Section 5-9
Weskeag River (Friends of Weskeag & Georges River Land Trust)

Weskeag River

The Weskeag River is located in the towns of Thomaston, South Thomaston, Owls Head and city of Rockland in Knox County located in mid-coast Maine. The watershed has a total area of approximately 12.87 mi^2 (33.3 km^2). One headwater tributary begins in a wetland north of Limerock Street in Rockland. This tributary crosses Route 1 and joins another tributary flowing from the west in Thomaston. The stream is referred to at this point as Marsh Brook and continues flowing south, crossing Thomaston Street. It continues flowing south where it crosses Lower Buttermilk Lane- at which point the river is clearly tidal. It flows through the Waldo Tyler Wildlife Management Area in this section of the river. Further down it crosses Route 73, opening up to the Weskeag River estuary. In the upper part of the estuary, BallyHac Creek and Cuddy Creek drain into the estuary from the northeast and Sharkeyville Creek from the southwest.

The upper part of the watershed is largely developed. Potential impacts include residential development, commercial development along the Route 1 corridor, Rockland Industrial Park, and Dragon Cement (plant and mines). Portions of the upper Weskeag have been filled for residential and commercial development (above Thomaston Street). The freshwater marsh between Dragon Cement and the Industrial Park is degraded.

Weskeag River/marsh is one of the largest tidal marshes in midcoast Maine and is recognized for its abundant resource values by state and federal agencies. It is recognized as a state focus area by the Beginning with Habitat Program, by the Nature Conservancy as a portfolio site and by Georges River Land Trust as a conservation focus area because it is a known shorebird area and it is a saltmarsh in good condition.

Due to pollution, shellfish growing areas in the Weskeag are designated as prohibited, restricted or conditinally approved (closed during summer months).

Monitoring History

• Friends of Weskeag and Georges River Land Trust began a joint effort in partnership with the Volunteer River Monitoring Program in 2015. The goals of monitoring are:

1) Collect baseline information about the Weskeag's health
2) Raise public awareness about the importance of water quality to all other users of the river

• In 2015, the volunteers in conjunction with the Maine DEP Bacteria/TMDL Program collected bacteria samples for either *E.coli* or *Enterrococci* at three freshwater and four marine sites.

• In 2016, the volunteer group will partner with the City of Rockland and Town of Thomaston on the bacteria sampling. The waste water treatment plants' staff from the two municipalities will jointly analyze the bacteria samples.

• The Depatment of Marine Resources (DMR) routinely monitors bacteria 6 times/year at several estuarine sites. Periodically, DMR also performs shoreline surveys to identify potential sources of bacterial pollution.

Methods and Sampling Sites

The Friends of Weskeag/Georges River Land Trust have 8 monitoring sites. Three are freshwater sites on the two tributaries in the upper watershed. One site is brackish and 4 sites are estuarine/marine.

Monitoring is conducted 1-2 times/month from May through August/September (or later at the freshwater sites). The freshwater monitoring team monitors water temperature and dissolved oxygen using a YSI meter. Conductivity is measured with either a YSI meter or Oakton EC Testr 11+/11 pen. The marine monitoring team monitors water temperature, dissolved oxygen, and salinity using a YSI Pro 2030 meter. Both teams collect grab samples for either *E.coli* or *Enterrococci* bacteria.

In 2015, both teams also monitored pH on their own, as they were able to use equipment lent from the Georges River Tidewater Association. The 2015 pH data was not included in the VRMP database because QA/QC was not assured through the VRMP. Hopefully this can be resolved in 2016.

Table 5-9-1: Friends of Weskeag/Georges River Land Trust sampling sites on the Weskeag River.

VRMP Site ID	Organization Site Code	Sample Location	Class
Unnamed Tributary-NWGMRUB08-VRMP	F1	Limerock Street	B
Unnamed Tributary-NWGMRUB02-VRMP	F2	Route 1	B
Unnamed Tributary-NWGMRUA15-VRMP	F3	Upper Buttermilk Lane	B
Marsh Brook-NWGMR23-VRMP	B1	Thomaston Street	B
Marsh Brook-NWGMR-08-VRMP	E1	Lower Buttermilk Lane	SB
Unnamed Tributary-NWGUC-03-VRMP	E2	Dublin Road-Cuddy Cove	SB
Weskeag River-NWG-28-VRMP	E3	Route 73-Town Pier	SB
Unnamed Tributary-NWGUD-18-VRMP	E4	Dublin Road-Bally Hac Creek	SB

