

Section 5-2 Bagaduce River & Tributaries (Bagaduce Watershed Association)

Refer to Chapter 4 of this document for information about sampling methods, sampling sites, and quality assurance.

Overview

The Bagaduce Watershed Association (BWA) was formed in 2002 because of interest and concern for the river. The association began sampling in 2003 and has been very active since then. The volunteer group now includes over 100 members and 11 river monitors. The group has been monitoring several freshwater streams as well as sites in the Bagaduce River estuary. In addition to monitoring, the group has also done eelgrass transplants in cooperation with Maine Department of Transportation.

The Bagaduce River is located on the coast of Maine in the eastern part of Penobscot Bay. The watershed includes seven major streams and ponds: Camp Stream, Winslow Stream, Mill Stream, Smelt Brook, Bagaduce Stream, Stony Brook, Mill Brook, Wight Pond, Snake Pond, Parker Pond, Walker Pond, Frost Pond, Black Pond, and Pierce Pond which have all been monitored at one time or another. These waterbodies drain to the Bagaduce River – an estuary that flows into Penobscot Bay. The watershed includes parts of five towns: Brooksville, Blue Hill, Castine, Penobscot, and Sedgewick. The river has a total watershed area of 125 square miles. Land use in the watershed consists primarily of forest, wetlands, low intensity residential, roads, agriculture, shoreline development, and limited commercial development. Maine Maritime Academy (MMA) is located in Castine; it has an associated ship pier, the training ship *State of Maine*, and an undergraduate oceanography program. The headwaters of the Bagaduce, especially Walker Pond, support a unique dwarf alewife (a subspecies of *Alosa pseudoharengus*), and the estuary supports some of the best remaining eelgrass beds (*Zostera marina*) found in Hancock County.

The statutory water class of the freshwater tributaries to the Bagaduce River are Class B, and the Bagaduce River estuary is Class SA/SB.¹ All freshwater lakes and ponds are Class GPA – the only State classification for lakes. According to the DEP “2010 Integrated Water Quality Monitoring and Assessment Report”, the Bagaduce River and streams are placed in “Category 2: Rivers and Streams Attaining some Designated Uses-Insufficient Information for Other Uses”. The Penobscot River and Bagaduce River in Castine-Penobscot are placed in “Category 2: Estuarine and Marine Waters Attaining some Designated Uses-Insufficient Information for Other Uses”. It is listed here for the Department of Marine Resources’ closure of 2.5 square miles to shellfishing due to overboard discharges (on-site sewage treatment systems). Past monitoring by BWA has indicated that some of the freshwater streams (Camp Stream, Mill Brook, Mill Stream, and Smelt Brook) experience water temperature and dissolved oxygen levels that may be of concern. Because of the rural nature of the area, most of the problems may be due to natural

¹ See Water Classification webpage for further clarification of classification of these waters: www.maine.gov/dep/blwq/docmonitoring/classification/index.htm

causes (e.g. low flow, beaver activity). Macroinvertebrate community rapid assessments were also done on Mill Stream, Mill Brook, Winslow Stream, Stoney Brook, and Camp Stream. There was a good diversity of macroinvertebrates with many mayflies, stoneflies, and caddisflies, indicating good water quality.

The overall purpose of monitoring is to assess water quality data to determine whether the river is meeting water quality classification standards. The Bagaduce River Watershed Sampling and Analysis Plan states that the overall objectives of monitoring are to: (1) assess overall health of the Bagaduce tributaries and river; and (2) assess habitat value for native coldwater fish species.

Methods

During the 2011 field season, the volunteers monitored the Bagaduce River at four estuary sites (Bridges Point, Lords Cove, Tills Point, and Youngs Island) and at four freshwater streams (Camp Stream, Mill Brook, Mill Stream and Winslow Stream) (Table 5-2-1 and Figures 5-2-1 through 5-2-3). All of the estuary sites were non-approved sites, while the freshwater sites were VRMP approved. Maine currently has no formal volunteer based monitoring program for marine and estuary environments.

Table 5-2-1: Bagaduce Watershed Association sampling sites.

VRMP Site ID	Organization Site Code	Sample Location	Class
Camp Stream-NBGCS08-VRMP	Site #1	Camp Stream	B
Winslow Stream-NBGWS32-VRMP	Site #2	Winslow Stream	B
Mill Brook-NBGMB07-VRMP	Site #3	Mill Brook	B
Mill Stream-NBGMS02-VRMP	Site #4	Mill Stream	B
Bagaduce River-NBG-BWA	Bridges Point	Bridges Point	SA/SB
Bagaduce River-NBG-BWA2	Lords Cove	Lords Cove	SA/SB
Bagaduce River-NBG132-BWA	Tills Point	Tills Point	SA/SB
Bagaduce River-NBG133-BWA	Youngs Island	Youngs Island	SA/SB

Monitoring was generally once a month in May and twice a month, if possible, during June, July and August. Samples taken in September and October reverted to the once-a-month schedule. Volunteers were encouraged to sample storm events any time there was more than one inch of rain measured at neighboring weather stations. Water temperature, dissolved oxygen (DO), specific conductance (or salinity for estuarine sites), and water clarity were measured in the summer. Water temperature, specific conductance, and water clarity were taken during or after storms. Water temperature was measured with a handheld thermometer. Dissolved oxygen was measured with LaMotte all-liquid Titration kits (Model 5860). Specific conductance was measured at Camp Stream, Mill Brook, and Winslow Stream with Oakton ECTestr 11+ conductivity pens. Salinity was measured with a refractometer. Turbidity was measured using 120 cm transparency tubes. Transparency tubes are plexiglass tubes with a secchi disk target at the bottom. Visibility is a measure of transparency (it is the distance at which the secchi target is visible at the bottom of the turbidity tube, and it ranges from 0-120 cm), and is just the opposite of turbidity. That is, a transparency tube reading of 120 cm is clear water, while 120 NTU from a turbidity meter is very cloudy and almost opaque.



Figure 5-2-1: Map of all Bagaduce Watershed Association sampling sites on the Bagaduce River and tributaries.

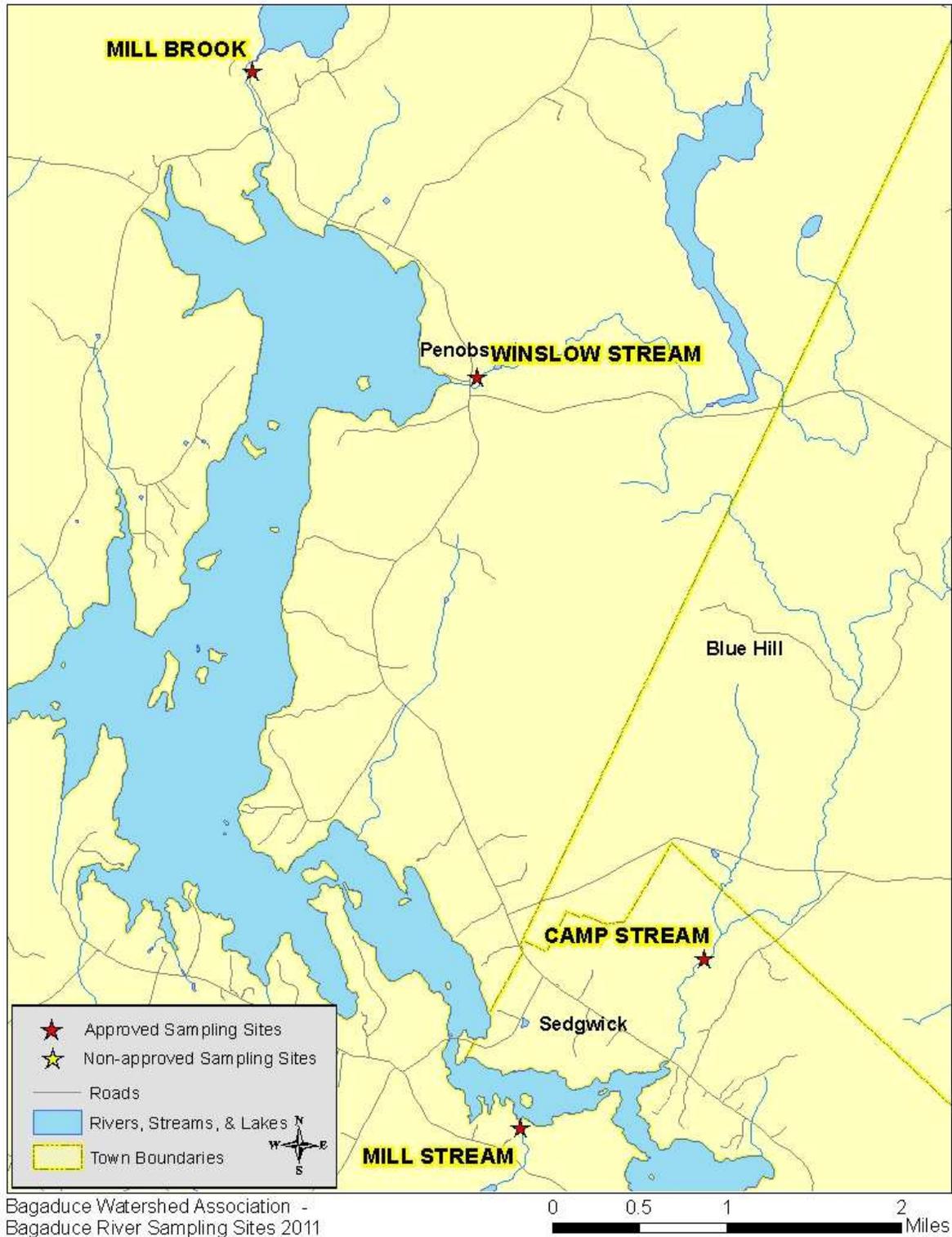


Figure 5-2-2: Map of approved freshwater Bagaduce Watershed Association sampling sites on the Bagaduce River and tributaries.

