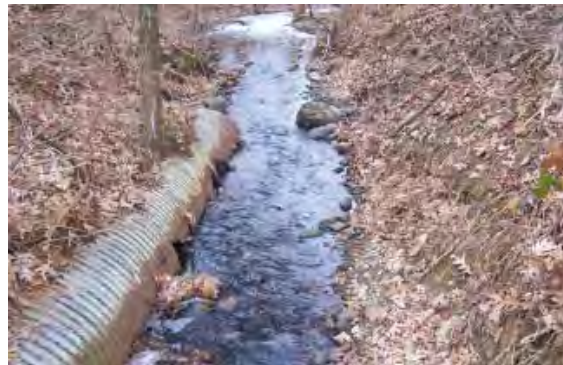
Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	mg/l	Col/100ml
4/16/2018	6.19	6.93	710.1	69.5	12.06	NT
5/24/2018	20.17	6.8	185.2	0.8	9.21	NT
6/26/2018	20.71	6.93	743.6	0.8	7.44	NT
7/30/2018	21.47	7.15	872.0	2.1	8.58	NT
8/27/2018	24.33	7.53	220.3	0.3	8.29	NT
10/7/2018	17.84	6.83	187.9*	0.7	9.47	NT

. * Conductivity did not pass Post calibration check. Data not qualified

Water here is generally clear and odorless. There is some trash scattered about the site, and algae and small attached plants were seen on occasion. High levels of conductivity were observed three times which is consistent with that seen downstream at Bigelow Road during low flow. The high turbidity reading is related to bottom sediment interference. Runoff from the new mall does not seem to be changing the water characteristics.

Nancy Drive, Webster N 42°04'41.2" W 71°52'28.0"

Nancy Drive (impact): an unnamed stream on the east side of the river in Webster near the Oxford line, which receives water from an industrial park and a casual junkyard, possibly carrying pollutants of all types. High conductivity levels have been measured here in the past. Take Nancy Drive from Route 12 and park at the end. Walk to the right by the house to a wooden bridge and monitor downstream.



Date	Water Temp C	pH	Specific Conductivity uS/cm	Turbidity NTUs	DO mg/l	E. Coli Col/100ml
4/17/2018	5.96	6.77	NT	NT	NT	NT
5/24/2018	19.95	6.54	865.7	3,3	4.31	NT
6/25/2018	18.90	6.55	964.0	4.4	3.56	NT
7/30/2018		Flow	too low to	sample		
8/27/2018	22.04	7.15	705.0	1.2	4.13	NT
10/7/2018	15.1	7.37	557.4*	1.5	2.12	

. * Conductivity did not pass Post calibration check. Data not qualified

Water here is clear and odorless. The extreme high levels of conductivity and low levels of DO, far below state standards, are typical of this site. DO failed to meet state standards on four occasions.

Old Mill Brook, Oxford N 42°05'19.1" W 71°52'15.1"

Old Mill Brook (impact): carries a significant volume of water and flows through two industrial parks, which may be sources of pollution. Park on Route 12 under the railroad overpass and Old Mill Brook is on the west side. Monitor where it emerges from the culvert under Route 12.



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	Mg/l	Col/100ml
5/24/2018	15.99	6.85	310.8	8.91	8.91	NT
6/26/2018	14.53	6.64	487.6	1.3	7.72	NT
7/30/2018	23.28	7.6	327.6	1.7	5.82	NT
8/27/2018	17.81	6.97	104.8	1.0	6.98	NT
10/7/2018	14.78	7.73	247.4*	0.7	9.52	NT

. * Conductivity did not pass Post calibration check. Data not qualified

The water here is clear and odorless. Low DO values which are quite typical of this site were not observed this year. The elevated levels of conductivity that were observed in 2014, 2015, and 2016 have returned this year.

Lowe's Brook, Oxford N 42°06'14.7" W 71°51'58.8"

Lowe's Brook (impact): The largest brook that we measure flowing into the French River, except for the Little River, drains Lowe Pond, above which significant commercial development is taking place, which may be resulting in runoff now from development, and in the future from operation. Park at the small convenience store on the east side where Lowe's Brook crosses Route 12. Monitor from the bridge over the small diagonally running road (State Street) behind the store.