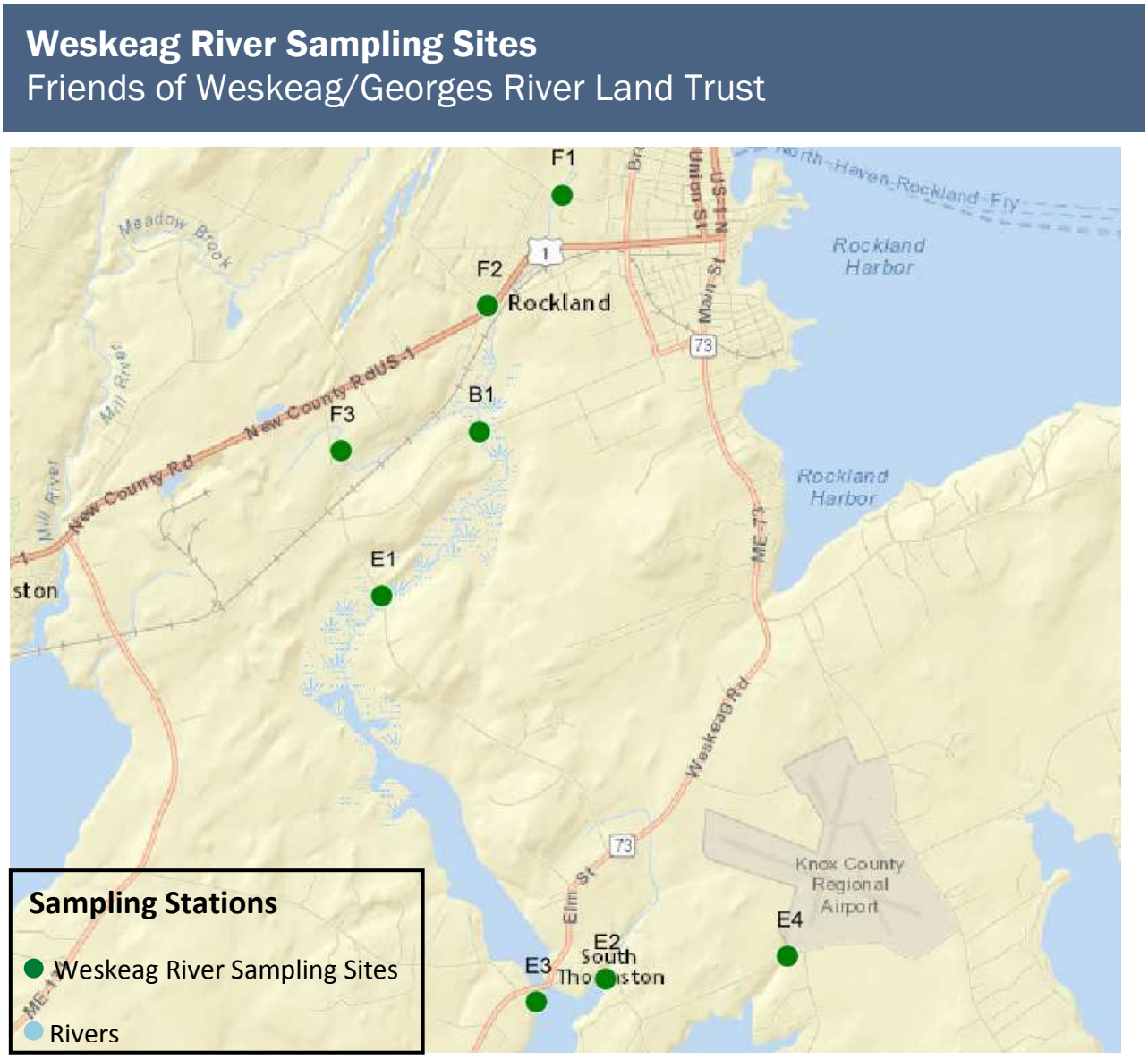


Figure 5-9-1: Map of Friends of Weskeag/Georges River Land Trust sampling sites on the Weskeag River.

Results

Refer to Appendix in discussion of individual site data and trends.

Dissolved Oxygen

Dissolved oxygen levels are generally lowest early in the morning and then increase during the day, peaking mid to late afternoon. Monitors should try to collect some samples early in the morning. Dissolved oxygen is also affected by flow conditions and temperature. During high flow conditions, more oxygen is added to the river from the atmosphere as the water is more turbulent and there is more opportunity for mixing. If flow during the summer months is higher or lower that normal, this will affect the dissolved oxygen.

Class B criteria for dissolved oxygen are a minimum of 7 mg/l (milligrams/liter) or 75% saturation. To meet water quality criteria, both concentration and saturation criteria must be met. Class SB criteria for dissolved oxygen is 85% saturation.

2015 Results:

Freshwater sites: The freshwater sites F1 and F2 did not meet the dissolved oxygen concentration criterion of 7 mg/l on 4-6 sampling dates and did not meet the saturation criterion of 75% saturation on 4-9 sampling dates. Site F1 flows out of a wetland so the low values here as well as perhaps at site F2 may be somewhat natural. Site F3 was much better meeting dissolved oxygen concentration criterion on all dates and meeting saturation criterion on all but 1 date [72.4% on 6/22/15]. Site B1 which is brackish did not meet dissolved oxygen concentration and saturation criteria on 3 dates. This site is very open and slow which likely contributes to somewhat low dissolved oxygen. Overall, dissolved oxygen ranged from poor to excellent depending on the site.

Tidal sites: The tidal site data only includes 2-3 sample dates, due in part to some of the data not meeting quality control requirements (ie. calibration values either missing or out of acceptable range). Site E1 was overall low with 2 values not meeting and 1 value just above the dissolved oxygen saturation criterion of 85% saturation. Sites E2 and E4 did not meet this criterion on 1 date in July. Site E3 met the saturation criterion for all 3 sample dates. Dissolved oxygen is limited by the few sample points, but overall was good-excellent for all sites except site E1.

Table 5-9-2: A summary of minimum, maximum, and mean dissolved oxygen concentration (mg/l) values at Friends of Weskeag/Georges River Land Trust monitoring sites on the Weskeag River.

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
F1	B	10	6.5	2.9	10.9	7	6
F2	B	10	8.0	2.1	12.0	7	4
F3	B	10	9.2	7.3	11.6	7	0
B1	B	10	8.4	5.1	11.8	7	3
E1	SB	2	5.4	4.8	6.1	n/a	n/a

E2	SB	2	8.0	7.8	8.1	n/a	n/a
E3	SB	2	8.8	8.4	9.2	n/a	n/a
E4	SB	2	7.4	6.5	8.3	n/a	n/a

Table 5-9-3: A summary of minimum, maximum, and mean dissolved oxygen saturation (%) values at Friends of Weskeag/Georges River Land Trust monitoring sites on the Weskeag River.

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Not Meeting Criterion
F1	B	10	59.3	34.3	85.6	75	9
F2	B	10	73.4	18.0	96.7	75	4
F3	B	10	86.5	72.4	93.0	75	1
B1	B	10	77.2	49.0	87.9	75	3
E1	SB	3	76.7	60.4	85.6	85	2
E2	SB	2	90.5	77.0	104.0	85	1
E3	SB	3	107.6	100.9	113.1	85	0
E4	SB	2	92.2	77.2	107.2	85	1

Figure 5-9-2: Graph of dissolved oxygen concentrations at freshwater sites.

