

## Section 5-2 Androscoggin River (Friends of Merrymeeting Bay)

### Androscoggin River

---

The Androscoggin River is the third largest river in the state. It has a length of 177 miles and drainage area of 3,450 square miles (2,730 sq. mi. in Maine).<sup>1</sup> The headwaters are Umbagog Lake in Maine/New Hampshire. From there it flows into New Hampshire and then back into Maine through the towns of Gilead and Bethel. It continues flowing through the towns and cities of Rumford, Mexico, Dixfield, Jay, Livermore Falls, Lewiston, Auburn, Lisbon, Lisbon Falls, Durham, Brunswick, and Topsham where it joins the Kennebec River at Merrymeeting Bay.

The Androscoggin River has a long history of industrial and municipal use over the last 200 years.<sup>1</sup> Beginning in the early 1800s, many dams were constructed for mills, primarily in the lower part of the river. By the late 1800s, many textile and lumber mills were in operation, mostly from Lewiston to Brunswick. Pulp and paper mills that are still in operation today were established in the late 1800s in New Hampshire, Rumford, and Jay. Beginning in the late 1920s, Central Maine Power built hydroelectric dams that impounded much of the river from Lewiston to Livermore Falls. Some of these uses continue today. “Along its course to the sea, the river is repeatedly dammed. It receives discharges from industrial and municipal sources, as well as polluted runoff from a variety of sources.”<sup>2</sup> Specific problems include mill discharges, combined sewer overflows (CSOs), dam impacts (28 dams exist), and historical sediment toxins.

The Androscoggin River is assigned Class B from the Maine/New Hampshire boundary to its confluence with the Ellis River. It is assigned Class C from the confluence with the Ellis River to Merrymeeting Bay.

### Monitoring History

---

- The Maine DEP Biological Monitoring Program has been monitoring the lower Androscoggin River since 1984. This data is available on DEP’s website.
- The lower Androscoggin River is monitored by the Friends of Merrymeeting Bay (FOMB). FOMB has been in existence since 1975 and focuses on protecting the Merrymeeting Bay watershed through research, education, advocacy, and land conservation. They have been monitoring the lower part of the Androscoggin River, tributaries to Merrymeeting Bay, and the Bay since 1999. Their monitoring has extended up the Androscoggin at times (depending on volunteers) to Livermore Falls. FOMB joined the VRMP in 2009 with an interest in bringing about water classification upgrades when possible.

---

<sup>1</sup> Maine Rivers Website- Androscoggin River Profile

<sup>2</sup> Androscoggin River Alliance Website-Androscoggin River slideshow

- In 2011, FOMB requested that two of the three approved sites (Water Street Mooring, WSM and Brunswick Canoe Mooring, BCM) be moved from mid-channel to shore. They submitted monitoring data from mid-channel and shore to demonstrate similarity. The Department approved relocation of these approved sites. FOMB renamed these sites Brunswick Water Street (BWS) and Brunswick Canoe Portage (BCP), respectively.
- In 2010, a water quality model to predict effect of discharges and river flows on attainment of Maine's Water Quality Standards was developed for the lower Androscoggin River by the Maine DEP. The model report and data are available on DEP's website.

## Methods and Sampling Sites

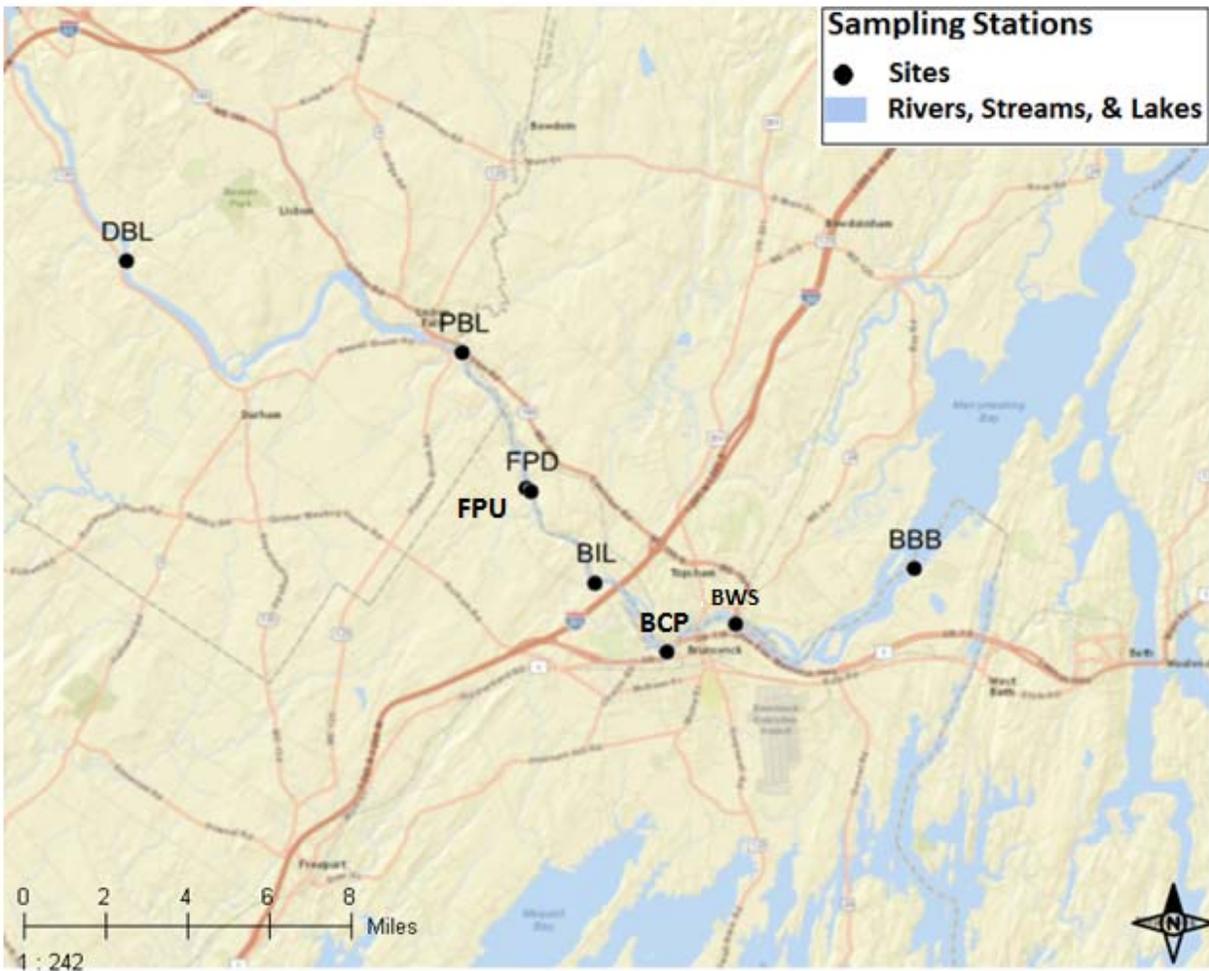
Volunteers monitor the Androscoggin River at eight sites on the main stem. All of the sites are now VRMP approved sites.