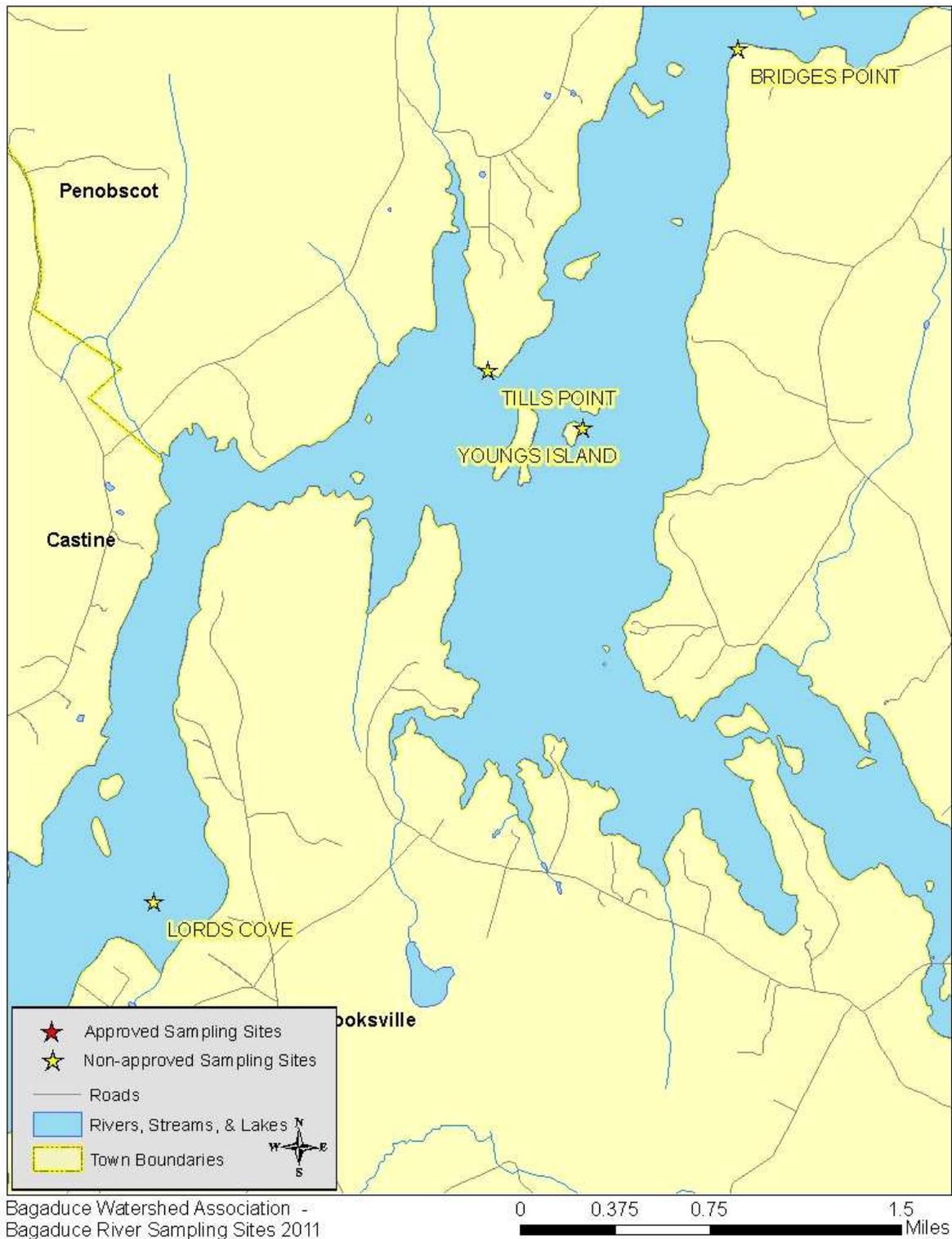


Figure 5-2-3: Map of non-approved Bagaduce Watershed Association sampling sites on the Bagaduce River estuary.

Results

Refer to Appendices A-1 and A-2 in discussion of individual site data and trends, as well as graphed data (5-2-4 through 5-2-13), at the end of this section of the report.

Dissolved Oxygen

Dissolved oxygen was measured 3-10 times at each of the eight sampling sites (Table 5-2-2 and Table 5-2-3). Dissolved oxygen saturation was a calculated value when both dissolved oxygen in mg/l and temperature were measured. Monitoring occurred from May through October. For freshwater, Class B criteria for DO 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. For the Bagaduce River estuary, Class SA standards are “as naturally occurs” and Class SB standards are 85% saturation.

Table 5-2-2: A summary of minimum, maximum, and average dissolved oxygen concentration values (mg/l) at Bagaduce Watershed Association monitoring sites on the Bagaduce River.

Site	Approved Site	# of Samples	Minimum Value	Maximum Value	Average Value
Camp Stream Site #1	Y	10	4.3	8.5	6
Winslow Stream Site #2	Y	8	5.4	8.6	7.2
Mill Brook Site #3	Y	9	6.2	8.8	7.2
Mill Stream Site #4	Y	3	7	9.7	8.4
Bridges Point	N	9	6.2	9.9	8
Lords Cove	N	6	5.8	7.7	6.8
Tills Point	N	7	7.2	9.7	8.6
Youngs Island	N	7	6.4	12.8	8.4

Table 5-2-3: A summary of minimum, maximum, and average dissolved oxygen saturation values (%) at Bagaduce Watershed Association monitoring sites on the Bagaduce River.

Site	Approved Site	# of Samples	Minimum Value	Maximum Value	Average Value
Camp Stream Site #1	Y	9	50.1	77.1	64.3
Winslow Stream Site #2	Y	3	72.4	84.6	78.5
Mill Brook Site #3	Y	9	72.9	85.8	79.3
Mill Stream Site #4	Y	3	80.1	110.9	90.6
Bridges Point	N	9	66	95.1	81.6
Lords Cove	N	6	55.2	78.8	67.3
Tills Point	N	4	73.2	102.5	87
Youngs Island	N	7	67.6	124.2	84.1

Dissolved oxygen concentrations measured in the Bagaduce River Estuary sites ranged from 5.8 mg/l to 12.8 mg/l. The freshwater sites ranged from 4.3 mg/l to 9.7 mg/l. Camp Stream had its highest values in early June and the remaining values were fairly low. Dissolved oxygen dropped below the Class B standard of 7.0 mg/l for 8 out of 9 sampling events, with an average of 6.0 mg/l and ranging from 4.3 mg/l to 8.5 mg/l. Camp Stream is characterized by alternating riffles and pools, with much more slow water than active riffles in the summer time. There are also many beaver ponds. Low water, poor circulation, and high temperatures are probably at fault for summer DO problems. Mill Brook was sampled from May through October and generally had its highest values from May through June. It dropped below the Class B standard in July, during the warmest month of the year (the water temperature was 23°C and 24.5°C on those dates, above 73°F), but oxygen saturation remained 72.9% or above. Given that the stream originates in Pierce Pond (shallow dark water ponds can be efficient solar heat collectors) and that July was hot and fairly dry, the noted variation in DO is almost certainly due to natural causes. August was cooler and wetter, and oxygen levels improved. Mill Stream was sampled 3 times and oxygen levels were good on all dates. Winslow Stream was sampled from May through October and had its highest values in early spring and October. Dissolved oxygen concentrations dropped below the Class B standard for a single day in August. Since we have no temperature data, we cannot tell if the percent saturation was also too low. One other low DO event was recorded where the concentration was just barely acceptable. This was July 15, where the concentration was 7 mg/L but the saturation was 72.4%. This is probably close enough to ignore. The low DO saturation levels are probably due to natural causes. So far, these streams seem like typical Maine coastal trout streams.

At the estuary sites, dissolved oxygen ranged from 5.8 mg/l to 12.8 mg/l and percent saturation ranged from 55.2% to 124.2%. Every estuary site had some values below the Class SB standards. Bridges Point dropped below the Class SB concentration standard on a single date, on July 26. However, the percent saturation was below 85% for five sample dates in July, August, and early September. Just like last year, Lords Cove was below the Class SB standard for oxygen saturation on all 6 sampling events and experienced the lowest DO readings for the 2011 field season. This is disturbing because this is our coldest site with the most marine influence (see Temperature plot, Appendix A-1). On an ebb tide, Lords Cove is below the first tidal falls (which would thoroughly mix the out-going estuary water). On the flood tide, the water might be stratified and therefore not representative of the whole mass of water at Lords Cove. Tills Point had DO concentrations that were acceptable at all sites, but the percent saturation was low on 2 out of 4 sample dates. At nearby Youngs Island, almost all of the DO concentration measurements were acceptable, but 5 out of 7 percent saturation measurements were below Class SB standards from July through October. Very high DO saturation at Youngs Island (124.2%) may reflect algal blooms on the mud flats. Any algal blooms could be signs of nutrient enrichment within the estuary. Algal blooms should be reported to Maine DEP, either the Marine or Rivers Program.

It is surprising that the estuary sites had values below the Class SB standard for all sites. The estuary has a strong marine influence with three tidal falls. Freshwater inputs are small and diffuse (so there should be little stratification based on salinity). On the other hand, there are large tidal flats, some coastal development, and some aquaculture. Thermal stratification could develop due to heating in the tidal flats (and might persist until it went through one of the tidal

falls). Our sampling approach may also not be the best for the circumstances. Almost all of the sampling in 2011 in the estuary was done using LaMotte titration kits. Samples are collected by reaching down into the water from a boat or from the shore in a constricted area or from a dock. One concern was whether the monitors were able to obtain a representative sample by only sampling the surface. DEP staff thinks that the estuarine monitoring program would be improved by using electronic meters with probes that can be lowered on a cable. This provides a DO and temperature profile from top to bottom; this is more easily interpreted with confidence.

Water Temperature

Temperature was measured 4-9 times at each of the four estuary sites and 3-9 times at each of the four freshwater sampling sites (Table 5-2-4). Monitoring occurred from May through October. 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.

Table 5-2-4: A summary of minimum, maximum, and average temperature values (°C) at Bagaduce Watershed Association monitoring sites on the Bagaduce River.