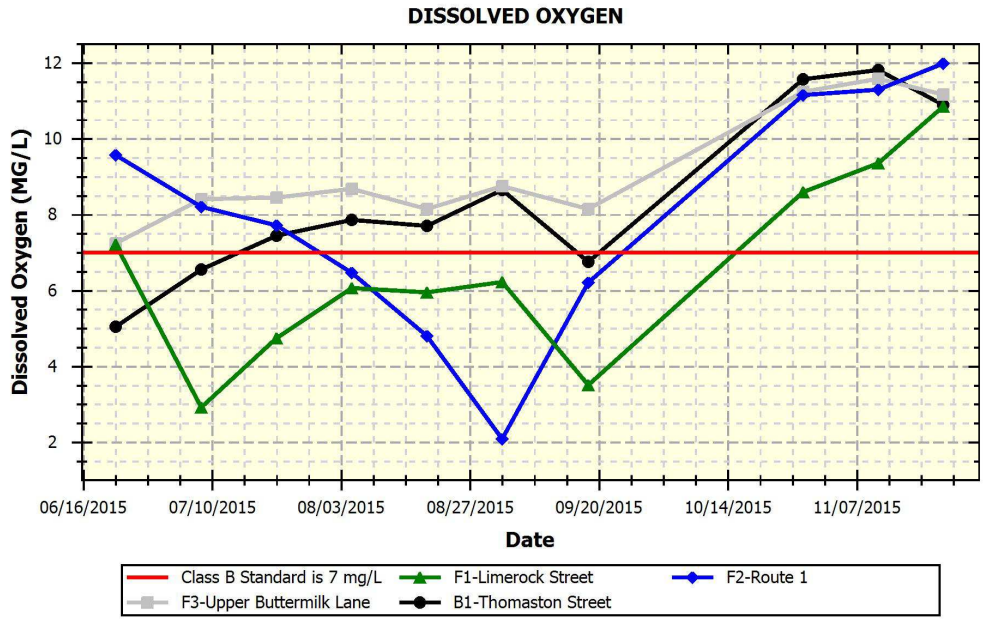


Figure 5-9-3: Graph of dissolved oxygen concentrations at tidal sites.

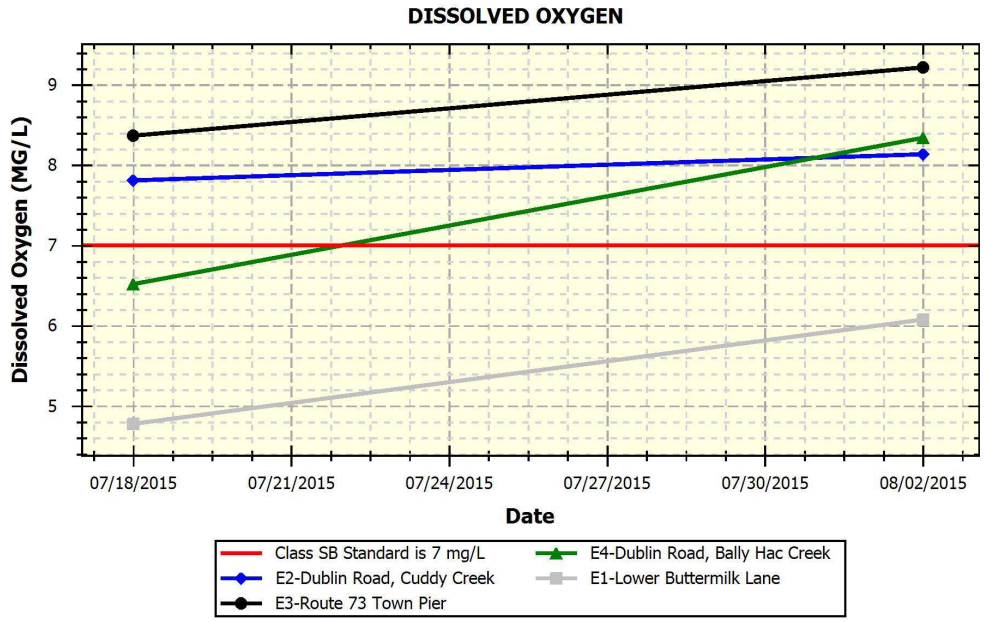


Figure 5-9-4: Graph of dissolved oxygen saturation at freshwater sites.

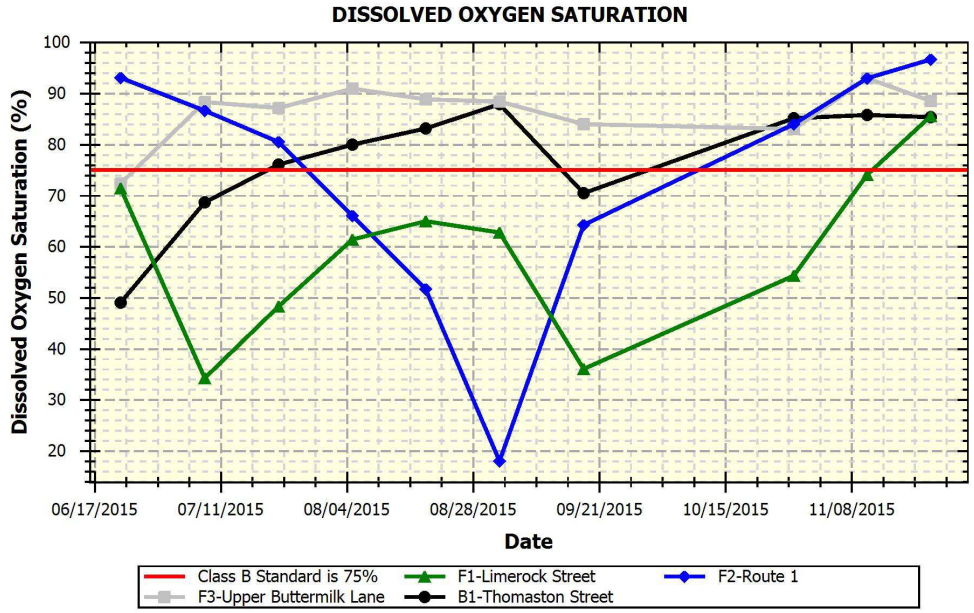
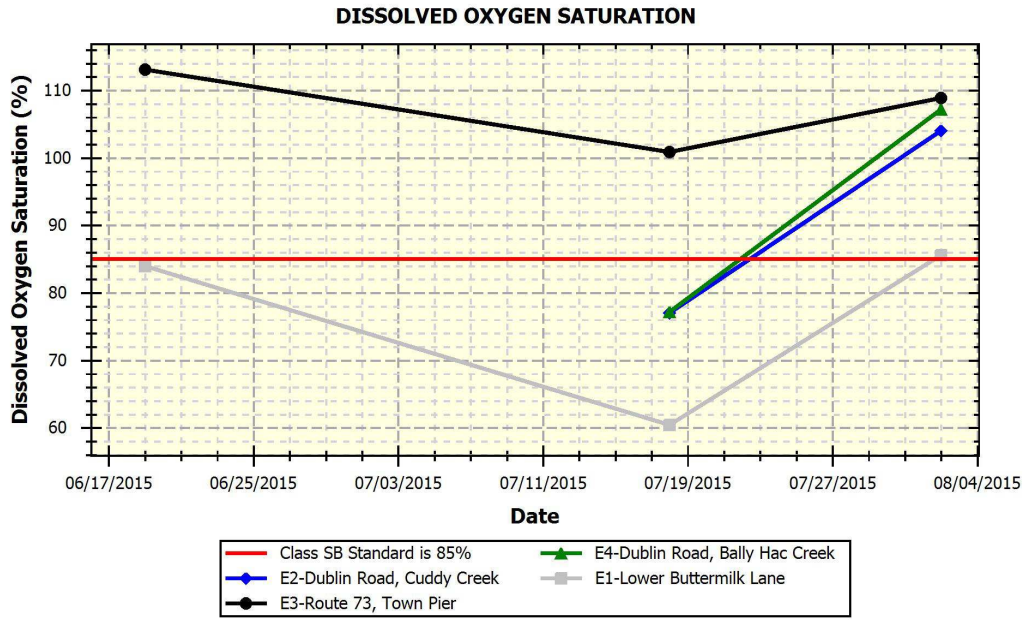


Figure 5-9-5: Graph of dissolved oxygen saturation at tidal sites.