Monitoring is conducted once/month from May through August-September. Monitors take measurements of water temperature and dissolved oxygen using a YSI meter. Specific conductance is measured using either a YSI meter or an Oakton EC 11+/11 Testr pen. Samples are collected for *E. coli* bacteria and transported to Bowdoin College for analysis by FOMB volunteers.

**Table 5-2-1:** Friends of Merrymeeting Bay sampling sites at Androscoggin River.

VRMP Site ID	Organization Site Code	Sample Location	Class
Androscoggin River-A231-VRMP	BBB	Bay Bridge Jetty	C
Androscoggin River-A281BK-VRMP	BWS	Brunswick Water Street	C
Androscoggin River-A299BK-VRMP	BCP	Brunswick Canoe Portage	C
Androscoggin River- A24-FOMB	BIL	Brunswick Interstate Ledges	C
Androscoggin River-A45-FOMB	FPD	Fish Park Downstream	C
Androscoggin River-A47-FOMB	FPU	Fish Park Upstream	C
Androscoggin River-A71-FOMB	PBL	Pejepscot Boat Launch	C
Androscoggin River-A158-FOMB	DBL	Durham Boat Launch	C

## 2014 Androscoggin River Sampling Sites Friends of Merrymeeting Bay



**Figure 5-2-1:** Map of all Friends of Merrymeeting Bay sampling sites on the Androscoggin River

## Results

Refer to Appendices A-1 and A-2 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 than normal, this will affect the dissolved oxygen.

Class C criteria for dissolved oxygen are a minimum of 5 mg/l or 60 % saturation. 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 standards must be met.

#### *2014 Results:*

**Dissolved oxygen (DO) was measured 6 times from May through October at the 7 sampling sites. Not all the data are reported here because some data was rejected for QA/QC reasons (no calibration value recorded). At all the sites, DO concentration was above the Class C criterion of 5 mg/l. It was also above the Class B criterion of 7 mg/l at all sites except sites BBB and BWS. It was below 7 mg/l 2 times at site BBB and 1 time at site BWS. DO percent saturation was above the Class C criterion of 60% saturation for all dates also above Class B criterion of 75% saturation for all dates. Overall sites BBB, BWS and BCP are very similar. The sites above here (BIL, FPD, FPU, and PBL) are also very similar. Dissolved oxygen was overall good to excellent.**

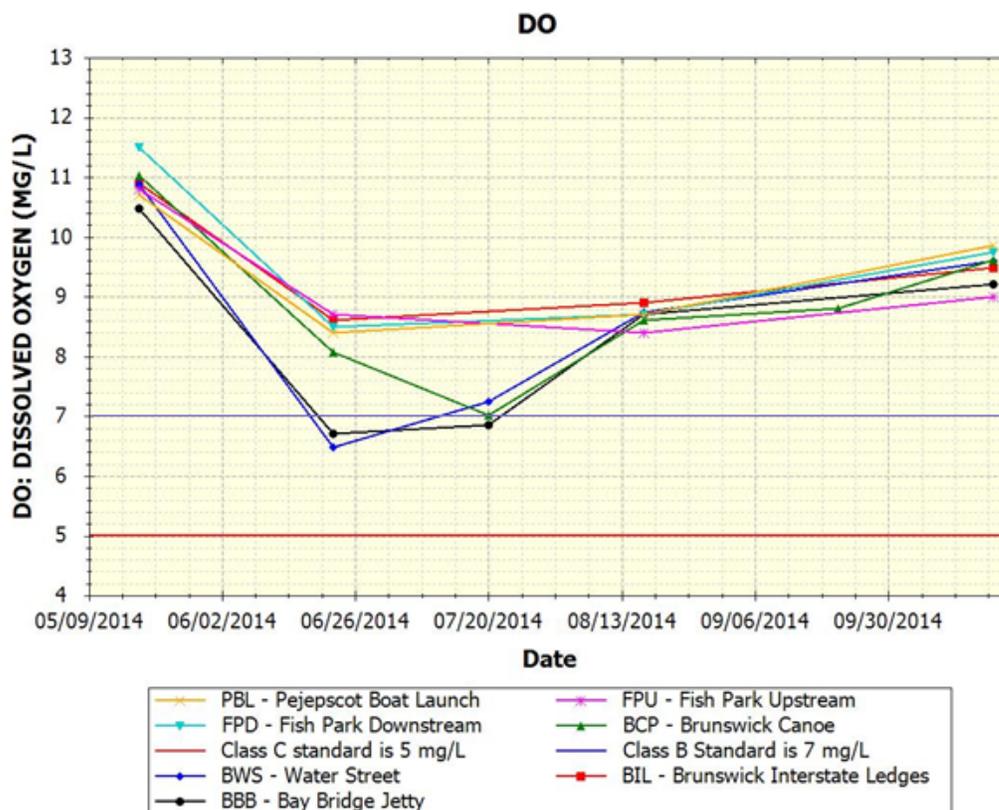
**Table 5-2-2:** A summary of minimum, maximum, and average dissolved oxygen concentration values (mg/l) at Friends of Merrymeeting Bay monitoring sites on the Androscoggin River.