Site	Approved Site	# of Samples	Minimum Value	Maximum Value	Average Value
Camp Stream Site #1	Y	9	11	24.5	19.5
Winslow Stream Site #2	Y	2	14.6	17	15.8
Mill Brook Site #3	Y	9	13	24.5	20.3
Mill Stream Site #4	Y	3	12.5	22	18.8
Bridges Point	N	9	11	20	16.8
Lords Cove	N	6	10	16.5	14.7
Tills Point	N	4	15.5	18	16.6
Youngs Island	N	7	13	18	15.9

Temperature measured at the estuary sites ranged from 6°C to 21°C (43-70°F). At Bridges Point, temperature ranged from 11°C to 20°C with the highest recorded estuary temperature for the year (21°C). The vast mudflats of Northern Bay influence summer water quality (high temperatures) at Bridges Point. At Lords Cove, the water temperature was generally the coldest, reflecting the marine influence in the lower estuary. Tills Point and Youngs Island were intermediate in temperature and very similar to each other; they are also physically close.

Temperature measured at the freshwater sites ranged from 11°C to 24.5°C. Mill Brook and Camp Stream had the highest recorded water temperatures for the freshwater sites 24.5 °C on July 19 or July 31 respectively. The highest air temperatures were generally around July 21. At

Mill Stream, water temperature ranged from 12.5°C to 22°C (but there were no July measurements). Winslow Stream temperatures ranged from 14.6°C to 17°C for the period of May through October. As mentioned above in the discussion of oxygen, streams with headwater lakes can be strongly influenced by solar heating. This is a natural process and does not reflect the influence of human activities.

Specific Conductance

Specific conductance was measured as many as 8 times at one of the freshwater sampling sites (Table 5-2-5). However, the watershed association only had two conductivity meters, so monitoring in other streams was limited. Monitoring occurred from May through October. 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.

Table 5-2-5: A summary of minimum, maximum, and average specific conductance (µS/cm) or salinity (ppt) values at Bagaduce Watershed Association monitoring sites on the Bagaduce River.

Site	Approved Site	# of Samples	Minimum Value	Maximum Value	Average Value
Camp Stream Site #1	Y	4	36	45	42
Winslow Stream Site #2	Y	1	34.2	34.2	34.2
Mill Brook Site #3	Y	8	22	24.2	23.4
Mill Stream Site #4	Y	0			
Bridges Point	N	9	26	30	28.6
Lords Cove	N	3	29	30	29.7
Tills Point	N	5	25	26	25.7
Youngs Island	N	6	26	27	26

All of the specific conductivity values were fairly consistent and ranged from 22 to 45 µS/cm for the three freshwater sites. These values are all considered low and are similar to expected background values in undeveloped watersheds. So far, there is no evidence of road salt contamination. Salinity was measured at the estuary sites (Table 5-2-5). The range was 25-30 ppt (parts per thousand), reflecting the strong marine influence and weak/diffuse nature of the freshwater tributaries.

pH

Freshwater and estuary pH was not measured in 2011. In the past, the river estuary has ranged from around 7 (reflecting a freshwater source) to 8 (representing the marine influence), while tributary stream pH ranged from about 5 during high flows to around 7 during summer low flows. Some of the lowest freshwater pH values may represent a problem for native fish, especially the minnows. Brook trout are among the most acid tolerant fish species in Maine

streams. Since the summer pH is high, we assume that acid rain problems are not very important in these watersheds and the low pH is probably of natural origins (organic acids from forest soils and marshes).

Turbidity/Transparency

Transparency was measured 1 to 9 times at the freshwater sites and 3-8 times in the estuary (Table 5-2-6). There are no state turbidity or transparency standards, but any measurable cloudiness could interfere with feeding for visual predators like fish. High turbidity could smother fish fry or eggs, or damage fish gills. Turbidity is also often indicative of erosion or other problems in the watershed. In order to evaluate the effects of turbidity on aquatic life, you need both intensity data (a transparency or turbidity measure) and some knowledge of the duration (in hours, days, and weeks).

Table 5-2-6: A summary of minimum, maximum, and average transparency values (cm) at Bagaduce Watershed Association monitoring sites on the Bagaduce River.

Site	Approved Site	# of Samples	Minimum Value	Maximum Value	Average Value
Camp Stream Site #1	Y	9	85	120	107
Winslow Stream Site #2	Y	2	120	120	120
Mill Brook Site #3	Y	8	120	120	120
Mill Stream Site #4	Y	1	120	120	120
Bridges Point	N	8	80	120	108
Lords Cove	N	3	80	120	97
Tills Point	N	5	120	120	120
Youngs Island	N	7	47	120	97

Camp Stream was the only freshwater site with any lower transparency values (noticeable water cloudiness). Two of these dates are associated with rainstorms, and two are associated with early seasonal sampling in late May or mid-June. Both of these early samples note good weather and moderate flows, but also “beaver activity” going on at the time. Beaver can muddy the water during dam building.

Visibility was mostly good in estuarine samples. However some fairly severe turbidity was reported in August and September (both wet months in 2011). At least two of the four dates with low transparency are storm dates, so the problem is probably muddy runoff from land. Contaminated runoff is associated with phosphorus and chemical inputs to estuaries and this can be harmful in the long-term. Lawn chemicals like fertilizer and pesticides are of special concern in these rural areas.

Discussion and Recommendations

There are numerous sources of pollution and other stresses to the Bagaduce River and tributary sites monitored by the Bagaduce Watershed Association 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., eroded soil, fertilizers, pesticides, sewage systems, heavy metals, petroleum residues, road salt, wildlife and pet feces) and polluted stormwater originating from impervious surfaces such as streets, parking lots, driveways, rooftops (even though development and roads are fairly sparse in the watershed), and from 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:

- Monitoring should include some early morning (before 8:00 am) sampling to document potential dissolved oxygen problems. 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; during the day, plant life is photosynthesizing. This is particularly important during the summer months of July to early September when temperatures are warmest and dissolved oxygen tends to be at the lowest levels.
- Focus monitoring on dissolved oxygen and temperature which appear to be the parameters of primary concern, especially in the estuary. High oxygen saturation can be a sign of nutrient enrichment, so watch for algal blooms on the mud flats. Low oxygen can also be due to enrichment, usually an organic source.
- pH monitoring was dropped in 2011. Conductivity also does not appear to be a problem during the field season. However, high conductivity due to road salt has been reported elsewhere in Maine. The highest values typically occur during the first thaw events in late winter and early summer (February to April). The BWA may want to begin their monitoring program in the freshwater streams in February to evaluate road salt impacts. Volunteers need to be careful, since this can be a dangerous time of year due to ice and high flows. Samples should not be taken if the situation is thought to be dangerous. Turbidity is also an issue. In the estuary, turbidity may reflect contaminated runoff and could be related to high or low oxygen values observed by volunteers. More information is needed about these issues.
- Continue monitoring at all stations to develop a long term trend database.

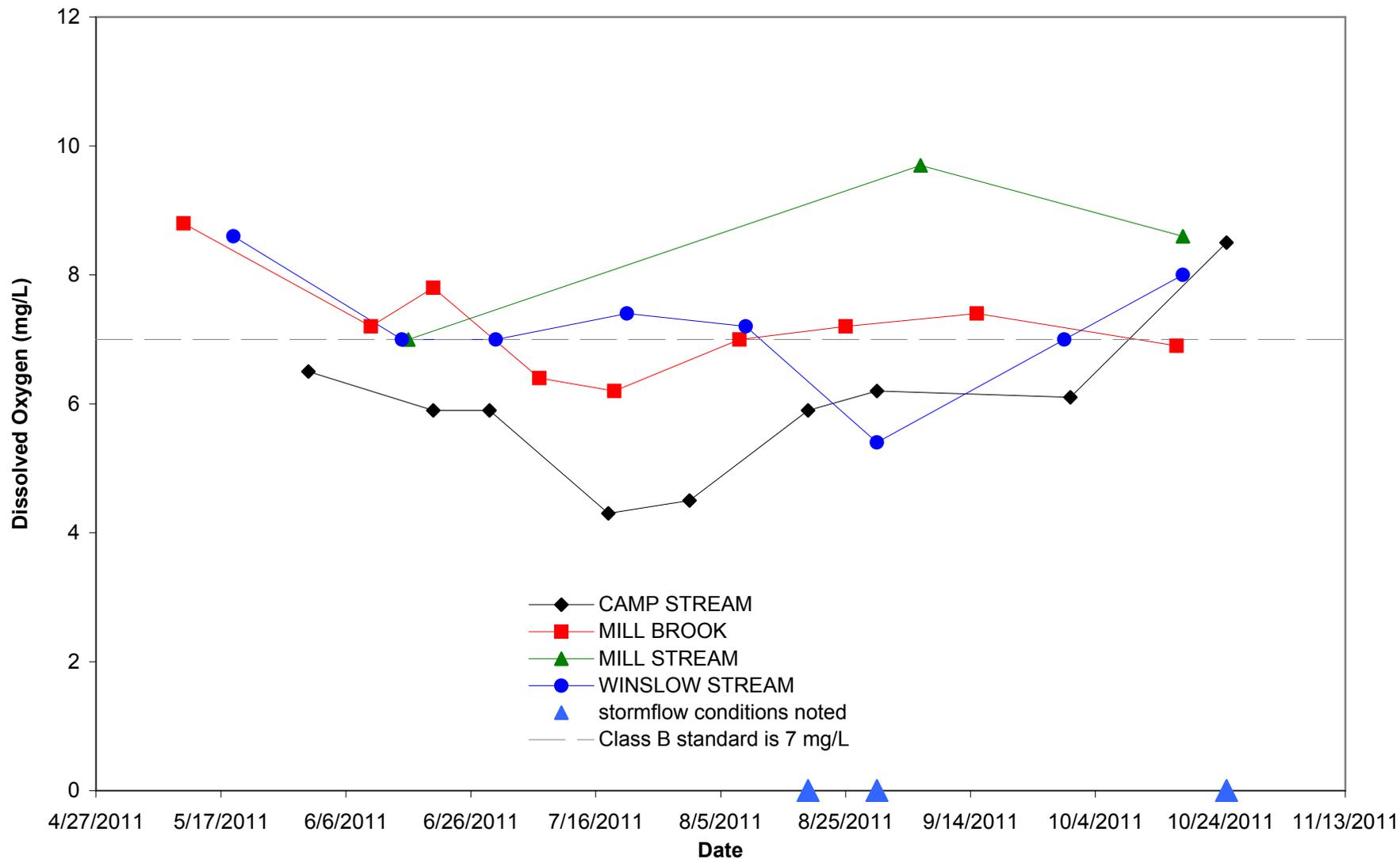


Figure 5-2-4. Dissolved oxygen concentrations at Bagaduce Watershed Association approved freshwater monitoring sites on the Bagaduce River for 2011.