Date	Water Temp C	pH	Specific Conductivity uS/cm	Turbidity NTUs	DO Mg/l	E. Coli Col/100ml
5/24/2018	8.52	6.81	285.5	1.5	8.52	NT
6/26/2018#	19.95/20.35	6.60/6.62	404.7/404.4	1.4/1.8	5.99/7.7!	NT
7/30/2018	23.28	7.6	327.6	1.7	5.82	NT
8/27/2018	22.08	7.60	228.1	2.5	7.48	NT
110/7/2018	16.34	7.84	168.0*	1.4	8.78	NT

. * Conductivity did not pass Post calibration check. Data not qualified
! DO data not qualified

Duplicate samples

The water here is clear and odorless. There is trash scattered around the site. It is noteworthy that between 2010 and 2015, Lowe's Brook had at least one occasion in which DO values were below state DO standards. High Conductivity was observed once this year

Clara Barton Road, Oxford N 42°09'14.2" W 71°52'57.3"

Clara Barton Road (reference): This site is upstream of gravel pit operations in the area. Take Clara Barton Road off Route 12 in North Oxford. Park at the stone bridge and monitor off the bridge.



Date	Water Temp C	pH	Specific Conductivity uS/cm	Turbidity NTUs	DO Mg/l	E. Coli Col/100ml
5/24/2018	19.93	7.05	236.4	1.5	8.94	NT
6/26/2018	21.13	7.03	351.6	2.8	8.44	NT
7/30/2018	23.09	7.71	233.7	1.0	8.25	NT
8/27/2018	22.25	7.69	190.9	0.0	8.44	NT
10/7/2018	15.71	7.83	172.5*	1.4	9.62	NT

. * Conductivity did not pass Post calibration check. Data not qualified

Water here is clear and odorless. High conductivity values were observed on one occasion.

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Little River, Oxford N 42°06'34.1" W 71°53'00.3"

The Little River (impact): this site is the largest inflow of water into the French River; it is the outflow from Buffumville Lake. Between Buffumville Lake and its confluence with the French River there are several industrial areas right on the river. We are monitoring here to see if there are any adverse effects from these sites. Where Dudley Road crosses over the French River there is a public parking lot at the Leovich Landing boat launch site. Park here and walked down the old Boston & Albany railbed about ¼ mile and monitor the Little River when reached



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	Mg/l	Col/100ml
5/24/208	21.44	6.79	197.1	1.0	8.62	NT
7/30/2018	25.07	7.79	217.5	1.1	7.43	NT
8/27/2018	23.9	7.77	161.4	0.3	7.59	NT
10/7/2018	16.78	7.97	135.7*	1.1	8.92	NT

. * Conductivity did not pass Post calibration check. Data not qualified

Water here is clear and odorless. There are grassy plants visible. The Little River failed to meet DO standards once in 2012, but that had not been seen before and was not repeated in the last five years.

Dudley Road, Oxford N 42°06'25.5" W 71°52'58.4"

Dudley Road (reference): This site is above Lowe's Brook and is monitored as a baseline to see how much influence Lowe's Brook has on the French River. Park in the same location as for Little River and monitor off the bridge.



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	mg/l	Col/100ml
4/17/2018	6.33	6.66	217.8	3.9	11.92	
5/24/2018#	21.77/21.77	6.76/6.76	225.1/225.1	1.2/1.2	8.84/8.84	NT
7/30/2018#	24.65/24.71	7.66/7.55	233.5/234.1	3.3/2.7	7.32/7.56	42.8
8/27/2018	22.76	7.55	182.0	0.5	6.79	39.3
10/7/2018	16.26	7.76	273.5*	1.0	8.22	NT

. * Conductivity did not pass Post calibration check. Data not qualified

Duplicate samples

The water here is clear and odorless, with grasses observed at mid-season. There has been a summertime dip in DO since we started observing in 2007

Harwood Street , Oxford N 42°05'28.6" W 71°52'48.7"

Harwood Street (reference): This site is below Lowe's Brook and combined with Dudley Road should give us a clear picture of any impact Lowe's has on the French River. Monitoring here also gives us a good flow measurement above North Village dam to compare with flow below as measured by the USGS gauge in Webster. There is a pull off next to the bridge where Harwood Street crosses over the French River. Park here and monitor off the bridge



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	mg/l	Col/100ml
5/24/2018	21.29	6.67	244.6	1.2	8.11	NT
7/30/2018	23.9	7.54	242.6	0.9	6.16	55.4
8/27/2018	22.38	7.52	189.8	0.5	6.23	66.3
10/7/2018	16.14	7.72	162.7*	0.9	7.44	NT

. * Conductivity did not pass Post calibration check. Data not qualified

The water here is clear and odorless.