Site	Class	# of Observations	Average	Minimum	Maximum	Criterion	# Exceeding
BBB	C	5	8.4	6.7	10.5	5	0
BWS	C	5	8.6	6.5	10.9	5	0
BCP	C	6	8.9	7.0	11.0	5	0
BIL	C	4	9.5	8.6	10.9	5	0
FPD	C	4	9.6	8.5	11.5	5	0
FPU	C	4	9.2	8.4	10.8	5	0
PBL	C	4	9.4	8.4	10.7	5	0

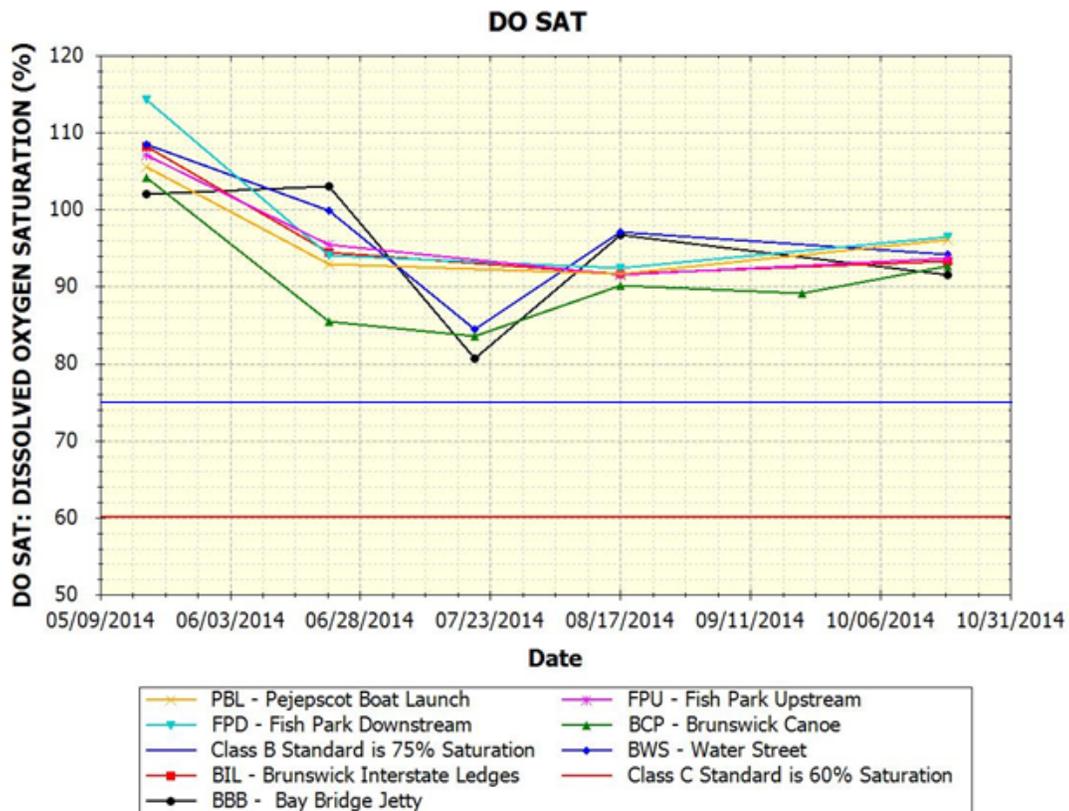
**Table 5-2-3:** A summary of minimum, maximum, and average dissolved oxygen saturation (%) values at Friends of Merrymeeting Bay monitoring sites on the Androscoggin River.

Site	Class	# of Observations	Average	Minimum	Maximum	Criterion	# Exceeding
BBB	C	5	94.8	80.7	103.0	60	0
BWS	C	5	96.8	84.5	108.4	60	0
BCP	C	6	90.8	83.5	104.1	60	0
BIL	C	4	96.9	91.7	108.2	60	0
FPD	C	4	99.3	92.4	114.3	60	0
FPU	C	4	96.9	91.5	107.0	60	0
PBL	C	4	96.6	91.7	105.6	60	0

**Figure 5-2-2:** Graph of dissolved oxygen concentrations.



**Figure 5-2-3:** Graph of dissolved oxygen saturation



### 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.

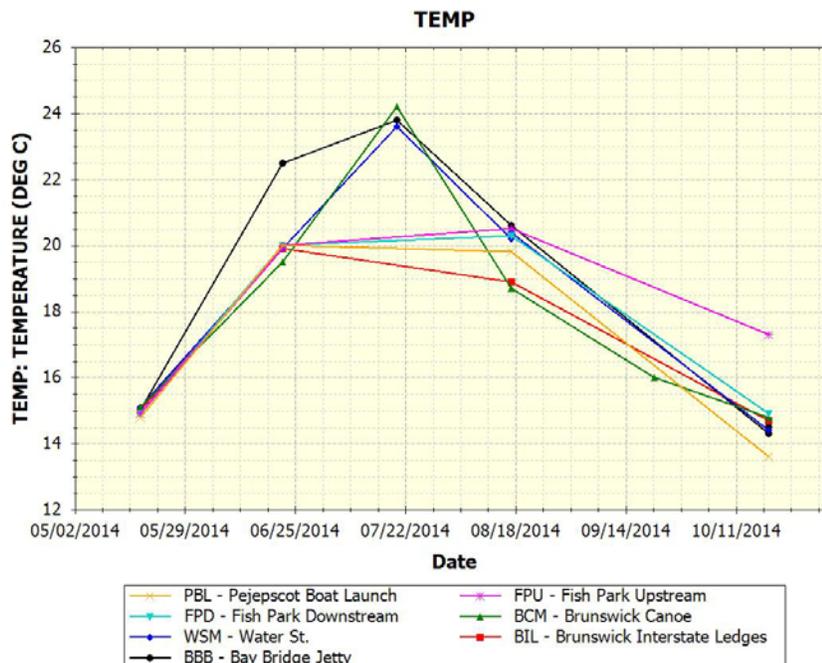
**2014 Results:**

Temperature at the 3 lowest sampling sites (BBB, BWS and BCP) were similar with highest temperatures occurring in July (23°-24°C). Temperature was very similar at the 4 sampling sites above (BIL, FPD, FPU, PBL) with highest readings being around 20°C). Temperature for July is not reported here because the data was not included due to QA/QC reasons explained in the “Dissolved Oxygen” results. Because sampling only occurs monthly, it is not possible to determine how long temperatures remained high. Since measurements are taken close to the surface [mid-depth (1-1.5 ft.)], it is not too surprising that temperatures can get quite warm in July and August in the large open river.

**Table 5-2-4:** A summary of minimum, maximum, and average water temperature (°C) values at Friends of Merrymeeting Bay monitoring sites on the Androscoggin River.

Site	Class	# of Observations	Average	Minimum	Maximum	Criterion	# Exceeding
BBB	C	5	19.3	14.5	23.8	n/a	n/a
BWS	C	5	18.7	14.4	23.6	n/a	n/a
BCP	C	6	18.1	14.8	24.2	n/a	n/a
BIL	C	4	17.1	14.7	19.9	n/a	n/a
FPD	C	4	17.5	14.9	20.3	n/a	n/a
FPU	C	4	18.2	14.9	20.5	n/a	n/a
PBL	C	4	17.1	13.6	20.0	n/a	n/a

**Figure 5-2-4:** Graph of temperature



### 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. Also, discharges from pulp and paper mills upstream measurably increase the conductivity of the river.