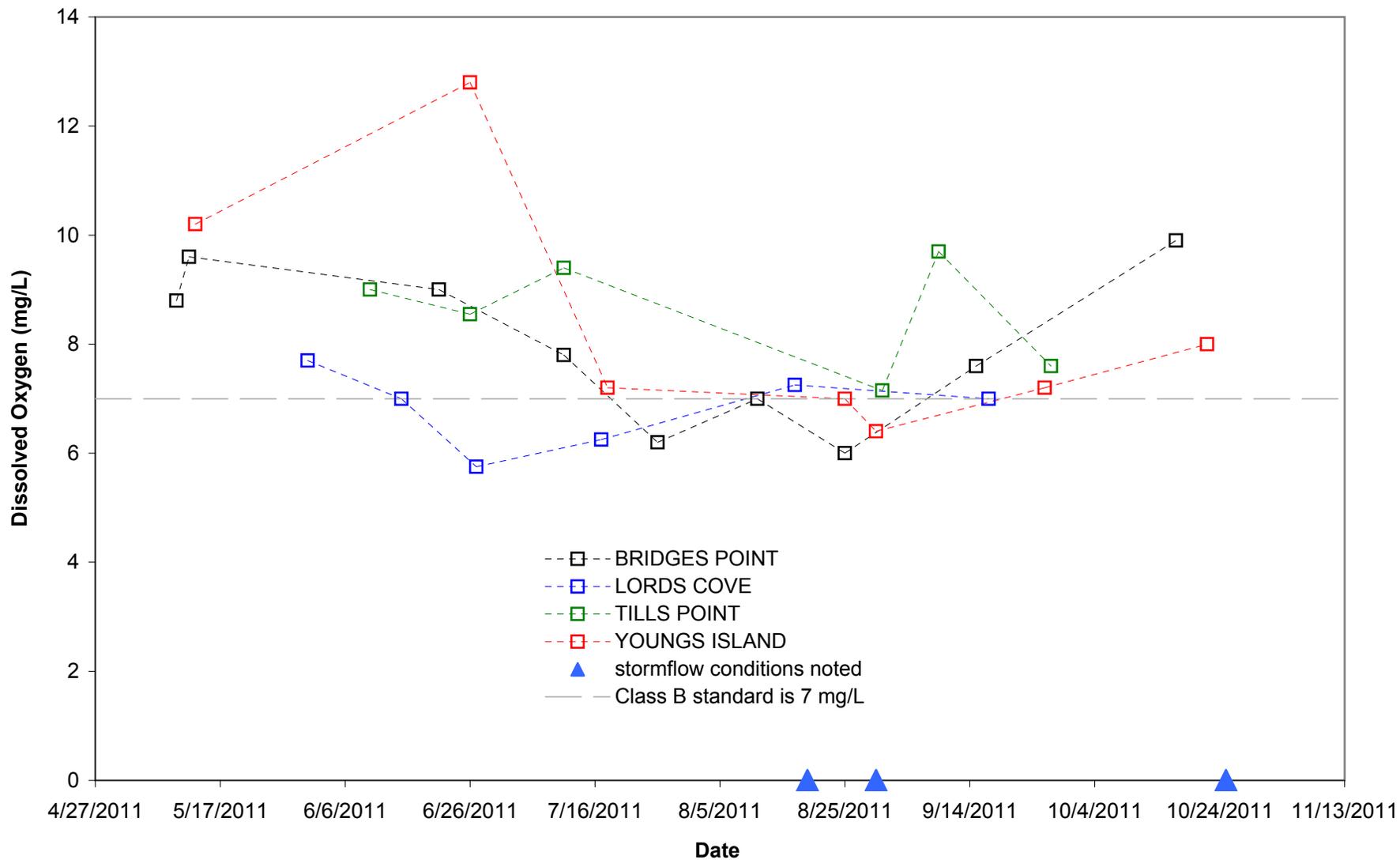


Figure 5-2-5. Dissolved oxygen concentrations at Bagaduce Watershed Association non-approved estuary monitoring sites on the Bagaduce River for 2011.

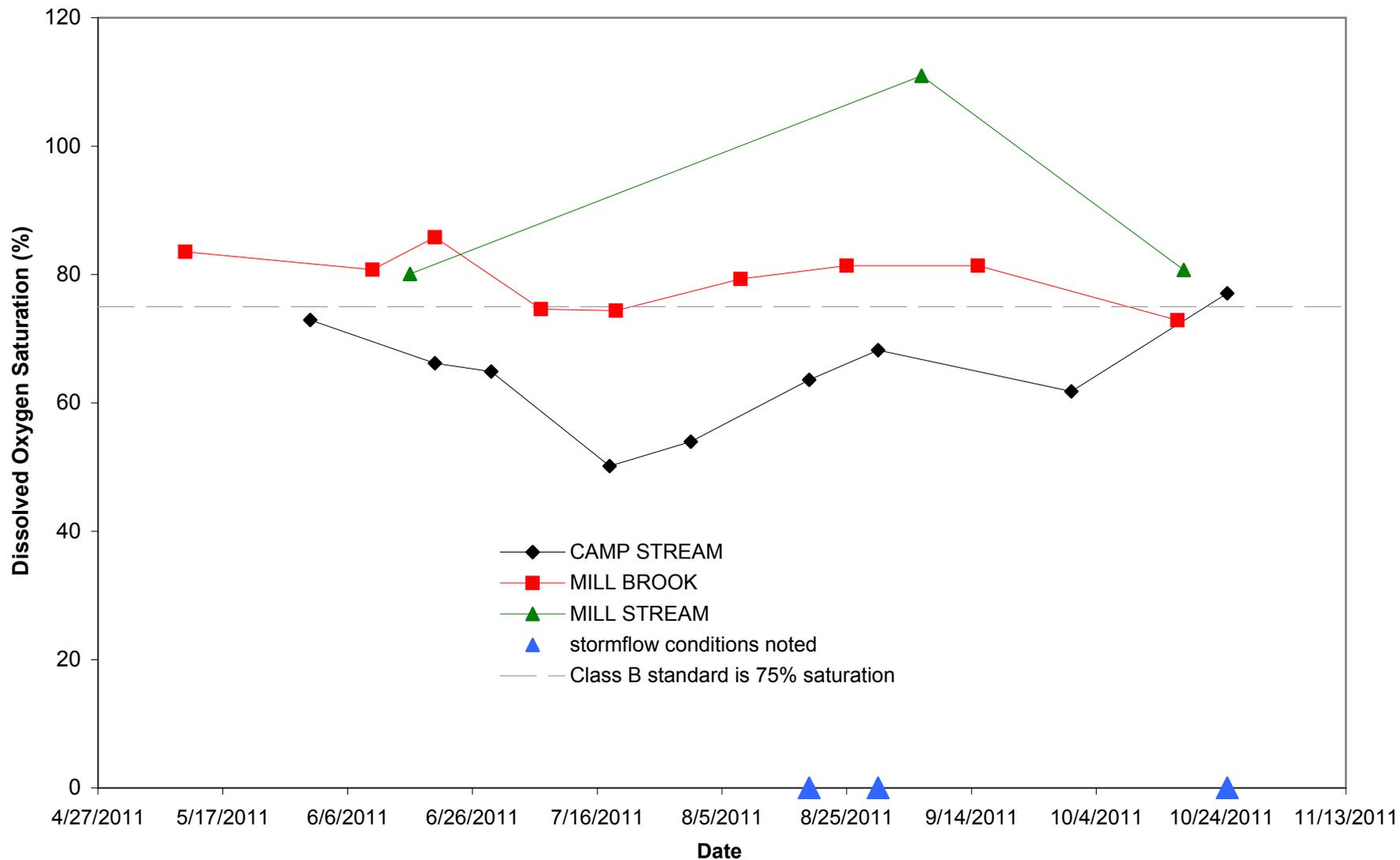


Figure 5-2-6. Dissolved oxygen % saturation at Bagaduce Watershed Association approved freshwater monitoring sites on the Bagaduce River for 2011.