Water Temperature

Maine's Regulations Relating to Temperature (06-096 CMR Chapter 582) require that discharge of pollutants not raise the temperature of any river and stream above the EPA criteria for indigenous species (23°C maximum and 19°C weekly average) or 0.3°C (0.5°F) above the temperature that would naturally occur outside a mixing zone established by the Board of Environmental Protection. Pollutant is defined in statute as many things including dirt and heat. For tidal waters, discharge of pollutants may not raise the temperature more than 4°F (2.2°C) or more than 1.5°F (0.8°C) from June 1 to September 1, and may not cause the temperature of any tidal waters to exceed 85°F (29°C) at any point outside a mixing zone established by the Board of Environmental Protection.

2015 Results:

Freshwater sites: Temperature at the four freshwater/brackish sites were all very similar and ranged from 14.5-19.4°C over the period from June-September. Overall temperature was excellent.

Tidal sites: There is limited data to say much about temperatures. It was overall low at site E3 (town pier) and several degrees higher at site E1 which is not unexpected.

Table 5-9-4: A summary of minimum, maximum, and mean water temperature (°C) values at Friends of Weskeag/Georges River Land Trust monitoring sites on the Weskeag River.

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Exceeding Criterion
F1	B	10	13.6	3.0	19.3	n/a	n/a
F2	B	10	13.4	3.7	18.9	n/a	n/a
F3	B	10	13.6	3.3	19.3	n/a	n/a
B1	B	10	13.3	2.9	19.4	n/a	n/a
E1	SB	3	21.9	20.1	25.3	n/a	n/a
E2	SB	2	19.1	18.4	19.7	n/a	n/a
E3	SB	3	15.5	14.7	16.7	n/a	n/a
E4	SB	2	19.0	17.7	20.2	n/a	n/a

Figure 5-9-6: Graph of water temperature at freshwater sites.

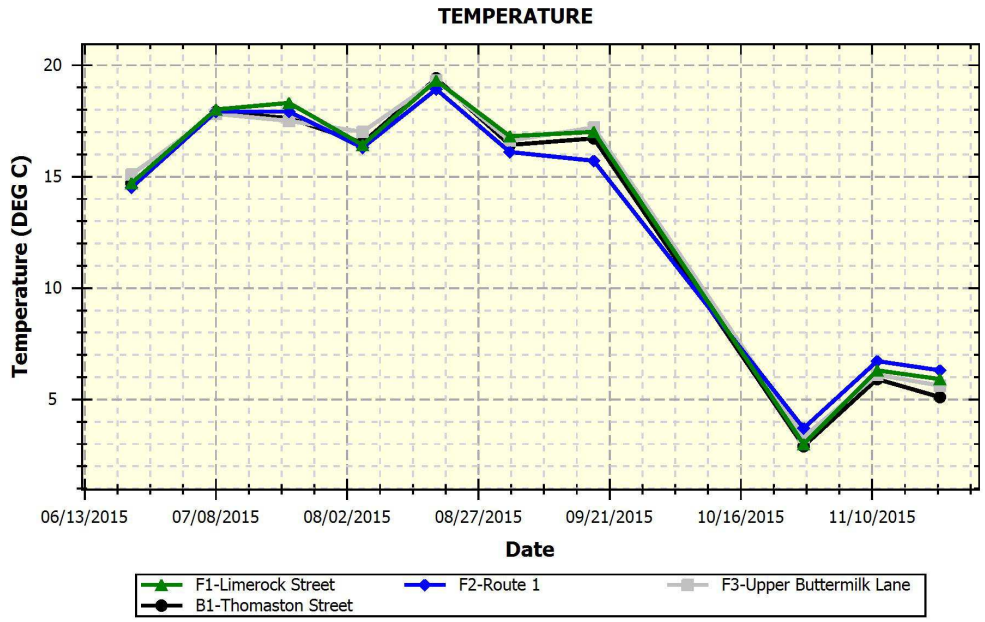
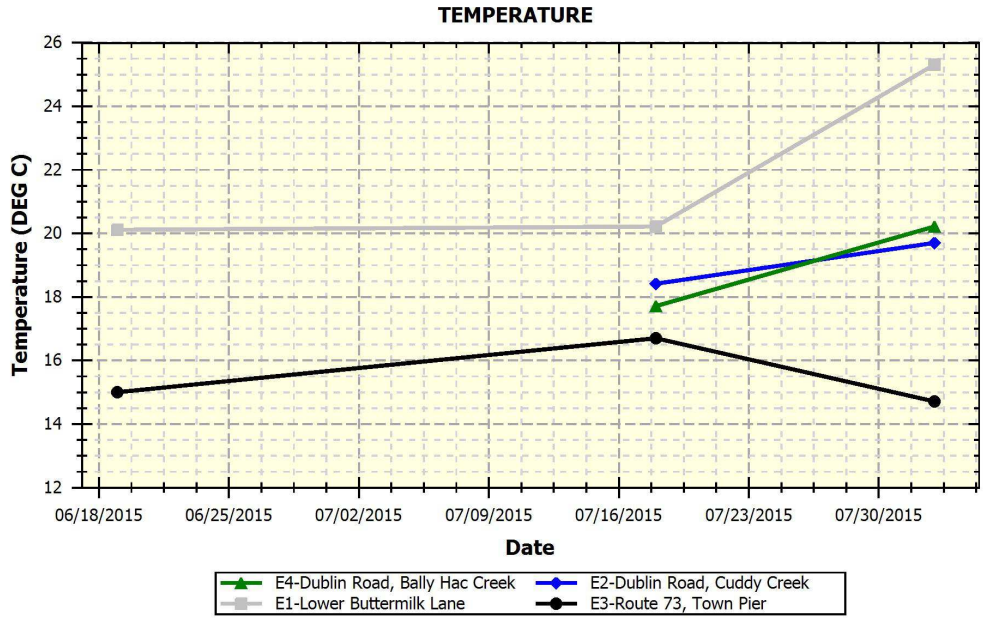


Figure 5-9-7: Graph of water temperature at tidal sites.