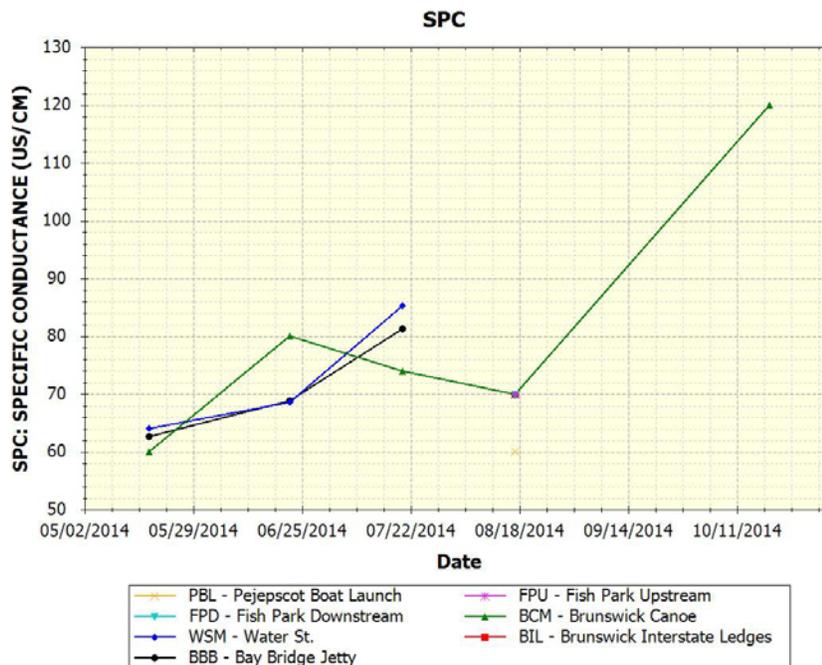
**2014 Results:**

Specific conductance was measured from 1-5 times at the sampling sites with measurements ranging from 60-120  $\mu\text{S}/\text{cm}$ . Overall, the values are low, but somewhat elevated from natural background values reflecting point and non-point source effects.

**Table 5-2-5:** A summary of minimum, maximum, and average specific conductance values (micro-ohms/cm,  $\mu\text{S}/\text{cm}$ ) at Friends of Merrymeeting Bay monitoring sites on the Androscoggin River.

Site	Class	# of Observations	Average	Minimum	Maximum	Criterion	# Exceeding
BBB	C	3	71	63	81	n/a	n/a
BWS	C	3	73	64	85	n/a	n/a
BCP	C	5	81	60	120	n/a	n/a
BIL	C	1	70	70	70	n/a	n/a
FPD	C	1	70	70	70	n/a	n/a
FPU	C	1	70	70	70	n/a	n/a
PBL	C	1	60	60	60	n/a	n/a

**Figure 5-2-5:** Graph of specific conductance



## Bacteria

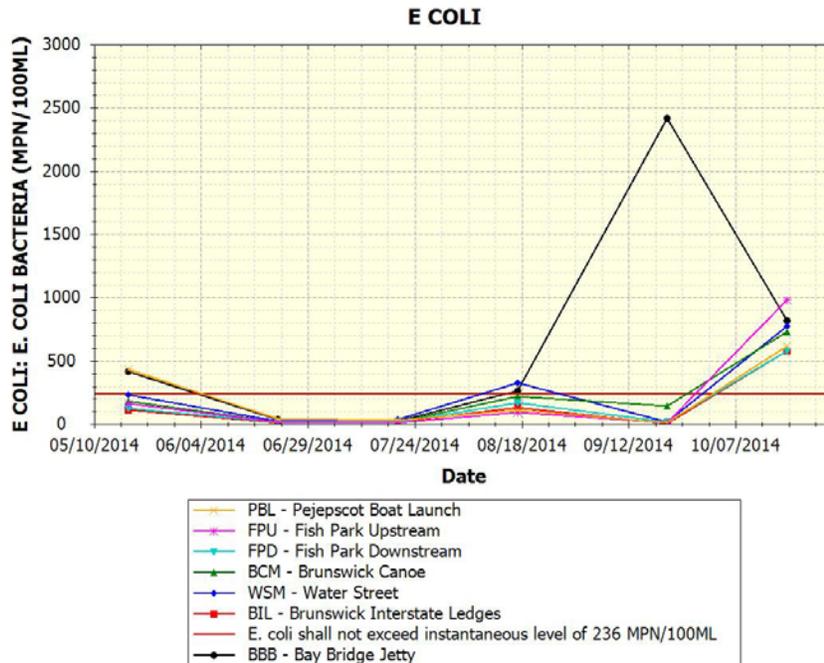
*E. coli* bacteria are used as the indicator organism for freshwater. While these types of bacteria are not pathogens, their presence in the water may indicate the presence of other organisms including bacteria and viruses that can cause gastrointestinal illnesses. Class C criteria for bacteria are as follows: “Between May 15<sup>th</sup> and September 30<sup>th</sup>, the number of *Escherichia coli* of human and domestic origin shall not exceed a geometric mean of 126/100 ml (milliliters) or an instantaneous level of 236/100 ml.” Class B criteria are as follows: “Between May 15<sup>th</sup> and September 30<sup>th</sup>, the number of *Escherichia 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.” Geometric means are calculated instead of averages because it is more appropriate to use geometric mean for something like bacteria where there may be one or more very high or low values that can skew the mean.

### 2014 Results:

*Escherichia coli* bacteria was sampled 6 times at the 7 sampling sites. Weather conditions included a mix of conditions including 2 dates (May & September) when there was heavy rain in the past 24 hours, 1 date when there was light rain (October) and dry conditions for July and August. Site BBB exceeded the Class B and Class C bacteria instantaneous criterion of 236 (MPN/100ml) on 4 out of 6 sampling dates (all dates except June & July). Site BWS exceeded these criterion in August and October. Sites BCP, BIL, FPD and FPU exceeded criterion in October only. Site PBL exceeded these criterion 2 times-May and October. The geometric mean criterion of 126 (MPN/100ml) was not exceeded at any of the sites. The Class B criterion of 64 (MPN/100ml) was exceeded at 4 of 7 sites. Site BBB is the lowest site on the river and exceeded the instantaneous criterion most often-perhaps because of its location below Brunswick. The fact that in 2014, there were exceedances may in part reflect that sampling included wet weather conditions. Typically high bacterial levels are associated with stormwater runoff and/or combined sewer overflows.