Route 56, Oxford N 42.16345° W 71.888340°

Route 56 (reference): It is the furthest upstream site that we will be monitoring and gives us a baseline for all downstream monitoring. Take Route 56 off Route 12 in North Oxford. Park at the bridge and monitor off the bridge.



Date	Water Temp	pH	Specific Conductivity	Turbidity	DO	E. Coli
	C		uS/cm	NTUs	mg/l	Col/100ml
5/24/2018	19.44	6.9	217.3	2.4	8.55	NT
6/26/2018	21.78	7.28	296.5	1.9	8.38	NT
7/30/2018	23.91	7.70	220.3	3.8	7.73	NT
8/27/2018	22.17	7.06	129.3	1.3	8.6	NT
10/7/2018	15.66	7.81	117.0*	10.9	9.21	NT

. * Conductivity did not pass Post calibration check. Data not qualified

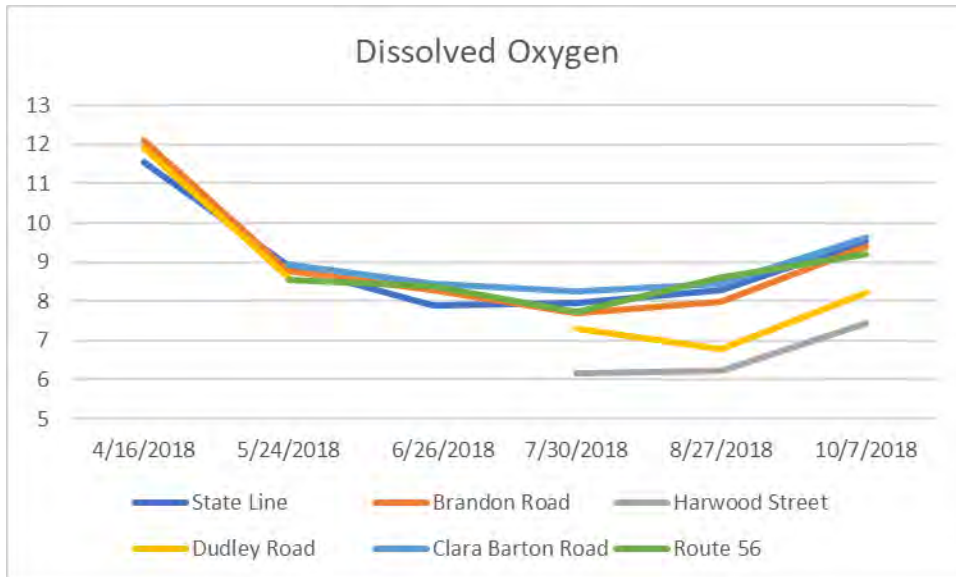
Water here is clear and odorless. High turbidity was observed on one occasion and may be associated with air bubbles.

French River Parameter Graphs

Since 2007, we have been creating plots for each parameter, showing variations over the monitoring season for each of the five mainstream locations. With the addition of the Route 56 site, we now show six sites. What we have noted is that the lines representing the locations are similar year to year, and that their relationship to each other is also similar. On the following pages are the charts for 2018. Turbidity was not charted this year.