Specific Conductance

Specific conductance is related to the amount of dissolved materials in the water. While there are no numerical standards, a relationship exists between conductivity and chloride which has numerical criteria. In general, streams located in urban areas tend to have high specific conductance due to polluted urban stormwater runoff. This may also in large part be due to salt buildup in surface and groundwater from road maintenance practices.

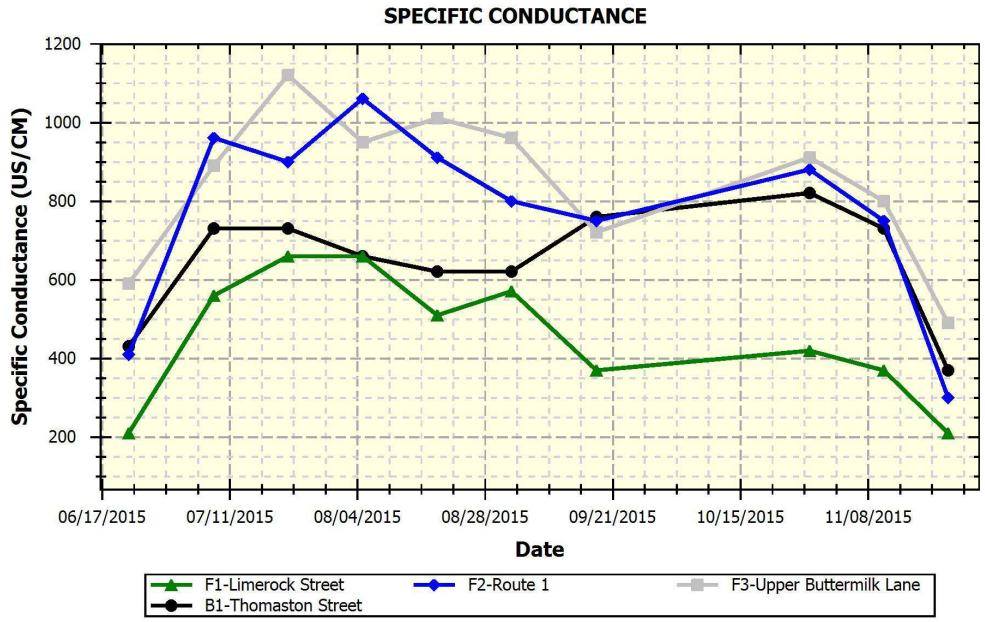
2015 Results:

Specific conductance at the four freshwater/brackish sites followed similar patterns through the season. Sites F2 and F3 were highest overall and very similar. Site B1 was generally always lower, but high also. It this site is brackish, it may be affected by low salinity values. Site F1 was the lowest overall, but values are somewhat elevated. Overall specific conductance at the freshwater sites is high. It is not unexpected to see high conductivity in more developed streams, although values at sites F2 and F3 are very high.

Table 5-9-5: A summary of minimum, maximum, and mean specific conductance (µS/cm) values at Friends of Weskeag/Georges River Land Trust monitoring sites on the Weskeag River.

Site	Class	# Sample Points	Mean	Minimum	Maximum	Criterion	# Exceeding Criterion
F1	B	10	454	210	660	n/a	n/a
F2	B	10	772	300	1060	n/a	n/a
F3	B	10	844	490	1120	n/a	n/a
B1	B	10	647	370	820	n/a	n/a

Figure 5-9-8: Graph of specific conductance at freshwater sites.



Bacteria

Enterococci bacteria are used as the indicator organism for marine waters and *E. coli* bacteria are used for freshwaters. While these types of bacteria are not pathogens, their presence in the water may indicate the presence of other organisms including bacteria and viruses that can cause gastrointestinal illnesses. Monitoring should include at least 6 samples and include a mix of dry and storm event sampling.

Class B criteria for bacteria are as follows: "Between May 15th and Sept 30th, *E. coli* of human and domestic origin shall not exceed a geometric mean of 64/100 ml (milliliters) or an instantaneous level of 236/100 ml." Class SB criteria are as follows: "Between May 15th and September 30th, the numbers of enterococcus bacteria of human and domestic animal origin in these waters may not exceed a geometric mean of 8 per 100 milliliters or an instantaneous level of 54 per 100 milliliters." Geometric means are calculated instead of average because it is more appropriate to use this calculation for something like bacteria where there may be one or more very high or low values that can skew the mean.

2015 Results:

Freshwater sites: The freshwater sites did not meet the instanteous criterion of 236 MPN/100 ml on 3-8 sample dates and did not meet the geometric criterion of 64 MPN/100 ml. It is possible that site F1 may be affected by wildlife. Site F2 in particular was very high and worth some further investigation. Site B1 was sampled for enterococci bacteria and met this criteria. Overall, bacteria at these sites (except B1) was poor-fair.

Tidal sites: Three sites were sampled and two of the sites did not meet the instanteous criterion of 54 MPN/100m. on 1 date and did not meet the geometric mean criterion of 8 MPN/100 ml. Overall, bacteria was good.

Table 5-9-6: A summary of minimum, maximum, and geometric means for bacteria (MPN/100 mL) values at Friends of Weskeag/Georges River Land Trust monitoring sites on the Weskeag River.

Site	Class	Type	# Sample Points	Geometric Mean	Minimum	Maximum	Criterion Inst/Geo	# Exceeding Criterion
F1	B	E.coli	9	174	22	980	236/64	3
F2	B	E.coli	8	1314	326	2419	236/64	8
F3	B	E.coli	9	196	64	548	236/64	5
B1	B	Entero*	7	7	1	37	54/8	0
E1	SB	Entero	7	16	3	66	54/8	1
E2	SB	Entero	-	-	-	-	54/8	-
E3	SB	Entero	7	1	1	2	54/8	0
E4	SB	Entero	8	9	0	57	54/8	1

***Enterococcus bacteria was sampled at this Class B site (brackish)**

Figure 5-9-9: Graph of E. coli (MPN/ml) at freshwater sites.