**Table 5-2-6:** A summary of minimum, maximum, and geometric mean values (MPN/100mL) for bacteria at Friends of Merrymeeting Bay monitoring sites on the Androscoggin River.

Site	Class	# of Observations	Geometric Mean	Minimum	Maximum	Criterion Inst/Geo	# Exceeding
BBB	C	6	239	24	2419	236/126	4
BWS	C	6	95	12	770	236/126	2
BCP	C	6	99	14	727	236/126	1
BIL	C	6	41	5	579	236/126	1
FPD	C	6	61	16	579	236/126	1
FPU	C	6	53	8	980	236/126	1
PBL	C	6	87	12	613	236/126	2

**Figure 5-2-6:** Graph of E. coli (MPN/ml)

## Discussion and Recommendations

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

- Point source pollution (pollution originating from a direct discharge including wastewater treatment plant discharge, combined sewer overflows and overboard discharges).
- Non-point source pollution (e.g., eroded soil, fertilizers, pesticides, heavy metals, petroleum residues, road salt, septic systems, wildlife and pet feces) and polluted stormwater originating from urban impervious surfaces (e.g., streets, parking lots, driveways, rooftops), 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 are characteristic of many wetlands).

**The following are recommendations for future monitoring:**

- **Some of the sites are very similar. Friends of Merrymeeting Bay might consider dropping some sites that are close to each other. They should also consider adding new sites, including streams draining to the Androscoggin River.**
- **Bacteria monitoring should include a mix of sampling events to include both dry and runoff events. If possible, volunteer leaders could try to collect 1-2 bacteria samples during/after rain events.**
- **Continue monitoring at all stations (or at least a subset of sites) to develop a long- term trend database. FOMB might consider sampling 2 X/month in July and August and dropping the October sampling event.**
- **Some data was not accepted because calibration values were not entered on the field sheets. Monitors should review their field sheets on each sampling date to ensure they are completed.**

Appendix A-1. 2014 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" = normal environmental sample ; "D" = field duplicate; "D.O." = dissolved oxygen; "Spec. Cond" = specific conductance; "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)	Turbidity (NTU)	Total Diss. Solids (MG/L)	** TSS (MG/L)	E Coli Bacteria (MPN/100ML)	Enterococci (MPN/100ML)
<b>Androscoggin River - Friends of Merrymeeting Bay: Approved Sites</b>																
BBB	ANDROSCOGGIN RIVER - A231 - VRMP	5/18/2014	8:05 AM	N			15	102	10.47	62.6					410.6	
BBB	ANDROSCOGGIN RIVER - A231 - VRMP	6/22/2014	8:15 AM	N			22.5	103	6.71	68.8					36.9	
BBB	ANDROSCOGGIN RIVER - A231 - VRMP	6/22/2014	8:15 AM	D											10.8	
BBB	ANDROSCOGGIN RIVER - A231 - VRMP	7/20/2014	7:45 AM	N			23.8	80.7	6.85	81.2					24.1	
BBB	ANDROSCOGGIN RIVER - A231 - VRMP	8/17/2014	7:45 AM	N			20.6	96.7	8.7						260.3	
BBB	ANDROSCOGGIN RIVER - A231 - VRMP	9/21/2014	8:20 AM	N											2419.6	
BBB	ANDROSCOGGIN RIVER - A231 - VRMP	10/19/2014	9:00 AM	N			14.5	91.5	9.2						816.4	
BBB	ANDROSCOGGIN RIVER - A231 - VRMP	10/19/2014	9:00 AM	D			14.3	93	9.4							
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	5/18/2014	8:15 AM	N			15	108.2	10.9						108.1	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	6/22/2014	8:30 AM	N			19.9	94.4	8.6						7.5	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	6/22/2014	8:30 AM	D											11.9	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	7/20/2014	8:12 AM	N											14.5	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	8/17/2014	7:35 AM	N			18.9	91.7	8.9	70					127.4	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	9/25/2014	7:45 AM	N											5.1	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	9/25/2014	7:45 AM	D											5.2	
BIL	ANDROSCOGGIN RIVER - A24 - VRMP	10/19/2014		N			14.7	93.3	9.48						579.4	

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)	Turbidity (NTU)	Total Diss. Solids (MG/L)	** TSS (MG/L)	E Coli Bacteria (MPN/100ML)	Enterococci (MPN/100ML)
BWS	ANDROSCOGGIN RIVER - A281 - VRMP	5/18/2014	7:25 AM	N			15.1	108.4	10.88	64					231	
BWS	ANDROSCOGGIN RIVER - A281 - VRMP	6/22/2014	7:45 AM	N			19.9	99.9	6.48	68.5					20.6	
BWS	ANDROSCOGGIN RIVER - A281 - VRMP	7/20/2014	7:15 AM	N			23.6	84.5	7.25	85.3					37.3	
BWS	ANDROSCOGGIN RIVER - A281 - VRMP	8/17/2014	7:15 AM	N			20.4	97.1	8.74						325.5	
BWS	ANDROSCOGGIN RIVER - A281 - VRMP	8/17/2014	7:15 AM	D			20.2	96.9	8.61							
BWS	ANDROSCOGGIN RIVER - A281 - VRMP	9/21/2014	7:50 AM	N											16.9	
BWS	ANDROSCOGGIN RIVER - A281 - VRMP	10/19/2014	8:40 AM	N			14.4	94.2	9.6						770.1	
BCP	ANDROSCOGGIN RIVER - A299 - VRMP	5/18/2014	7:45 AM	N			15.1	104.1	11.03	60					178.5	
BCP	ANDROSCOGGIN RIVER - A299 - VRMP	6/22/2014	7:45 AM	N			19.5	85.5	8.07	80					17.3	
BCP	ANDROSCOGGIN RIVER - A299 - VRMP	7/20/2014	8:00 AM	N			24.2	83.5	7.01	74					13.5	
BCP	ANDROSCOGGIN RIVER - A299 - VRMP	8/17/2014	7:45 AM	N			18.7	90.1	8.6	70					218.7	
BCP	ANDROSCOGGIN RIVER - A299 - VRMP	9/21/2014	7:45 AM	N			16	89.16	8.8						143.9	
BCP	ANDROSCOGGIN RIVER - A299 - VRMP	10/19/2014	7:30 AM	N			14.8	92.7	9.61	120					727	
BCP	ANDROSCOGGIN RIVER - A299 - VRMP	10/19/2014	7:30 AM	D			14.8	92.7	9.61	120					579.4	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	5/18/2014	7:50 AM	N			14.9	114.3	11.5						121	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	6/22/2014	8:00 AM	N			20	94	8.5						16.9	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	6/22/2014	8:00 AM	D											11.9	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	7/20/2014	7:38 AM	N											16.8	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	8/17/2014	7:25 AM	N			20.3	92.4	8.71	70					167	
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	9/25/2014	7:12 AM	N											15.5	