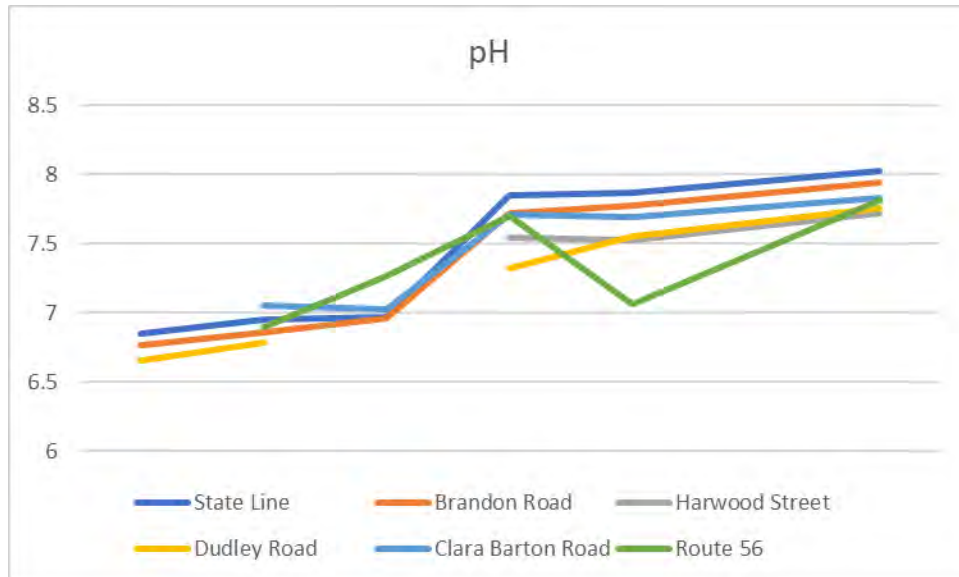
These have been compared with charts from previous years, and we find that the similarity continues. If there is a negative trend to watch, it may be that the dissolved oxygen “dip” at Dudley Road and Harwood Street is becoming deeper and/or broader. The lack of dissolved oxygen data for 6/26 for the Dudley Road and Harwood Street sites limits the evaluation of the “dip” this year. It appears that the negative trend did continue this year. This trend will continue to be monitored.

French River Dissolved Oxygen (mg/l)



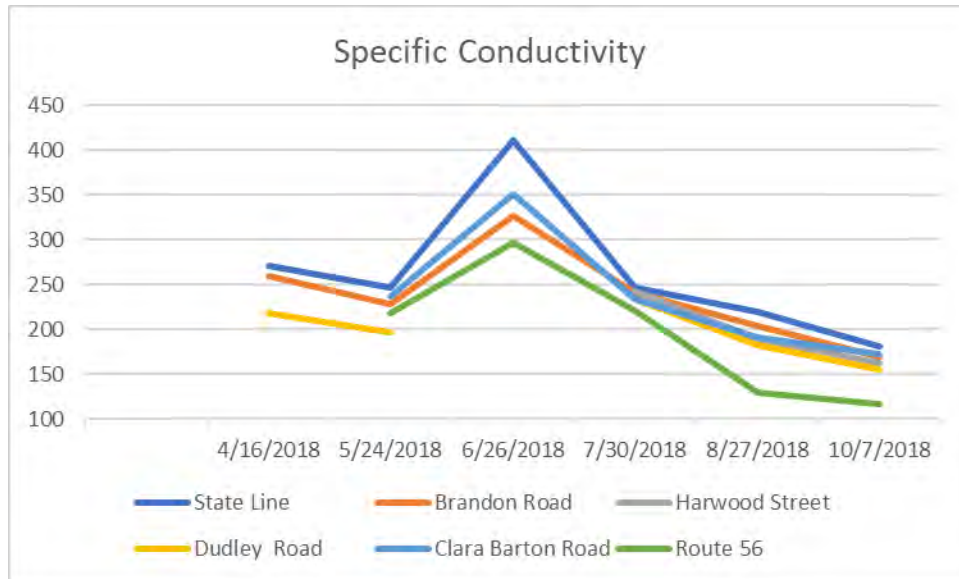
It is usual to observe Clara Barton, State Line, Brandon Road, and Route 56 exhibiting higher levels of dissolved oxygen throughout the season. Dudley Road and Harwood Street exhibited lower levels but not as low as last year. There was not sufficient data to evaluate the “dip” shown in previous years. Dudley Road was not as low as last year.