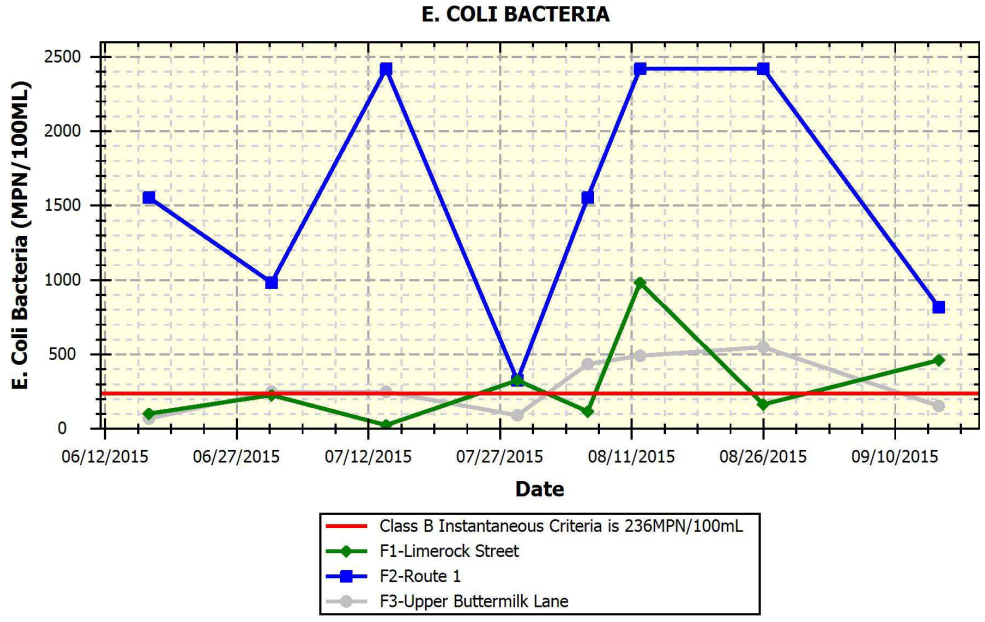


Figure 5-9-10: Graph of Enterococci (MPN/ml) Site B1.

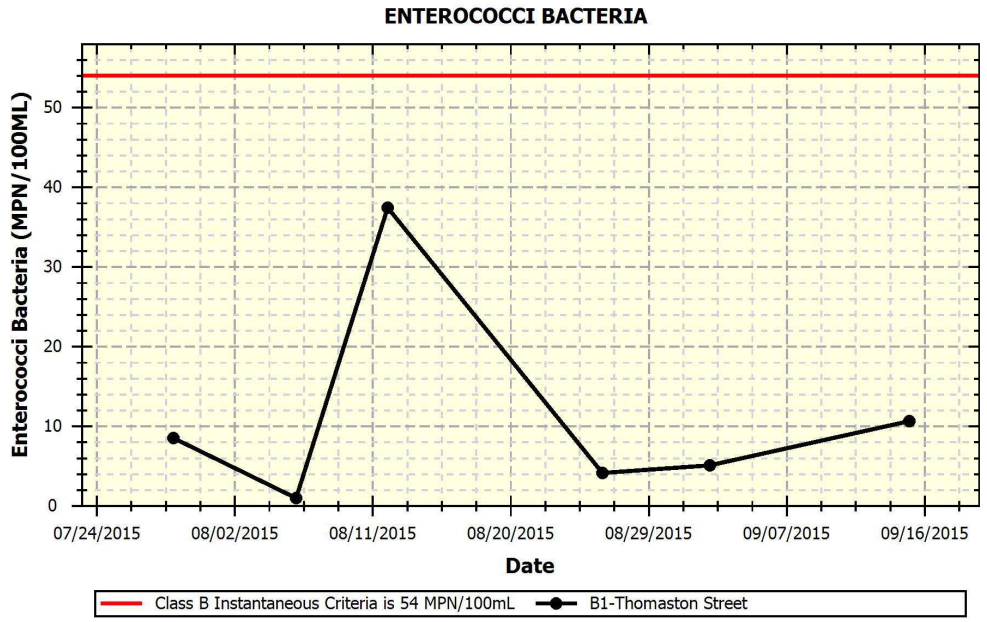
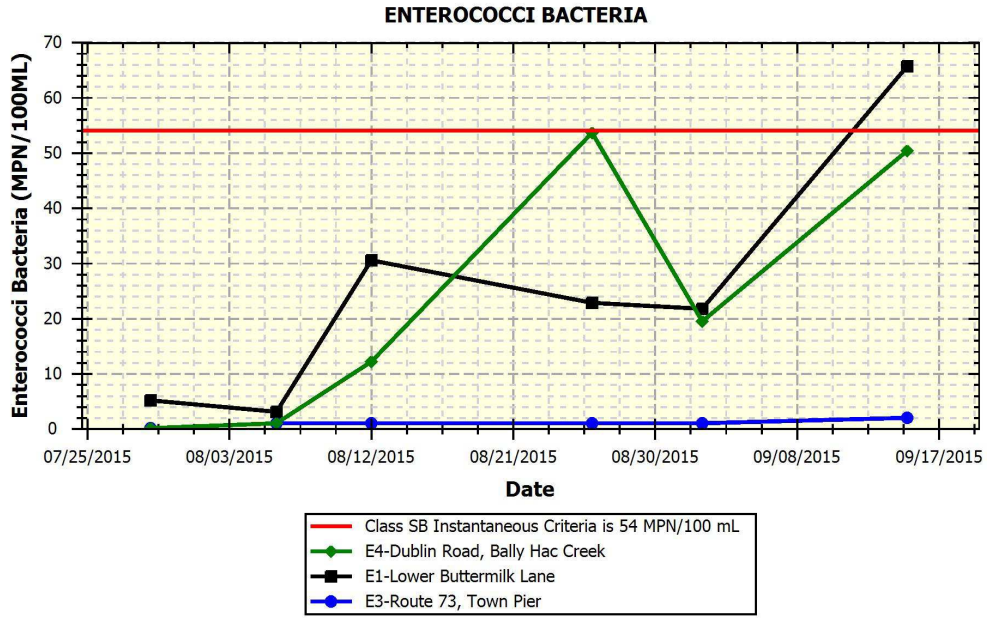


Figure 5-9-11: Graph of Enterococci (MPN/ml) at tidal sites.