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)	Turbidity (NTU)	Total Diss. Solids (MG/L)	** TSS (MG/L)	E Coli Bacteria (MPN/100ML)	Enterococci (MPN/100ML)
FPD	ANDROSCOGGIN RIVER - A45 - VRMP	10/19/2014	6:55 AM	N			14.9	96.5	9.75						579.4	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	5/18/2014	7:35 AM	N			14.9	107	10.8						161.6	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	6/22/2014	7:40 AM	N			20	95.4	8.7						18.7	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	6/22/2014	7:40 AM	D			19.9	95.5	8.7						11.9	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	7/20/2014	7:15 AM	N											8.4	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	7/20/2014	7:15 AM	D											28.2	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	8/17/2014	7:20 AM	N			20.5	91.5	8.4	70					93.3	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	9/21/2014	6:50 AM	N											9.6	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	10/19/2014	6:40 AM	N			17.3	93.7	9						980.4	
FPU	ANDROSCOGGIN RIVER - A47 - VRMP	10/19/2014	6:40 AM	D			17.3	92.4	9.4						727	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	5/18/2014	6:55 AM	N			14.8	105.6	10.7						435.2	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	5/18/2014	6:55 AM	D			14.8	105.3	10.7						248.1	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	6/22/2014	7:10 AM	N			20	92.9	8.4						42	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	7/20/2014	6:05 AM	N											27.5	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	8/17/2014	7:00 AM	N			19.8	91.7	8.71	60					112.4	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	9/21/2014	6:12 AM	N											12.1	
PBL	ANDROSCOGGIN RIVER - A71 - VRMP	10/19/2014	5:50 AM	N			13.6	96	9.86						613.1	



Appendix A-2. 2014 observational data and quality assurance/quality control (QA/QC) notes for "approved" and "non-approved" sites.

\*\* "N" = normal environmental sample; "D" = field duplicate; "L" = lab duplicate