French River pH



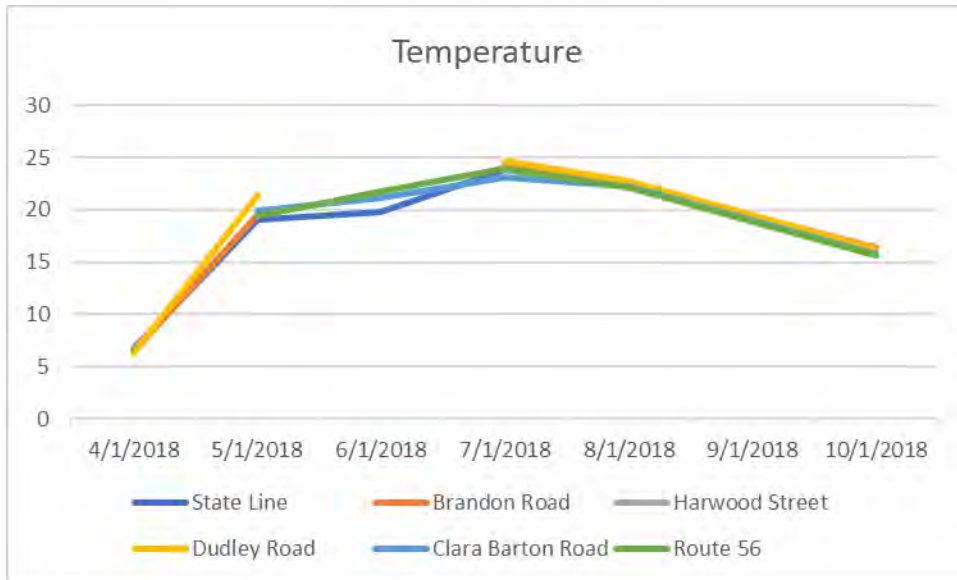
The values of pH, and the relative positions of the lines representing each station, are similar to the previous years. We generally find Clara Barton, State Line, Brandon Road and Route 56 within a 0.5 pH range. This is not true on every date, but most often it is. pH tended to be higher this year.

French River Specific Conductivity (uSm/cm)



The low river flow for the 6/26 sampling resulted in a high specific conductivity for all sites. The high river flow for the 8/27 and 10/7 sampling resulted in low specific conductivity for all sites.

French River Temperature (°C)



Water temperature is extremely weather dependent, and always very similar over the length of the river. The highest temperature was recorded at Dudley Road. Water temperatures are higher than last year.

E. Coli Sampling

E. Coli sampling was conducted at limited number of sites in August. The results are presented in the table below:

Site	Date	E. Coli	Date	E. Coli
State Line	8/1/2018	63.7	8/27/2018	54.7
Brandon Road	8/1/2018	35.0	8/27/2018	158.5
Harwood Street	8/1/2018	55.4	8/27/2018	66.3
Dudley Road	8/1/2018	42.6	8/27/2018	39.3
Commerce Drain	8/1/2018	75.4		

The State Line, Brandon Road, Harwood Street, and Dudley Road sites were selected for sampling because they are French River sites suitable for boating. The Commerce Drain site was selected because it is a stormwater drain that serves main street in Wester.

To better understand the significance of the E. Coli values we have looked to Massachusetts health standards. At bathing beaches as defined by the Massachusetts Department of Public Health in 105 CMR 444.010: where E. Coli is the chosen indicator the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 colonies per 100 ml and no single sample shall exceed 235 colonies per 100 ml. Single values as high as 235 maybe acceptable, if when averaged with five other recent readings result in an average below 126. E. Coli samples were tested according to Hach method 10029 (m-Coli Blue) or Standard Methods, 22nd ed., method 9213D (modified m-TEC). While not enough samples were taken to fully comply with the above standard it is important to note that the maximum value was not exceeded and that the maximum average value was only exceeded once.

Chloride sampling

During the development of our 2005 to 2017 Water Quality Summary Report which is available on our website, we noticed an increasing trend in the specific conductivity at our five French River sampling sites. This trend started in 2011. It was around that time that local Towns started reducing amount of sanding and increased the of road salt application for winter weather road treatment. The Massachusetts DEP in their French and Quinebaug River Monitoring Report 2011-2013 Technical Memorandum reported on chloride concentration at the State Line sampling site. Those values are shown below:

Date	Chloride mg/l
4/27/2011	39
6/22/2011	45
8/31/2011	27
10/25/2011	34
1/25/2012	45
3/24/2012	43
5/29/2012	43
7/25/2012	58
9/26/2012	38
2/27/2013	140
4/24/2013	51

The following chloride sample value was taken by FRC

8/1/2018	67.5
8/27/2018	63.1

Just looking at summer data, we have

8/31/2011	27
7/25/2012	58
8/1/2018	67.5
8/27/2018	63.1

Obviously, the increase in summer chloride concentrations are not directly related to road salt application but are more likely related to a buildup of chloride concentrations in the groundwater and in ponds that discharge to the French River. Additional chloride sampling will be conducted next year. The Secondary Maximum Contaminate Level (SMCL) issued by USEPA for chloride is 250 mg/l

Conclusion

Although we had problems with the Troll this season, we are confident in the quality of the data and observations recorded throughout the season. We did not find great departures from data taken in previous years.