Discussion and Recommendations

There are numerous sources of pollution and other stresses to the Weskeag River sites monitored by the Friends of Weskeag/Georges River Land Trust that could potentially have an impact on water quality. Some of those sources of pollution and stress may include:

- Non-point source pollution (e.g., septic systems, eroded soil, fertilizers, pesticides, heavy metals, petroleum residues, road salt, wildlife and pet feces) and polluted stormwater originating from urban impervious surfaces (e.g., streets, parking lots, driveways, roofs), agriculture, and forestry.
- Ponds and impoundments (which often create more pond-like aquatic habitat conditions that may have higher water temperatures and lower dissolved oxygen concentrations than free-flowing waters)
- Natural effects of wetlands (such as contributing waters to a stream/river that have low dissolved oxygen levels due to the decomposition of large amounts of organic matter, respiration of abundant plant matter, and low re-aeration rates that is characteristic of many wetlands).

The following are recommendations for future monitoring:

- **The monitors at the freshwater sites should try to include some early morning measurements for dissolved oxygen. It is important to get some values early in the morning (before 8:00 am), particularly during the warmer summer months. Over a 24 hour period, the lowest readings occur in the early morning and highest readings in mid to late afternoon. This occurs because oxygen is used up during the night due to plant respiration and during the day, plant life is photosynthesizing.**
- **Investigate the high bacteria and conductivity at the freshwater sites [Sites F2 and F3].**
- **Continue monitoring at all stations to develop a long term trend database.**

Appendix A-1. 2011 water quality data for "Approved" and "Non-Approved" sites. Non-Approved sites do not yet meet official VRMP sample location criteria and/or require further inspection and review.
* Sampling depths are only reported for Tier 1 VRMP sites.
** "N/A" = normal environmental sample ; "D" = field duplicate; "D.O." = dissolved oxygen; "Spec. Cond" = specific conductance; "Turb" = turbidity; "TSS" = total suspended solids"
Refer to Appendix A-2 for observational data and quality assurance/quality control (QA/QC) notes.

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	* Sample Depth	Depth Unit	Water Temp (DEG C)	** D.O. Sat. (%)	** D.O. (MG/L)	** Spec. Cond. (US/CM)	Salinity (PPTH)	Turb-idity (NTU)	Total Diss. Solids (MG/L)	** TSS (MG/L)	E Coli Bacteria (MPN/ 100ML)	Entero-cocci (MPN/ 100ML)
Marsh Brook-Friends of Weskeag: Approved Sites																
E1	MARSH BROOK-NWGMR-08-VRMP	6/19/2015	5:50 PM	NA			20.1	84.0								
E1	MARSH BROOK-NWGMR-08-VRMP	7/18/2015	4:00 PM	NA			20.2	60.4	4.8		23.3					
E1	MARSH BROOK-NWGMR-08-VRMP	7/29/2015	11:35 AM	NA												5.2
E1	MARSH BROOK-NWGMR-08-VRMP	8/2/2015	1:51 PM	NA			25.3	85.6	6.1		25.5					
E1	MARSH BROOK-NWGMR-08-VRMP	8/6/2015	11:25 AM	NA												3.1
E1	MARSH BROOK-NWGMR-08-VRMP	8/12/2015	10:20 AM	NA												30.5
E1	MARSH BROOK-NWGMR-08-VRMP	8/12/2015	10:20 AM	DUP												18.7
E1	MARSH BROOK-NWGMR-08-VRMP	8/26/2015	11:25 AM	NA												22.8
E1	MARSH BROOK-NWGMR-08-VRMP	9/2/2015	11:30 AM	NA												21.8
E1	MARSH BROOK-NWGMR-08-VRMP	9/15/2015	10:00 AM	NA												65.7
B1	MARSH BROOK-NWGMR23-VRMP	6/22/2015	9:40 AM	NA			14.7	49.0	5.1	430						
B1	MARSH BROOK-NWGMR23-VRMP	7/8/2015	9:30 AM	NA			17.9	68.7	6.6	730						
B1	MARSH BROOK-NWGMR23-VRMP	7/22/2015	9:06 AM	NA			17.6	76.1	7.5	730						
B1	MARSH BROOK-NWGMR23-VRMP	7/22/2015	9:06 AM	D				77.1	7.3							
B1	MARSH BROOK-NWGMR23-VRMP	7/29/2015	11:30 AM	NA												8.5
B1	MARSH BROOK-NWGMR23-VRMP	8/5/2015	9:16 AM	NA			16.5	80.0	7.9	660						
B1	MARSH BROOK-NWGMR23-VRMP	8/6/2015	11:15 AM	NA												1
B1	MARSH BROOK-NWGMR23-VRMP	8/12/2015	10:15 AM	NA												37.4
B1	MARSH BROOK-NWGMR23-VRMP	8/19/2015	9:15 AM	NA			19.4	83.1	7.7	620						
B1	MARSH BROOK-NWGMR23-VRMP	8/26/2015	11:20 AM	NA												4.1
B1	MARSH BROOK-NWGMR23-VRMP	9/2/2015	9:20 AM	NA			16.4	87.9	8.7	620						
B1	MARSH BROOK-NWGMR23-VRMP	9/2/2015	11:20 AM	NA												5.1
B1	MARSH BROOK-NWGMR23-VRMP	9/2/2015	11:20 AM	DUP												13.2
B1	MARSH BROOK-NWGMR23-VRMP	9/15/2015	9:55 AM	NA												10.6
B1	MARSH BROOK-NWGMR23-VRMP	9/18/2015	9:40 AM	NA			16.7	70.5	6.8	760						
B1	MARSH BROOK-NWGMR23-VRMP	10/28/2015	9:30 AM	NA			2.9	85.2	11.6	820						
B1	MARSH BROOK-NWGMR23-VRMP	11/11/2015	9:30 AM	NA			5.9	85.8	11.8	730						
B1	MARSH BROOK-NWGMR23-VRMP	11/23/2015	1:45 PM	NA			5.1	85.4	10.9	370						
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	6/17/2015	11:15 AM	NA											66.3	
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	6/22/2015	9:27 AM	NA			15.1	72.4	7.3	590						
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	7/1/2015	11:55 AM	NA											248.1	
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	7/8/2015	9:20 AM	NA			17.8	88.3	8.4	890						
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	7/14/2015	11:00 AM	NA											248.9	
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	7/22/2015	9:06 AM	NA			17.5	87.2	8.5	1120						
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	7/29/2015	11:20 AM	NA											90.6	
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	7/29/2015	11:20 AM	DUP											64.4	
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	8/5/2015	9:16 AM	NA			17.0	91.0	8.7	950						