Refer to Appendix A-1 for water quality data

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	Flow	Stage	Air Temp (°C)	Sample Location	Current Weather	Air Condition	Past 24HR Weather	Habitat	Water Appearance	Comments
<b>Androscoggin River - Friends of Merrymeeting Bay: Approved Sites</b>														
BAY BRIDGE JETTY (BBB)	ANDROSCOGGIN RIVER - A231 - VRMP	5/18/2014	8:05 AM	N	BASEFLOW	HIGH	17.6	WADING	PARTLY CLOUDY	STRONG WIND	CLEAR	RUN	MEDIUM STAINED	EXTREMELY HIGH TIDE WADEABLE/MID-DEPTH
BAY BRIDGE JETTY (BBB)	ANDROSCOGGIN RIVER - A231 - VRMP	6/22/2014	8:15 AM	N	BASEFLOW	MEDIUM	22.5	WADING	CLEAR	CALM	CLEAR	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH
BAY BRIDGE JETTY (BBB)	ANDROSCOGGIN RIVER - A231 - VRMP	6/22/2014	8:15 AM	D				WADING						WADEABLE/MID-DEPTH
BAY BRIDGE JETTY (BBB)	ANDROSCOGGIN RIVER - A231 - VRMP	7/20/2014	7:45 AM	N	BASEFLOW	MEDIUM	19.7	WADING	CLOUDY	CALM	CLEAR	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH
BAY BRIDGE JETTY (BBB)	ANDROSCOGGIN RIVER - A231 - VRMP	8/17/2014	7:45 AM	N	BASEFLOW	MEDIUM	17.5	WADING	CLOUDY	CALM	CLEAR	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH
BAY BRIDGE JETTY (BBB)	ANDROSCOGGIN RIVER - A231 - VRMP	9/21/2014	8:20 AM	N	BASEFLOW	LOW	16.7	WADING		CALM		RUN	MEDIUM STAINED	CONCENTRATION IS ACTUALLY >2419.6. VALUE FOR USE IN GEOMETRIC MEAN., WATER VERY LOW WADEABLE/MID-DEPTH DISSOLVED OXYEN NOT ENTERED-CALIBRATION NOT ENTERED ON FIELDSHEET
BAY BRIDGE JETTY (BBB)	ANDROSCOGGIN RIVER - A231 - VRMP	10/19/2014	9:00 AM	N	STORMFLOW	MEDIUM	10	WADING	CLOUDY	STRONG WIND	CLOUDY	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH
BAY BRIDGE JETTY (BBB)	ANDROSCOGGIN RIVER - A231 - VRMP	10/19/2014	9:00 AM	D				WADING						WADEABLE/MID-DEPTH
Brunswick Interstate Ledges (BIL)	ANDROSCOGGIN RIVER - A24 - VRMP	5/18/2014	8:15 AM	N			13.9	WADING	CLEAR	CALM	CLOUDY, FOGGY, HEAVY RAIN, LIGHT RAIN			NON-WADEABLE/MID-DEPTH
Interstate Ledges (BIL)	ANDROSCOGGIN RIVER - A24 - VRMP	6/22/2014	8:30 AM	N	BASEFLOW	LOW	13.5	BANK	CLEAR	CALM	CLEAR	RUN	MEDIUM STAINED	WADEABLE/1.5 FT BELOW SURFACE
Brunswick Interstate Ledges (BIL)	ANDROSCOGGIN RIVER - A24 - VRMP	6/22/2014	8:30 AM	D				BANK						WADEABLE/1.5 FT BELOW SURFACE
Brunswick Interstate Ledges (BIL)	ANDROSCOGGIN RIVER - A24 - VRMP	7/20/2014	8:12 AM	N	BASEFLOW	LOW	18.5	WADING	CLOUDY, FOGGY	CALM	CLEAR, CLOUDY, FOGGY, MOSTLY CLOUDY	RUN	MEDIUM STAINED	WADEABLE/1.5 FT BELOW SURFACE DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Brunswick Interstate Ledges (BIL)	ANDROSCOGGIN RIVER - A24 - VRMP	8/17/2014	7:35 AM	N		HIGH		WADING	CLOUDY		CLOUDY, LIGHT RAIN	RUN	DARKLY STAINED	NON-WADEABLE/MID-DEPTH
Brunswick Interstate Ledges (BIL)	ANDROSCOGGIN RIVER - A24 - VRMP	9/25/2014	7:45 AM	N	BASEFLOW	LOW		WADING	CLOUDY, LIGHT RAIN	CALM	CLOUDY, LIGHT RAIN, MOSTLY CLOUDY, PARTLY	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	Flow	Stage	Air Temp (°C)	Sample Location	Current Weather	Air Condition	Past 24HR Weather	Habitat	Water Appearance	Comments
Brunswick Interstate Ledges (BIL)	ANDROSCOGGIN RIVER - A24 - VRMP	9/25/2014	7:45 AM	D				WADING						WADEABLE/MID-DEPTH DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Brunswick Interstate Ledges (BIL)	ANDROSCOGGIN RIVER - A24 - VRMP	10/19/2014		N	BASEFLOW	LOW	6.8	WADING	CLOUDY		LIGHT RAIN		MEDIUM STAINED	WADEABLE/MID-DEPTH
Water Street(BWS)	ANDROSCOGGIN RIVER - A281 - VRMP	5/18/2014	7:25 AM	N	BASEFLOW	HIGH	17.6	WADING	PARTLY CLOUDY	STRONG WIND	CLEAR	RUN	MEDIUM STAINED	EXTREMELY HIGH TIDE WADEABLE/MID-DEPTH
Water Street(BWS)	ANDROSCOGGIN RIVER - A281 - VRMP	6/22/2014	7:45 AM	N	BASEFLOW	MEDIUM	22.5	WADING	CLEAR	CALM	CLEAR	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH
Water Street(BWS)	ANDROSCOGGIN RIVER - A281 - VRMP	7/20/2014	7:15 AM	N	BASEFLOW	MEDIUM	19.7	WADING	CLOUDY	CALM	CLEAR	RUN	MEDIUM STAINED	WATER SCUMMY WADEABLE/MID-DEPTH
Water Street(BWS)	ANDROSCOGGIN RIVER - A281 - VRMP	8/17/2014	7:15 AM	N	BASEFLOW	MEDIUM	17.5	WADING	CLOUDY	CALM	CLEAR	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH
Water Street(BWS)	ANDROSCOGGIN RIVER - A281 - VRMP	8/17/2014	7:15 AM	D				WADING						WADEABLE/MID-DEPTH
Water Street(BWS)	ANDROSCOGGIN RIVER - A281 - VRMP	9/21/2014	7:50 AM	N	BASEFLOW	LOW	16.7	WADING		CALM		RUN	MEDIUM STAINED	WATER VERY LOW WADEABLE/MID-DEPTH DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Water Street(BWS)	ANDROSCOGGIN RIVER - A281 - VRMP	10/19/2014	8:40 AM	N	STORMFLOW	MEDIUM	10	WADING	CLOUDY	STRONG WIND	CLOUDY	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH
BRUNSWICK CANOE PORTAGE (BCP)	ANDROSCOGGIN RIVER - A299 - VRMP	5/18/2014	7:45 AM	N	STORMFLOW	HIGH	17.4	WADING	CLEAR	CALM	HEAVY RAIN, MOSTLY CLOUDY, SHOWERS	RUN	DARKLY STAINED	HEAVY RAIN PRIOR TO TESTING, WATER EXTREMELY HIGH; MOVED DOWNSTREAM TO SAMPLE WADEABLE/MID-DEPTH
BRUNSWICK CANOE PORTAGE (BCP)	ANDROSCOGGIN RIVER - A299 - VRMP	6/22/2014	7:45 AM	N	BASEFLOW	MEDIUM	15.1	WADING	CLEAR	CALM	CLEAR, PARTLY CLOUDY	RUN	DARKLY STAINED	WADEABLE/MID-DEPTH
BRUNSWICK CANOE PORTAGE (BCP)	ANDROSCOGGIN RIVER - A299 - VRMP	7/20/2014	8:00 AM	N	BASEFLOW	MEDIUM	18	BANK	PARTLY CLOUDY	CALM	CLEAR	RUN	MEDIUM STAINED	NON-WADEABLE/MID-DEPTH
BRUNSWICK CANOE PORTAGE (BCP)	ANDROSCOGGIN RIVER - A299 - VRMP	8/17/2014	7:45 AM	N		HIGH		WADING	CLOUDY		CLOUDY, LIGHT RAIN	RUN	DARKLY STAINED	NON-WADEABLE/MID-DEPTH COMPLETED ZERO DO CHECK-DID NOT RECORD RESULTS
BRUNSWICK CANOE PORTAGE (BCP)	ANDROSCOGGIN RIVER - A299 - VRMP	9/21/2014	7:45 AM	N	BASEFLOW	LOW	17	WADING	CLOUDY		CLOUDY, HEAVY RAIN, LIGHT RAIN, SHOWERS	RUN	MEDIUM STAINED	NON-WADEABLE/MID-DEPTH SAMPLE TIME ESTIMATED FROM START AND END TIME
BRUNSWICK CANOE PORTAGE (BCP)	ANDROSCOGGIN RIVER - A299 - VRMP	10/19/2014	7:30 AM	N	BASEFLOW	LOW	12.6	WADING	CLOUDY		CLOUDY	RUN	MEDIUM STAINED	LOTS OF GULLS AROUND WADEABLE/MID-DEPTH
BRUNSWICK CANOE PORTAGE (BCP)	ANDROSCOGGIN RIVER - A299 - VRMP	10/19/2014	7:30 AM	D				WADING						LOTS OF GULLS AROUND WADEABLE/MID-DEPTH
Fish Park Downstream (FPD)	ANDROSCOGGIN RIVER - A45 - VRMP	5/18/2014	7:50 AM	N			13.9	BANK	CLEAR	CALM	CLOUDY, FOGGY, HEAVY RAIN, LIGHT RAIN			NON-WADEABLE/MID-DEPTH
Fish Park Downstream (FPD)	ANDROSCOGGIN RIVER - A45 - VRMP	6/22/2014	8:00 AM	N	BASEFLOW	LOW	13.5	WADING	CLEAR	CALM	CLEAR	RUN	MEDIUM STAINED	WADEABLE/1.5 FT BELOW SURFACE