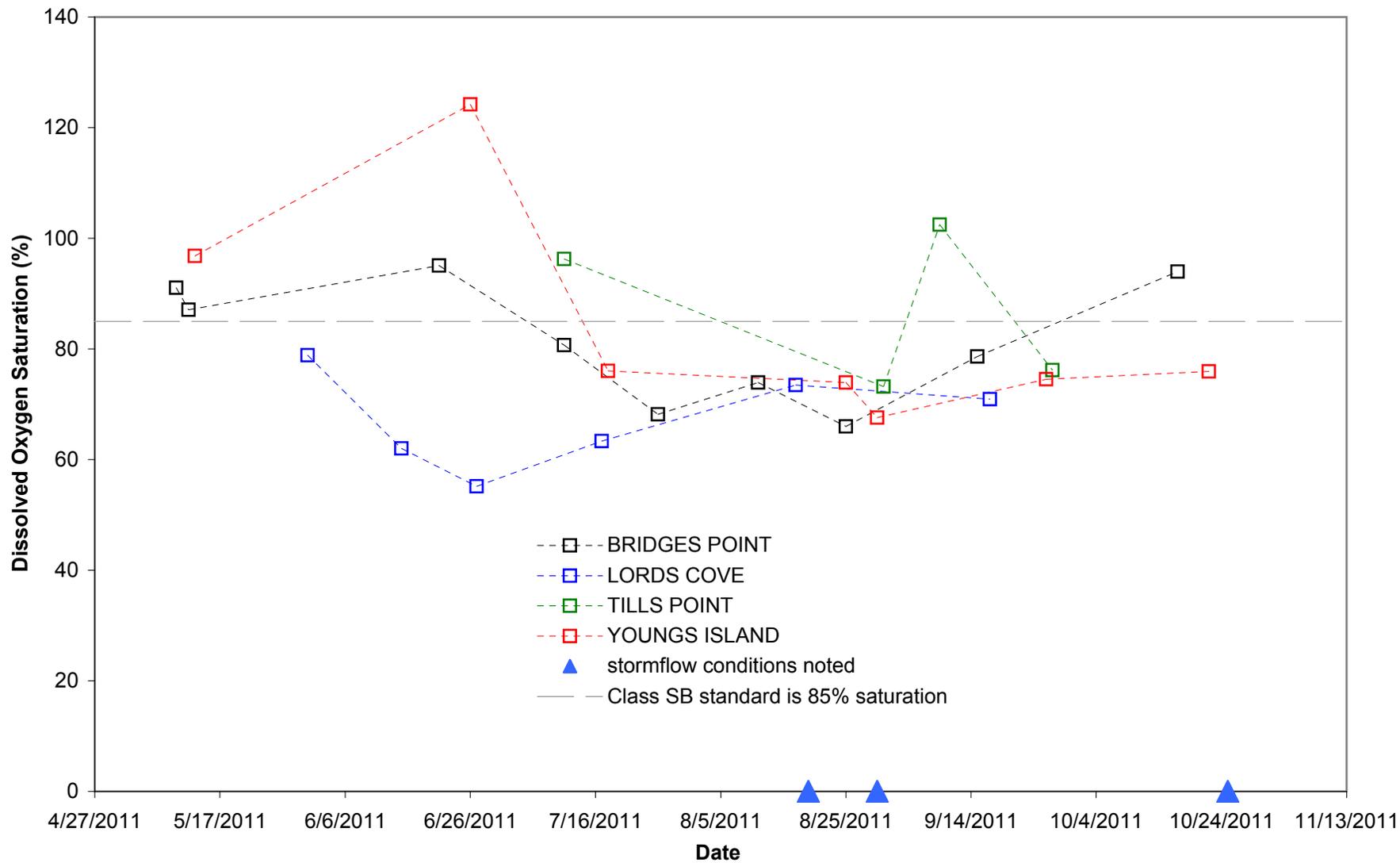


Figure 5-2-7. Dissolved oxygen % saturation at Bagaduce Watershed Association non-approved estuary monitoring sites on the Bagaduce River for 2011.

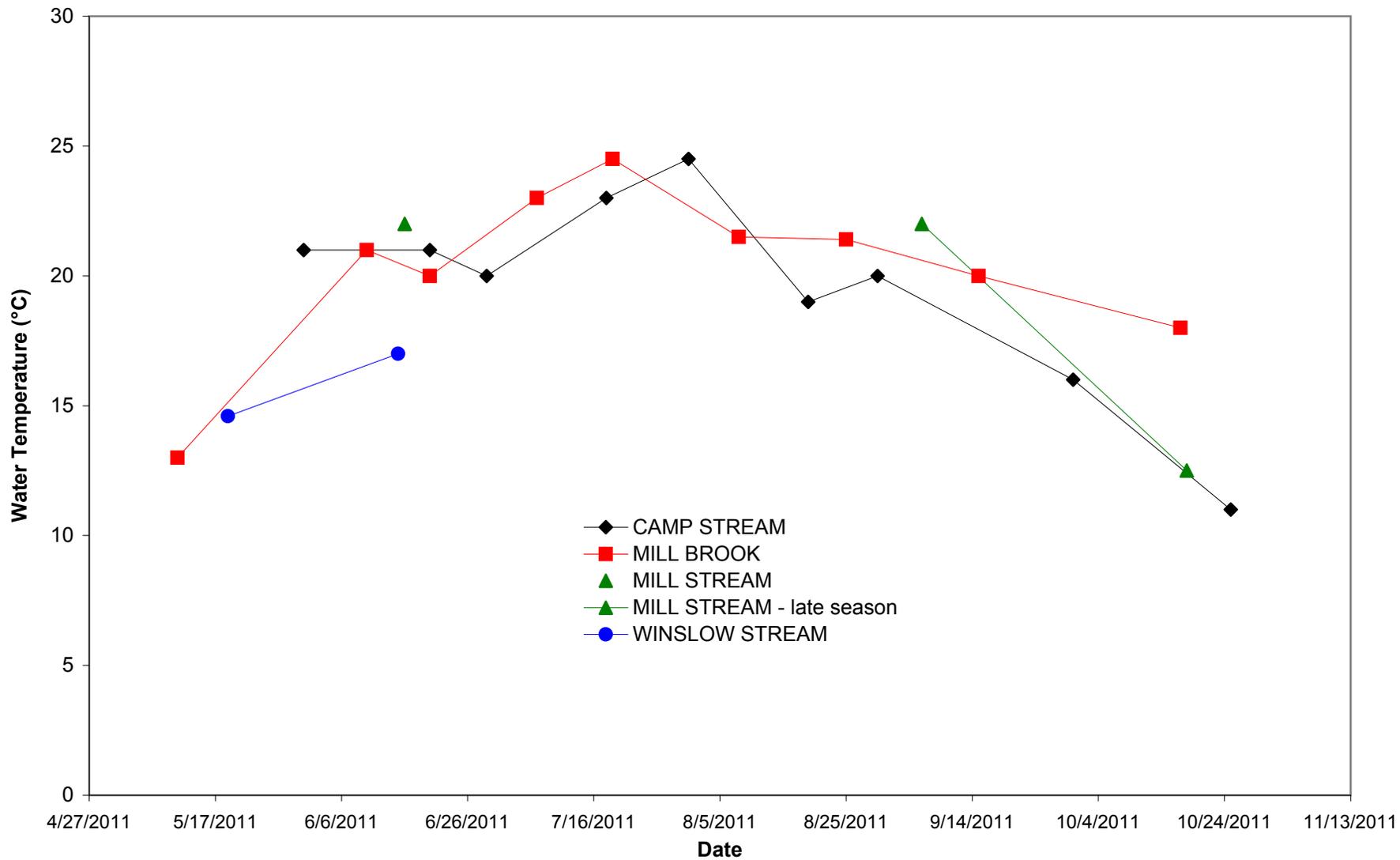


Figure 5-2-8. Water temperatures at Bagaduce Watershed Association approved freshwater monitoring sites on the Bagaduce River for 2011.

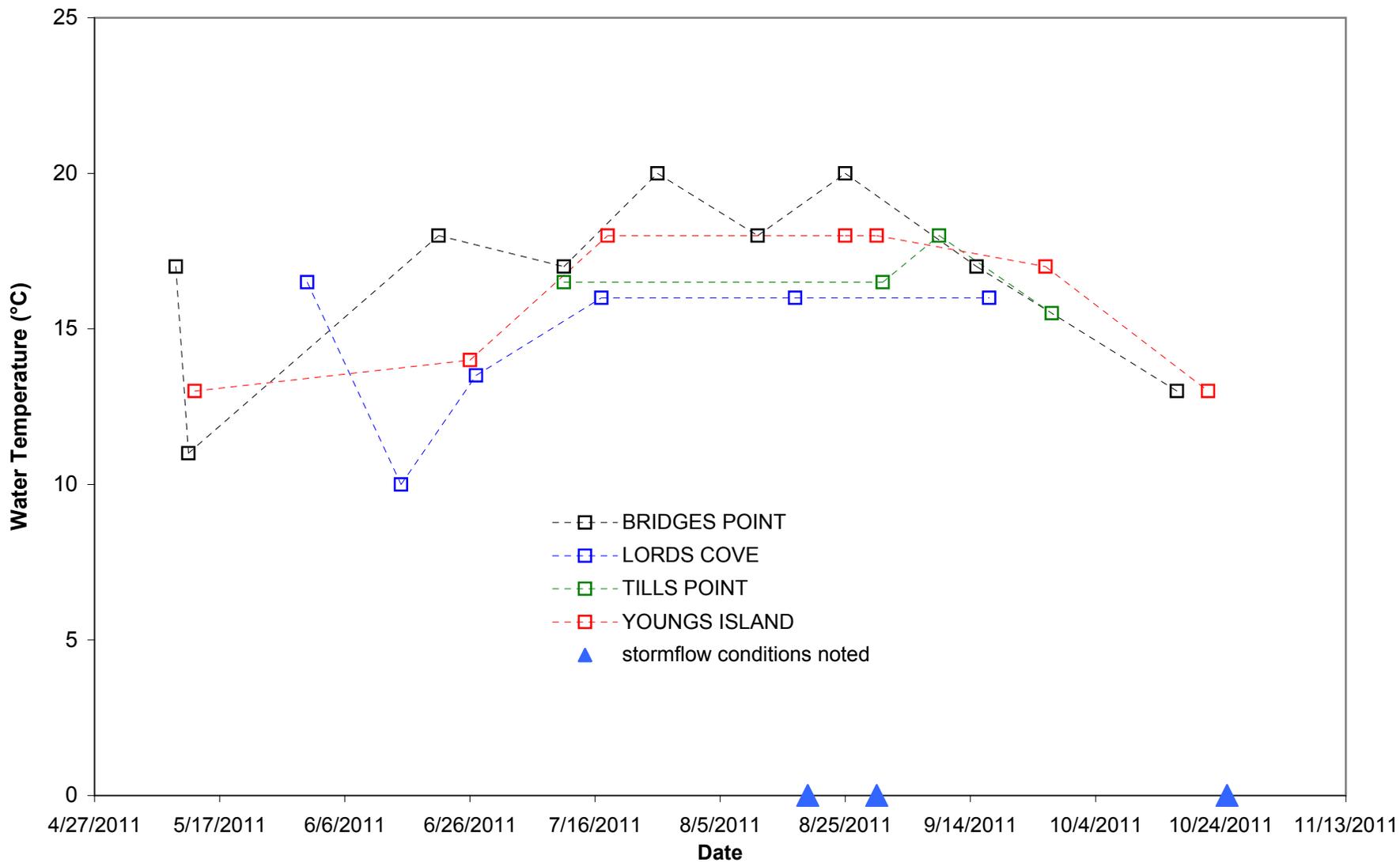


Figure 5-2-9. Water temperatures at Bagaduce Watershed Association non-approved estuary monitoring sites on the Bagaduce River for 2011.