The results of this campaign did not provide sufficient information to evaluate the DO dips at Dudley Road and Harwood Street sites. The “dip” in the French River needs to be evaluated next year.



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8H3048

Project Name: Pond Sample/Oxford, MA

John Josti
PO Box 426
Oxford, MA 01540

Project / PO Number: CC \$200.00
Auth#05545C
Received: 08/27/2018
Reported: 08/29/2018

Analytical Testing Parameters

Client Sample ID:	1E	Collected By:	Customer
Sample Matrix:	Wastewater	Collection Date:	08/27/2018 8:30
Lab Sample ID:	D8H3048-01		

Microbiology

	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997 Escherichia coli	63.1	235	1	MPN/100 mL		08/27/18 1528	08/28/18 1626	ARM

Client Sample ID:	1C	Collected By:	CUSTOMER
Sample Matrix:	Wastewater	Collection Date:	08/27/2018 8:30
Lab Sample ID:	D8H3048-02		

Inorganics

	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: Wet Chem - W/SM4500-Cl E-2011 Chloride	54.7		2.00	mg/L	A21		08/27/18 2032	MCM

Client Sample ID:	3E	Collected By:	Customer
Sample Matrix:	Wastewater	Collection Date:	08/27/2018 8:40
Lab Sample ID:	D8H3048-03		

Microbiology

	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997 Escherichia coli	158.5	235	1	MPN/100 mL		08/27/18 1528	08/28/18 1626	ARM

Client Sample ID:	4E	Collected By:	Customer
Sample Matrix:	Wastewater	Collection Date:	08/27/2018 8:45
Lab Sample ID:	D8H3048-04		

Microbiology

	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997 Escherichia coli	27.2	235	1	MPN/100 mL		08/27/18 1528	08/28/18 1626	ARM



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8H3048

Client Sample ID: 14E	Collected By: Customer
Sample Matrix: Wastewater	Collection Date: 08/27/2018 9:30
Lab Sample ID: D8H3048-05	

Microbiology	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997 Escherichia coli	39.3	235	1	MPN/100 mL		08/27/18 1528	08/28/18 1626	ARM

Client Sample ID: 15E	Collected By: Customer
Sample Matrix: Wastewater	Collection Date: 08/27/2018 9:15
Lab Sample ID: D8H3048-06	

Microbiology	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997 Escherichia coli	66.3	235	1	MPN/100 mL		08/27/18 1528	08/28/18 1626	ARM

Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.

Definitions

- A21:** Sample was filtered in the laboratory before analysis.
- RL:** Reporting Limit
- SMCL:** US EPA Secondary Maximum Contaminant Level

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville
M-CT008
Massachusetts Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

Reviewed and Approved By:

The data and information on this, and other accompanying documents, represents the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

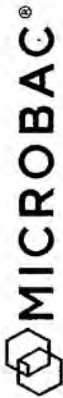
Melisa L. Montgomery *only*

QA Officer

Reported: 08/29/2018 13:53

Microbac Laboratories, Inc.

Louisa Viens Drive | Dayville, CT 06241 | 860.774.6814 p | www.microbac.com



Microb.
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Da

Copy of Report To

CUSTOMER: JOHN JOSTI
 ADDRESS: PO BOX 426
 OXFORD MA
 DELIVERY:
 E-MAIL: JJJOSTI@JUNO.COM
 PHONE: 508 434 0269 FAX:

1-508-434-0269

Sample Identification

Sample Matrix	Sample Type	Bottle Qty	Analysis	Preservatives
WWTM	Grab	1	F coli	NON-PRES
WWTM	Grab	1		HCL
W	Grab	1		HNO ₃
W	Grab	1		H ₂ O ₂
W	Grab	1		OTHER
W	Grab	1		
W	Grab	1		
W	Grab	1		
W	Grab	1		

CUSTODY TRANSFER

SAMPLER:	RECEIVED:	RELINQUISHED:	RECEIVED:	RELINQUISHED:	RECEIVED:
John Josti	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
DATE: 8/27/18	DATE: 8/27/18	DATE: 8/27/18	DATE: 8/27/18	DATE: 8/27/18	DATE: 8/27/18
TIME: 11:16	TIME: 12:45	TIME: 12:45	TIME: 12:45	TIME: 12:45	TIME: 12:45