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	Flow	Stage	Air Temp (°C)	Sample Location	Current Weather	Air Condition	Past 24HR Weather	Habitat	Water Appearance	Comments
Fish Park Downstream (FPD)	ANDROSCOGGIN RIVER - A45 - VRMP	6/22/2014	8:00 AM	D				WADING						WADEABLE/1.5 FT BELOW SURFACE
Fish Park Downstream (FPD)	ANDROSCOGGIN RIVER - A45 - VRMP	7/20/2014	7:38 AM	N	BASEFLOW	LOW	18.5	BANK	CLOUDY, FOGGY	CALM	CLEAR, CLOUDY, FOGGY, MOSTLY CLOUDY	RUN	MEDIUM STAINED	WADEABLE/1.5 FT BELOW SURFACE DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Fish Park Downstream (FPD)	ANDROSCOGGIN RIVER - A45 - VRMP	8/17/2014	7:25 AM	N		HIGH	19.8	BANK	CLOUDY	CALM	CLOUDY, LIGHT RAIN	RUN	DARKLY STAINED	NON-WADEABLE/MID-DEPTH
Fish Park Downstream (FPD)	ANDROSCOGGIN RIVER - A45 - VRMP	9/25/2014	7:12 AM	N	BASEFLOW	LOW		WADING	CLOUDY, LIGHT RAIN	CALM	CLOUDY, LIGHT RAIN, MOSTLY CLOUDY, PARTLY CLOUDY	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Fish Park Downstream (FPD)	ANDROSCOGGIN RIVER - A45 - VRMP	10/19/2014	6:55 AM	N	BASEFLOW	LOW	6.8	WADING	CLOUDY		LIGHT RAIN		MEDIUM STAINED	WADEABLE/MID-DEPTH
Fish Park Upstream (FPU)	ANDROSCOGGIN RIVER - A47 - VRMP	5/18/2014	7:35 AM	N			13.9	BANK	CLEAR	CALM	CLOUDY, FOGGY, HEAVY RAIN, LIGHT RAIN			NON-WADEABLE/MID-DEPTH
Fish Park Upstream (FPU)	ANDROSCOGGIN RIVER - A47 - VRMP	6/22/2014	7:40 AM	N	BASEFLOW	LOW	13.5	WADING	CLEAR	CALM	CLEAR	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH
Fish Park Upstream (FPU)	ANDROSCOGGIN RIVER - A47 - VRMP	6/22/2014	7:40 AM	D				WADING						WADEABLE/MID-DEPTH
Fish Park Upstream (FPU)	ANDROSCOGGIN RIVER - A47 - VRMP	7/20/2014	7:15 AM	N	BASEFLOW	LOW	18.5	WADING	CLOUDY, FOGGY	CALM	CLEAR, CLOUDY, FOGGY, MOSTLY CLOUDY	RUN	MEDIUM STAINED	WADEABLE/1.5 FT BELOW SURFACE DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Fish Park Upstream (FPU)	ANDROSCOGGIN RIVER - A47 - VRMP	7/20/2014	7:15 AM	D				WADING						WADEABLE/1.5 FT BELOW SURFACE DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Fish Park Upstream (FPU)	ANDROSCOGGIN RIVER - A47 - VRMP	8/17/2014	7:20 AM	N		HIGH	19.8	BANK	CLOUDY	CALM	CLOUDY, LIGHT RAIN	RUN	DARKLY STAINED	NON-WADEABLE/MID-DEPTH
Fish Park Upstream (FPU)	ANDROSCOGGIN RIVER - A47 - VRMP	9/21/2014	6:50 AM	N	BASEFLOW	LOW		WADING	CLOUDY, LIGHT RAIN	CALM	CLOUDY, LIGHT RAIN, MOSTLY CLOUDY, PARTLY CLOUDY	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Fish Park Upstream (FPU)	ANDROSCOGGIN RIVER - A47 - VRMP	10/19/2014	6:40 AM	N	BASEFLOW	LOW	6.8	WADING	CLOUDY		LIGHT RAIN		MEDIUM STAINED	WADEABLE/MID-DEPTH
Fish Park Upstream (FPU)	ANDROSCOGGIN RIVER - A47 - VRMP	10/19/2014	6:40 AM	D				WADING						WADEABLE/MID-DEPTH

Organization Site Code	VRMP Site ID	Date	Time	** Sample Type Qualifier	Flow	Stage	Air Temp (°C)	Sample Location	Current Weather	Air Condition	Past 24HR Weather	Habitat	Water Appearance	Comments
Pejepscot Boat Launch (PBL)	ANDROSCOGGIN RIVER - A71 - VRMP	5/18/2014	6:55 AM	N			13.9	WADING	CLEAR	CALM	CLOUDY, FOGGY, HEAVY RAIN, LIGHT RAIN			WADEABLE/MID-DEPTH
Pejepscot Boat Launch (PBL)	ANDROSCOGGIN RIVER - A71 - VRMP	5/18/2014	6:55 AM	D				WADING						WADEABLE/MID-DEPTH
Pejepscot Boat Launch (PBL)	ANDROSCOGGIN RIVER - A71 - VRMP	6/22/2014	7:10 AM	N	BASEFLOW	LOW	13.5	WADING	CLEAR	CALM	CLEAR	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH
Pejepscot Boat Launch (PBL)	ANDROSCOGGIN RIVER - A71 - VRMP	7/20/2014	6:05 AM	N	BASEFLOW	LOW	18.5	WADING	CLOUDY, FOGGY	CALM	CLEAR, CLOUDY, FOGGY, MOSTLY CLOUDY	RUN	MEDIUM STAINED	WADEABLE/1.5 FT BELOW SURFACE DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Pejepscot Boat Launch (PBL)	ANDROSCOGGIN RIVER - A71 - VRMP	8/17/2014	7:00 AM	N		HIGH		WADING	CLOUDY		CLOUDY, LIGHT RAIN	RUN	DARKLY STAINED	NON-WADEABLE/MID-DEPTH
Pejepscot Boat Launch (PBL)	ANDROSCOGGIN RIVER - A71 - VRMP	9/21/2014	6:12 AM	N	BASEFLOW	LOW		WADING	CLOUDY, LIGHT RAIN	CALM	CLOUDY, LIGHT RAIN, MOSTLY CLOUDY, PARTLY CLOUDY	RUN	MEDIUM STAINED	WADEABLE/MID-DEPTH DISSOLVED OXYGEN NOT ENTERED-CALIBRTATION VALUE NOT ENTERED ON FIELDSHEET.
Pejepscot Boat Launch (PBL)	ANDROSCOGGIN RIVER - A71 - VRMP	10/19/2014	5:50 AM	N	BASEFLOW	LOW	6.8	WADING	CLOUDY		LIGHT RAIN		MEDIUM STAINED	WADEABLE/MID-DEPTH