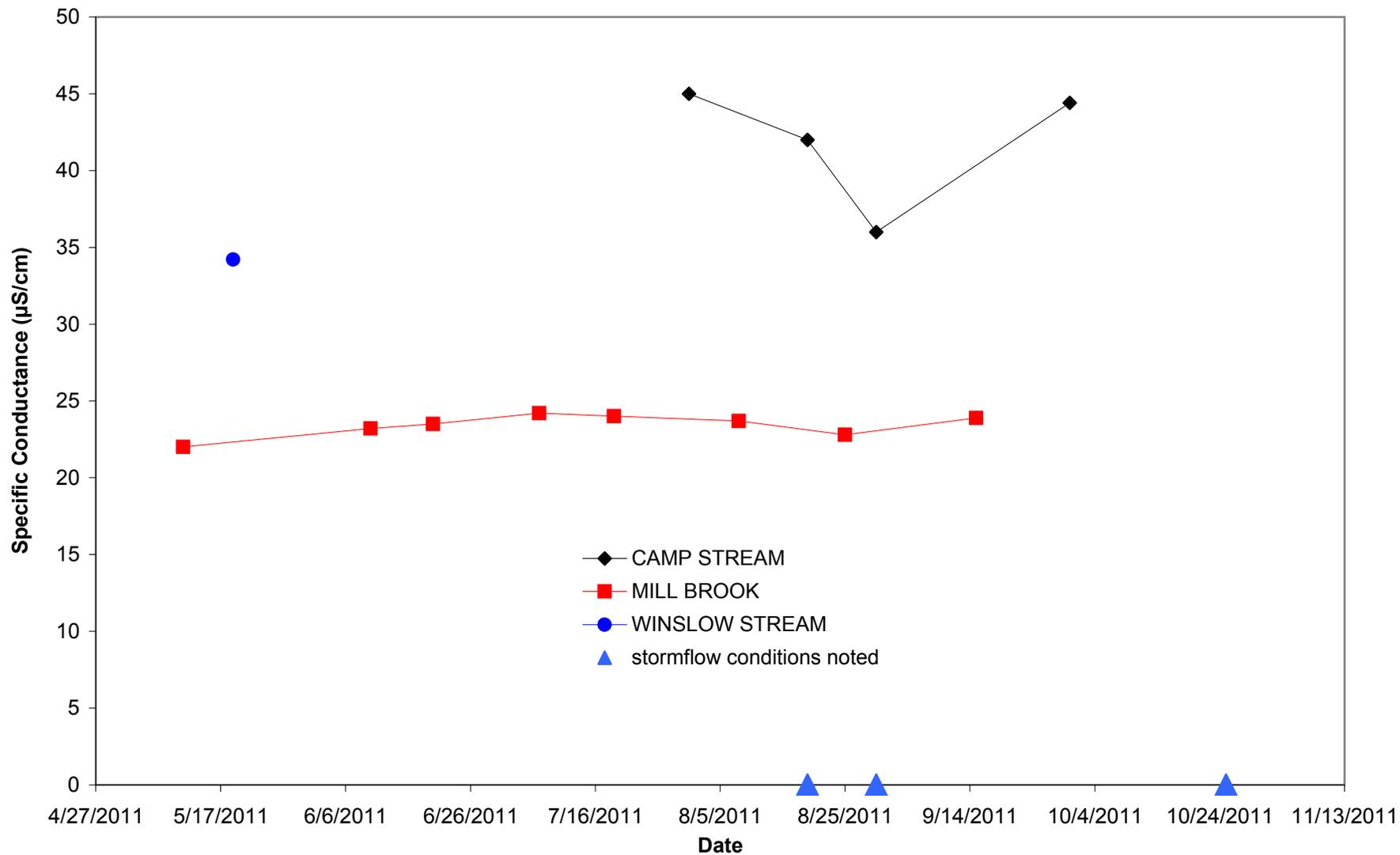


Figure 5-2-10. Specific conductance at Bagaduce Watershed Association approved freshwater monitoring sites on the Bagaduce River for 2011.

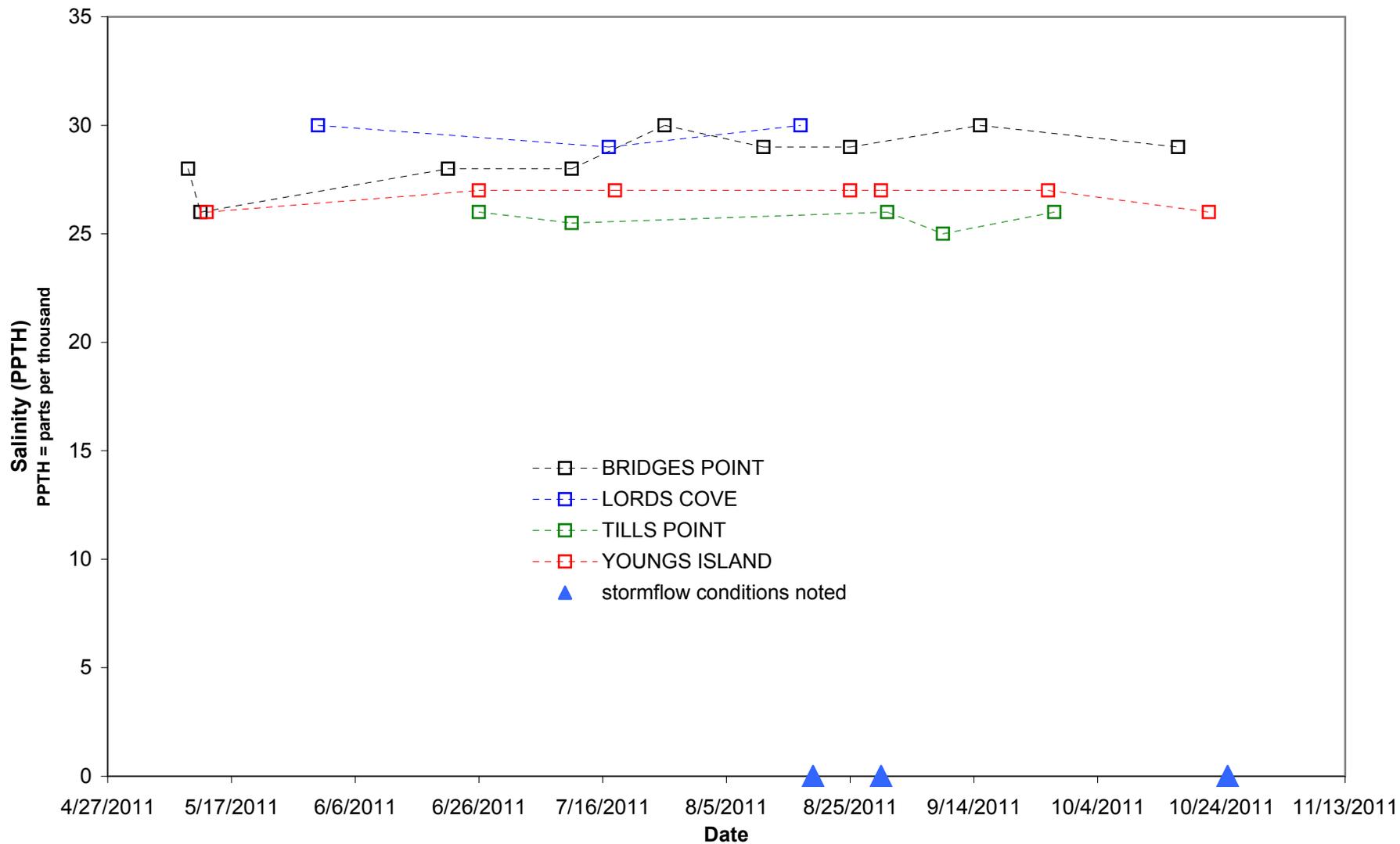


Figure 5-2-11. Salinity concentrations at Bagaduce Watershed Association non-approved estuary monitoring sites on the Bagaduce River for 2011.