Billing Information

BILL TO:
 ADDRESS:
 ATTN:
 PHONE:
 E-MAIL:

PURCHASE ORDER #:

Project Information

Project:
 Location:
 Project Mgr:
 E-MAIL:
 PHONE:
 FAX:



D 8 H 3 0 4 8
 CASH CUSTOMER

Lab WO #:

Project Manager:

page of

TURNAROUND TIME REQUESTED (select): RUSH Day

EXPEDITED SERVICE MAY BE SUBJECT TO SURCHARGE

Circle Delivery Method: E-MAIL HARD COPY OTHER

COMMENTS:

CONDITIONS UPON RECEIPT: (CHECK ONE)

COOLED

AMBIENT

17.8

°C Upon receipt at lab



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8H0224

Project Name: Pond Sample/Oxford, MA

Project / PO Number: CC \$25.00

Auth#03814C

Received: 08/01/2018

Reported: 08/03/2018

John Josti
PO BOX 426
Oxford, MA 01540

Analytical Testing Parameters

Client Sample ID: 1C
Sample Matrix: Wastewater
Lab Sample ID: D8H0224-01

Collected By: Customer
Collection Date: 08/01/2018 13:30

Inorganics

	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: Wet Chem - W/SM4500-CI E-2011					A21		08/02/18 1300	CLW
Chloride	67.2		2.00	mg/L	<i>gulatory limits change frequently,</i>			

Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as re Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentre Federal, state or local authorities before acting on the data.

Definitions

- A21:** Sample was filtered in the laboratory before analysis.
- RL:** Reporting Limit
- SMCL:** US EPA Secondary Maximum Contaminant Level

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville
M-CT008

Massachusetts Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents

the sample(s) analyzed. This report is incomplete unless all pages indicated

Reviewed and Approved By:

Nicole J. Paradise only

in the footnote are present and an authorized signature is included.

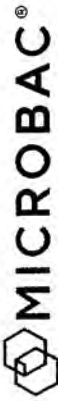
Assistant Quality Assurance Officer

Reported: 08/03/2018 08:55

Microbac Laboratories, Inc.

61 Louisa Viens Drive | Dayville, CT 06241 | 860.774.6814 p | www.microbac.com

Page 1 of 2



Microbac
61 Lot
Day

Copy of Report To

CUSTOMER: John Justi
 ADDRESS: Po Box 470
6 X Ford MA
 DELIVERY:
 E-MAIL: J.J.usti@juvo.com
 PHONE: 508/37024 FAX:



D 8 H 0 2 2 4
CASH CUSTOMER

page _____ of _____

Lab WO #: _____
 Project Manager: _____

Project Information

BILL TO:
 ADDRESS:
 ATTN:
 PHONE:
 E-MAIL:
 PURCHASE ORDER #:

Project:
 Location:
 Project Mgr:
 E-MAIL:
 PHONE:
 FAX:

IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL:

Sample Identification

Sample Matrix	Date Collected	Time Collected	Sample Type		Bottle Qty	Analysis	Preservatives									
			Composite	Grab			NON-PRES	HCL	HNO ₃	H ₂ SO ₄	OTHER					
IC	3/1/16	1:30	✓	✓	1	✓										

CUSTODY TRANSFER

SAMPLER:	RECEIVED:	RELINQUISHED:	RECEIVED:	RELINQUISHED:	RECEIVED:
John Justi	[Signature]	[Signature]	[Signature]	[Signature]	[Signature]
DATE	TIME	DATE	TIME	DATE	TIME
3/1/16	1:50	3/1/16	4:00	3-1-16	16:00
COMMENTS: TURNAROUND TIME REQUESTED (select): Standard RUSH ____ Day EXPEDITED SERVICE MAY BE SUBJECT TO SURCHARGE Circle Delivery Method: E-MAIL HARD COPY OTHER					
CONDITIONS UPON RECEIPT: (CHECK ONE)					
<input checked="" type="checkbox"/> COOLED	<input type="checkbox"/> AMBIENT	°C Upon receipt at lab			



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8G2805

Project Name: Pond Sample/Oxford, MA

John Josti
PO BOX 426
Oxford, MA 01540

Project / PO Number: CC \$175.00
Auth#04442C
Received: 07/30/2018
Reported: 08/01/2018

Analytical Testing Parameters

Client Sample ID:	1E	Collected By:	Customer
Sample Matrix:	Wastewater	Collection Date:	07/30/2018 8:10
Lab Sample ID:	D8G2805-01		