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	* Sample Depth	Depth Unit	Water Temp (DEG C)	** D.O. Sat. (%)	** D.O. (MG/L)	** Spec. Cond. (US/CM)	Salinity (PPTH)	Turb-idity (NTU)	Total Diss. Solids (MG/L)	** TSS (MG/L)	E Coli Bacteria (MPN/ 100ML)	Entero-cocci (MPN/ 100ML)
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	8/6/2015	11:05 AM	NA											435.2	
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	8/12/2015	10:05 AM	NA											488.4	
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	8/19/2015	9:05 AM	NA			19.3	88.8	8.2	1010						
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	8/26/2015	11:15 AM	NA											547.5	
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	9/2/2015	9:10 AM	NA			16.6	88.4	8.8	960						
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	9/15/2015	9:45 AM	NA											151.5	
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	9/18/2015	9:25 AM	NA			17.2	84.0	8.2	720						
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	10/28/2015	9:15 AM	NA			3.3	83.0	11.2	910						
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	11/11/2015	9:10 AM	NA			6.1	93.0	11.6	800						
F3	UNNAMED TRIBUTARY-NWGMRUA15-VRMP	11/23/2015	1:30 PM	NA			5.6	88.5	11.2	490						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	6/17/2015	11:30 AM	NA											1553.1	
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	6/22/2015	9:16 AM	NA			14.5	93.1	9.6	410						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	7/1/2015	11:40 AM	NA											980.4	
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	7/8/2015	9:10 AM	NA			17.9	86.6	8.2	960						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	7/14/2015	10:50 AM	NA											2419.6	
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	7/22/2015	8:55 AM	NA			17.9	80.5	7.7	900						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	7/29/2015	11:05 AM	NA											325.5	
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	8/5/2015	9:03 AM	NA			16.3	66.0	6.5	1060						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	8/6/2015	11:00 AM	NA											1553.1	
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	8/12/2015	10:00 AM	NA											2419.6	
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	8/19/2015	8:55 AM	NA			18.9	51.7	4.8	910						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	8/26/2015	11:10 AM	NA											2419.6	
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	9/2/2015	8:50 AM	NA			16.1	18.0	2.1	800						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	9/2/2015	8:50 AM	D			16.5	19.9	2.0							
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	9/18/2015	9:15 AM	NA			15.7	64.2	6.2	750						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	10/28/2015	9:00 AM	NA			3.7	84.0	11.2	880						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	11/11/2015	9:00 AM	NA			6.7	93.0	11.3	750						
F2	UNNAMED TRIBUTARY-NWGMRUB02-VRMP	11/23/2015	1:15 PM	NA			6.3	96.7	12.0	300						
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	6/17/2015	11:00 AM	NA											102.2	
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	6/22/2015	9:03 AM	NA			14.7	71.4	7.2	210						
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	7/1/2015	11:26 AM	NA											224.7	
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	7/8/2015	8:55 AM	NA			18.0	34.3	2.9	560						
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	7/14/2015	10:30 AM	NA											21.8	
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	7/22/2015	8:43 AM	NA			18.3	48.3	4.8	660						
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	7/29/2015	10:55 AM	NA											325.5	
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	8/5/2015	8:53 AM	NA			16.4	61.4	6.1	660						
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	8/6/2015	10:45 AM	NA											113.7	
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	8/6/2015	10:45 AM	DUP											110	
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	8/12/2015	9:50 AM	NA											980.4	
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	8/19/2015	8:45 AM	NA			19.3	65.0	6.0	510						
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	8/26/2015	11:00 AM	NA											161.6	
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	9/2/2015	8:45 AM	NA			16.8	62.8	6.2	570						
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	9/15/2015	9:15 AM	NA											461.1	
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	9/18/2015	9:05 AM	NA			17.0	36.0	3.5	370						
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	10/28/2015	8:45 AM	NA			3.0	54.3	8.6	420						
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	11/11/2015	8:50 AM	NA			6.3	74.1	9.4	370						

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	* Sample Depth	Depth Unit	Water Temp (DEG C)	** D.O. Sat. (%)	** D.O. (MG/L)	** Spec. Cond. (US/CM)	Salinity (PPTH)	Turb-idity (NTU)	Total Diss. Solids (MG/L)	** TSS (MG/L)	E Coli Bacteria (MPN/ 100ML)	Entero-cocci (MPN/ 100ML)
F1	UNNAMED TRIBUTARY-NWGMRUB08-VRMP	11/23/2015	1:00 PM	NA			5.9	85.6	10.9	210						
E2	UNNAMED TRIBUTARY-NWGUC-03-VRMP	7/18/2015	3:20 PM	NA			18.4	77.0	7.8		25					
E2	UNNAMED TRIBUTARY-NWGUC-03-VRMP	8/2/2015	1:42 PM	NA			19.7	104.0	8.1		26.3					
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	7/18/2015	3:35 PM	NA			17.7	77.2	6.5		20.1					
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	7/29/2015	11:50 AM	NA												0.1
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	8/2/2015	1:32 PM	NA			20.2	107.2	8.3		25.7					
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	8/6/2015	11:40 AM	NA												1
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	8/12/2015	10:35 AM	NA												12.2
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	8/26/2015	11:50 AM	NA												53.6
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	8/26/2015	11:50 AM	DUP												57.1
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	9/2/2015	11:55 AM	NA												19.5
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	9/2/2015	11:55 AM	DUP												9.4
E4	UNNAMED TRIBUTARY-NWGUD-18-VRMP	9/15/2015	10:20 AM	NA												50.4
E3	WESKEAG RIVER-NWG-28-VRMP	6/19/2015	5:12 PM	NA			15.0	113.1								
E3	WESKEAG RIVER-NWG-28-VRMP	7/18/2015	4:10 PM	NA			16.7	100.9	8.4		26.3					
E3	WESKEAG RIVER-NWG-28-VRMP	7/29/2015	11:40 AM	NA												0.1
E3	WESKEAG RIVER-NWG-28-VRMP	8/2/2015	1:15 PM	NA			14.7	108.9	9.2		27					
E3	WESKEAG RIVER-NWG-28-VRMP	8/6/2015	11:30 AM	NA												1
E3	WESKEAG RIVER-NWG-28-VRMP	8/12/2015	10:30 AM	NA												1
E3	WESKEAG RIVER-NWG-28-VRMP	8/26/2015	11:40 AM	NA												1
E3	WESKEAG RIVER-NWG-28-VRMP	9/2/2015	11:40 AM	NA												1
E3	WESKEAG RIVER-NWG-28-VRMP	9/15/2015	10:10 AM	NA												2
E3	WESKEAG RIVER-NWG-28-VRMP	9/15/2015	10:10 AM	DUP												0.5