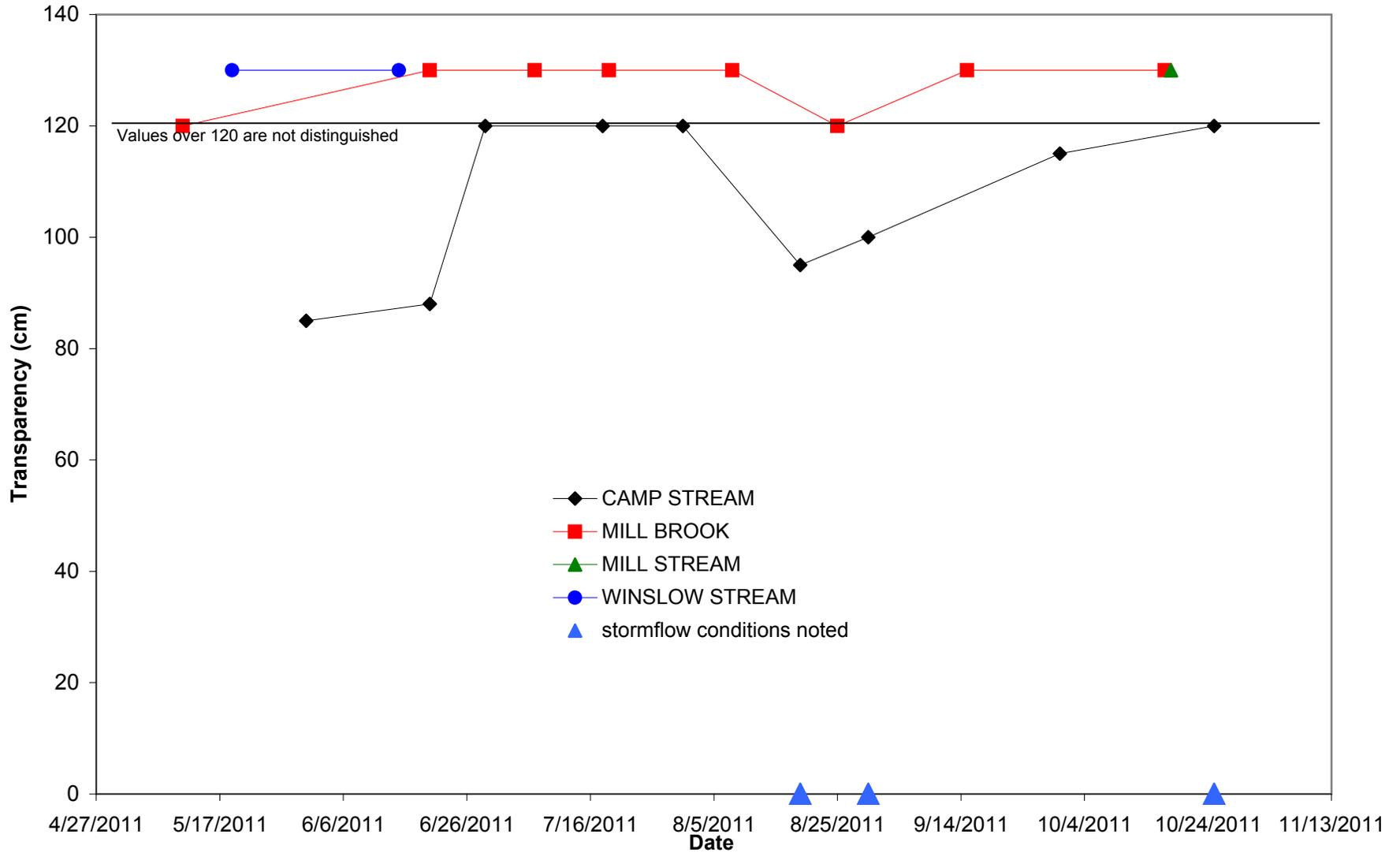


Figure 5-2-12. Transparency values at Bagaduce Watershed Association approved freshwater monitoring sites on the Bagaduce River for 2011.

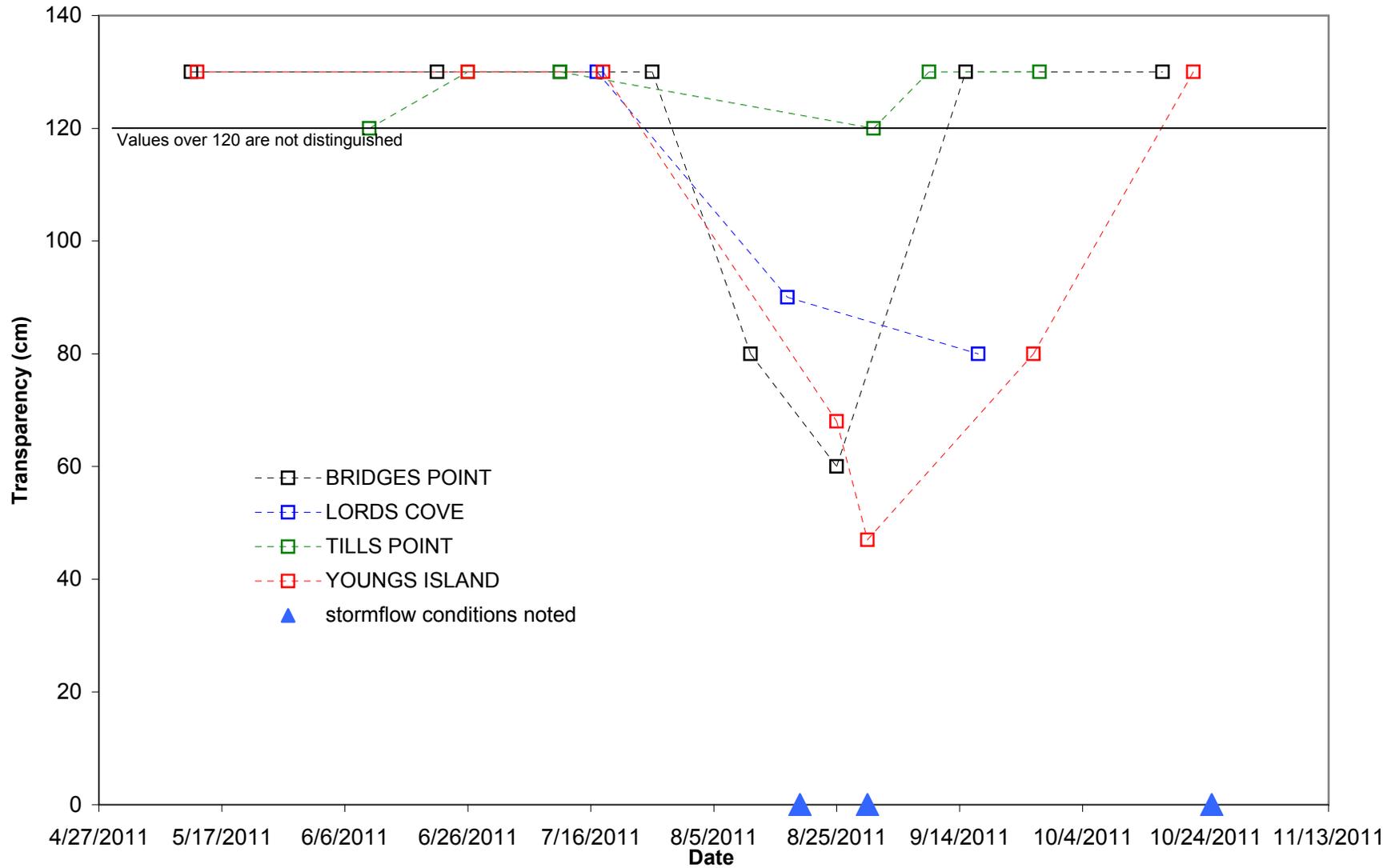


Figure 5-2-13. Transparency values at Bagaduce Watershed Association non-approved estuary monitoring sites on the Bagaduce River for 2011.

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" = normal environmental sample ; "D" = field duplicate; "D.O." = dissolved oxygen; "Spec. Cond" = specific conductance; "Turb" = turbidity

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)	Transpa rency (cm)	** TSS (MG/L)	E Coli Bacteria (MPN/ 100ML)
Bagaduce River - Bagaduce Watershed Association (Approved Sites)														
SITE #1 - CAMP STREAM	CAMP STREAM-NBGCS08-VRMP	5/31/2011	2:00 PM	N			21	72.91	6.5			85		
SITE #1	CAMP STREAM-NBGCS08-VRMP	6/20/2011	11:30 PM	N			21	66.18	5.9			88		
SITE #1	CAMP STREAM-NBGCS08-VRMP	6/29/2011	2:00 PM	N			20	64.89	5.9			120		
SITE #1	CAMP STREAM-NBGCS08-VRMP	6/29/2011	2:00 PM	D					5.8					
SITE #1	CAMP STREAM-NBGCS08-VRMP	7/18/2011	11:00 AM	N			23	50.13	4.3			120		
SITE #1	CAMP STREAM-NBGCS08-VRMP	7/31/2011	2:30 PM	N			24.5	53.96	4.5	45		120		
SITE #1	CAMP STREAM-NBGCS08-VRMP	8/19/2011	8:30 AM	N			19	63.6	5.9	42		95		
SITE #1	CAMP STREAM-NBGCS08-VRMP	8/30/2011	4:00 PM	N			20	68.19	6.2	36		100		
SITE #1	CAMP STREAM-NBGCS08-VRMP	9/30/2011	11:30 AM	N			16	61.8	6.1	44.4		115		
SITE #1	CAMP STREAM-NBGCS08-VRMP	10/25/2011	12:00 PM	N			11	77.08	8.5			120		
SITE #2 - WINSLOW STREAM	WINSLOW STREAM-NBGWS32-VRMP	5/19/2011	9:30 AM	N			14.6	84.55	8.6	34.2		>120		
SITE #2	WINSLOW STREAM-NBGWS32-VRMP	6/15/2011	10:40 AM	N			17	72.43	7			>120		
SITE #2	WINSLOW STREAM-NBGWS32-VRMP	6/30/2011	9:15 AM	N					7					
SITE #2	WINSLOW STREAM-NBGWS32-VRMP	7/21/2011	9:10 AM	N					7.4					
SITE #2	WINSLOW STREAM-NBGWS32-VRMP	8/9/2011	8:50 AM	N					7.2					
SITE #2	WINSLOW STREAM-NBGWS32-VRMP	8/30/2011	9:22 AM	N					5.4					
SITE #2	WINSLOW STREAM-NBGWS32-VRMP	9/29/2011	9:15 AM	N					7					
SITE #2	WINSLOW STREAM-NBGWS32-VRMP	10/18/2011	9:15 AM	N					8					
SITE #3 - MILL BROOK	MILL BROOK-NBGMB07-VRMP	5/11/2011	9:41 AM	N			13	83.52	8.8	22		120		
SITE #3	MILL BROOK-NBGMB07-VRMP	6/10/2011	8:30 AM	N			21	80.76	7.2	23.2				
SITE #3	MILL BROOK-NBGMB07-VRMP	6/20/2011	8:50 AM	N			20	85.79	7.8	23.5		>120		
SITE #3	MILL BROOK-NBGMB07-VRMP	7/7/2011	9:20 AM	N			23	74.61	6.4	24.2		>120		
SITE #3	MILL BROOK-NBGMB07-VRMP	7/19/2011	9:00 AM	N			24.5	74.34	6.2	24		>120		
SITE #3	MILL BROOK-NBGMB07-VRMP	8/8/2011	9:40 AM	N			21.5	79.29	7	23.7		>120		
SITE #3	MILL BROOK-NBGMB07-VRMP	8/25/2011	9:00 AM	N			21.4	81.39	7.2	22.8		120		
SITE #3	MILL BROOK-NBGMB07-VRMP	9/15/2011	9:05 AM	N			20	81.39	7.4	23.9		>120		
SITE #3	MILL BROOK-NBGMB07-VRMP	10/17/2011	2:00 PM	N			18	72.88	6.9			>120		