Microbiology

	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997 Escherichia coli	63.7	235	1	MPN/100 mL		07/30/18 1526	07/31/18 1611	ARM

Client Sample ID:	4E	Collected By:	Customer
Sample Matrix:	Wastewater	Collection Date:	07/30/2018 8:35
Lab Sample ID:	D8G2805-03		

Microbiology

	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997 Escherichia coli	35	235	1	MPN/100 mL		07/30/18 1526	07/31/18 1611	ARM

Client Sample ID:	6E	Collected By:	Customer
Sample Matrix:	Wastewater	Collection Date:	07/30/2018 9:58
Lab Sample ID:	D8G2805-04		

Microbiology

	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997 Escherichia coli	75.4	235	1	MPN/100 mL		07/30/18 1526	07/31/18 1611	ARM

Client Sample ID:	14E	Collected By:	Customer
Sample Matrix:	Wastewater	Collection Date:	07/30/2018 10:55
Lab Sample ID:	D8G2805-05		

Microbiology

	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997 Escherichia coli	42.6	235	1	MPN/100 mL		07/30/18 1526	07/31/18 1611	ARM



Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8G2805

Client Sample ID: 15E	Collected By: Customer
Sample Matrix: Wastewater	Collection Date: 07/30/2018 11:10
Lab Sample ID: D8G2805-06	

Microbiology	Result	Limit(s)	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM9223 B-1997								
Escherichia coli	55.4	235	1	MPN/100 mL		07/30/18 1526	07/31/18 1611	ARM

Results in **bold** have exceeded a limit defined for this project. Limits are provided for reference but as regulatory limits change frequently, Microbac Laboratories, Inc. advises the recipient of this report to confirm such limits and units of concentration with the appropriate Federal, state or local authorities before acting on the data.

Definitions

- RL:** Reporting Limit
- SMCL:** US EPA Secondary Maximum Contaminant Level

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville
M-CT008

Massachusetts Department of Environmental Protection

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents

Reviewed and Approved By:

*the sample(s) analyzed. This report is incomplete unless all pages indicated
in the footnote are present and an authorized signature is included.*

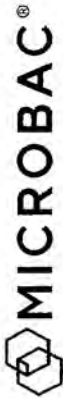
Melisa L. Montgomery *only*

QA Officer

Reported: 08/01/2018 13:42

Microbac Laboratories, Inc.

Louisa Viens Drive | Dayville, CT 06241 | 860.774.6814 p | www.microbac.com



Microb:
61 L
Da

Copy of Report To

CUSTOMER: J. H. JUSTI
ADDRESS: PO Box 426
OXFORD MA
DELIVERY:
E-MAIL:
PHONE:
FAX:



D 8 G 2 8 0 5
CASH CUSTOMER

page ___ of ___

Lab WO #:

Project Manager:

Project Information

Project:
Location:
Project Mgr:
E-MAIL:
PHONE:
FAX:

IN CASE WE HAVE ANY QUESTIONS WHEN SAMPLES ARRIVE WE SHOULD CALL:

PURCHASE ORDER #:

Sample Identification

Sample Matrix	Date Collected	Time Collected	Sample Type		Bottle Qty	Analysis	Preservatives								
			Composite	Grab			NON-PRES	HCL	HNO ₃	H ₂ SO ₄	OTHER				
3 IE	7/30	9:10	W	✓	1	✓									
1C	7/30	9:10	W	✓	1	✓									
4E	7/30	9:35	W	✓	1	✓									
6E	7/30	9:55	W	✓	1	✓									
14E	7/30	10:55	W	✓	1	✓									
15E	7/30	11:10	W	✓	1	✓									

CUSTODY TRANSFER

TURNAROUND TIME REQUESTED (select): Standard RUSH ___ Day
EXPEDITED SERVICE MAY BE SUBJECT TO SURCHARGE

SAMPLER: J. JUSTI

RECEIVED: [Signature]
RELINQUISHED: [Signature]
RECEIVED: [Signature]
RELINQUISHED: [Signature]
RECEIVED: [Signature]

SCANNED

Circle Delivery Method: E-MAIL HARD COPY OTHER
COMMENTS:
CONDITIONS UPON RECEIPT: (CHECK ONE)
 COOLED AMBIENT °C Upon receipt at lab