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)	Transpa rency (cm)	** TSS (MG/L)	E Coli Bacteria (MPN/ 100ML)
SITE #4 - MILL STREAM	MILL STREAM-NBGMS02-VRMP	6/16/2011	4:50 PM	N			22	80.06	7					
SITE #4	MILL STREAM-NBGMS02-VRMP	9/6/2011	4:45 PM	N			22	110.9	9.7					
SITE #4	MILL STREAM-NBGMS02-VRMP	10/18/2011	9:15 AM	N			12.5	80.71	8.6			>120		

Bagaduce River - Bagaduce Watershed Association (Non-approved Sites)														
BRIDGES POIN	BAGADUCE RIVER-NBG-BWA	5/10/2011	9:00 AM	N			17	91.05	8.8		28			
BRIDGES POIN	BAGADUCE RIVER-NBG-BWA	5/12/2011	7:25 PM	N			11	87.06	9.6		26	>120		
BRIDGES POIN	BAGADUCE RIVER-NBG-BWA	6/21/2011	3:45 PM	N			18	95.07	9		28	>120		
BRIDGES POIN	BAGADUCE RIVER-NBG-BWA	7/11/2011	9:45 AM	N			17	80.7	7.8		28	>120		
BRIDGES POIN	BAGADUCE RIVER-NBG-BWA	7/26/2011	9:20 AM	N			20	68.19	6.2		30	>120		
BRIDGES POIN	BAGADUCE RIVER-NBG-BWA	8/11/2011	9:55 AM	N			18	73.94	7		29	80		
BRIDGES POIN	BAGADUCE RIVER-NBG-BWA	8/25/2011	9:30 AM	N			20	65.99	6		29	60		
BRIDGES POIN	BAGADUCE RIVER-NBG-BWA	9/15/2011	2:20 PM	N			17	78.64	7.6		30	>120		
BRIDGES POIN	BAGADUCE RIVER-NBG-BWA	10/17/2011	2:40 PM	N			13	93.96	9.9		29	>120		
LORDS COVE	BAGADUCE RIVER-NBG-BWA2	5/31/2011	9:00 AM	N			16.5	78.84	7.7		30			
LORDS COVE	BAGADUCE RIVER-NBG-BWA2	6/15/2011	3:00 PM	N			10	62.01	7					
LORDS COVE	BAGADUCE RIVER-NBG-BWA2	6/27/2011	5:15 PM	N			13.5	55.18	5.75					
LORDS COVE	BAGADUCE RIVER-NBG-BWA2	7/17/2011	10:15 AM	N			16	63.32	6.25		29	>120		
LORDS COVE	BAGADUCE RIVER-NBG-BWA2	8/17/2011	10:30 AM	N			16	73.45	7.25		30	90		
LORDS COVE	BAGADUCE RIVER-NBG-BWA2	9/17/2011	10:20 AM	N			16	70.92	7			80		
TILLS POINT	BAGADUCE RIVER-NBG132-BWA	6/10/2011	7:10 AM	N					9			120		
TILLS POINT	BAGADUCE RIVER-NBG132-BWA	6/26/2011	7:10 AM	N					8.55		26	>120		
TILLS POINT	BAGADUCE RIVER-NBG132-BWA	7/11/2011	10:00 AM	N			16.5	96.25	9.4		25.5	>120		
TILLS POINT	BAGADUCE RIVER-NBG132-BWA	7/11/2011	10:00 AM	D					8.4					
TILLS POINT	BAGADUCE RIVER-NBG132-BWA	8/31/2011	7:10 AM	N			16.5	73.21	7.15		26	120		
TILLS POINT	BAGADUCE RIVER-NBG132-BWA	9/9/2011	11:20 AM	N			18	102.5	9.7		25	>120		
TILLS POINT	BAGADUCE RIVER-NBG132-BWA	9/27/2011	11:10 AM	N			15.5	76.18	7.6		26	>120		
YOUNGS ISLA	BAGADUCE RIVER-NBG133-BWA	5/13/2011	6:45 PM	N			13	96.8	10.2		26	>120		
YOUNGS ISLA	BAGADUCE RIVER-NBG133-BWA	6/26/2011	10:45 AM	N			14	124.2	12.8		27	>120		
YOUNGS ISLA	BAGADUCE RIVER-NBG133-BWA	7/18/2011	10:45 AM	N			18	76.05	7.2		27	>120		
YOUNGS ISLA	BAGADUCE RIVER-NBG133-BWA	8/25/2011	9:05 AM	N			18	73.94	7		27	68		
YOUNGS ISLA	BAGADUCE RIVER-NBG133-BWA	8/30/2011	9:00 AM	N			18	67.6	6.4		27	47		
YOUNGS ISLA	BAGADUCE RIVER-NBG133-BWA	9/26/2011	4:45 PM	N			17	74.5	7.2		27	80		
YOUNGS ISLA	BAGADUCE RIVER-NBG133-BWA	10/22/2011	4:00 PM	N			13	75.93	8		26	>120		

Appendix A-2. 2011 observational data and quality assurance/quality control (QA/QC) notes for "approved" and "non-approved" sites.
** "N" = normal environmental sample; "D" = field duplicate; "D.O." = dissolved oxygen; "Spec. Cond" = specific conductance; "Turb" = turbidity
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	Tide Stage	Water Appearance	Comments
Bagaduce River - Bagaduce Watershed Association (Approved Sites)															
CAMP STREAM	CAMP STREAM-NBGC	5/31/2011	2:00 PM	N	BASE FLOW	HIGH	24.0	BANK	CLEAR	CALM	CLEAR	RIFFLE		CLEAR	BEAVER ACTIVITY NON-WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
CAMP STREAM	CAMP STREAM-NBGC	6/20/2011	11:30 PM	N	BASE FLOW	HIGH	18.0	WADING	PARTLY CLOUDY	CALM	CLEAR	RIFFLE		DARKLY STAINED	HEAVY BEAVER ACTIVITY - STREAM IS DAMMED UP. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
CAMP STREAM	CAMP STREAM-NBGC	6/29/2011	2:00 PM	N		HIGH	17.0	WADING	MOSTLY CLOUDY	CALM	PARTLY CLOUDY	RIFFLE		MEDIUM STAINED	SLOW FLOW DUE TO BEAVER ACTIVITY - REMOVED PART OF DAM TO INCREASE FLOW. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
CAMP STREAM	CAMP STREAM-NBGC	6/29/2011	2:00 PM	D				WADING							SLOW FLOW DUE TO BEAVER ACTIVITY - REMOVED PART OF DAM TO INCREASE FLOW. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
CAMP STREAM	CAMP STREAM-NBGC	7/18/2011	11:00 AM	N		LOW	23.0	WADING	PARTLY CLOUDY	CALM	CLEAR	RIFFLE		MEDIUM STAINED	BEAVER DAM BLOCKING FLOW - LOW OXYGEN READING - REMOVED PART OF BEAVER DAM TO INCREASE WATER FLOW. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
CAMP STREAM	CAMP STREAM-NBGC	7/31/2011	2:30 PM	N		LOW	25.0	WADING	CLEAR	CALM	CLEAR	RIFFLE		MEDIUM STAINED	STREAM LOW - NO FLOW. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
CAMP STREAM	CAMP STREAM-NBGC	8/19/2011	8:30 AM	N	STRM FLOW	HIGH	19.0	WADING	CLEAR	CALM	CLEAR	RIFFLE		MEDIUM STAINED	STREAM HIGH - GOOD FLOW - RECENT HEAVY RAIN 3 DAYS AGO. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
CAMP STREAM	CAMP STREAM-NBGC	8/30/2011	4:00 PM	N	STRM FLOW	HIGH	22.0	WADING	CLEAR	BREEZE	PARTLY CLOUDY	RIFFLE		MEDIUM STAINED	2+ INCHES OF RAIN 2 DAYS AGO - HURRICAN IRENE. STREAM HIGH AND FLOWING. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
CAMP STREAM	CAMP STREAM-NBGC	9/30/2011	11:30 AM	N	BASE FLOW	HIGH	17.0	WADING	CLEAR	BREEZE	HEAVY RAIN	RIFFLE		MEDIUM STAINED	HEAVY RAIN A FEW HOURS BEFORE TESTING. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
CAMP STREAM	CAMP STREAM-NBGC	10/25/2011	12:00 PM	N	STRM FLOW	HIGH	11.0	WADING	PARTLY CLOUDY	BREEZE	LIGHT RAIN	RIFFLE		MEDIUM STAINED	STRONG STREAM FLOW - RECENT RAIN. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
MILL BROOK	MILL BROOK-NBGMB	5/11/2011	9:41 AM	N	BASE FLOW	HIGH	12.8	WADING	PARTLY CLOUDY	STRONG WIND	LIGHT RAIN, MOSTLY CLOUDY, SHOWERS	RIFFLE		CLEAR	0.4" RAIN OVER LAST 48 HOURS; CONDUCTIVITY MEASURED DOWNSTREAM 26 WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK; TURBIDITY RECORDED AS > 120
MILL BROOK	MILL BROOK-NBGMB	6/10/2011	8:30 AM	N	BASE FLOW	MEDIUM	17.2	WADING	CLEAR	BREEZE	HEAVY RAIN, PARTLY CLOUDY, SHOWERS	RIFFLE		CLEAR	0.9" RAIN OVER LAST 48 HOURS; CONDUCTIVITY DOWNSTREAM 31 WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK

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	Tide Stage	Water Appearance	Comments
MILL BROOK	MILL BROOK-NBGMB	6/20/2011	8:50 AM	N	BASE FLOW	LOW	18.3	WADING	CLEAR	BREEZE	CLEAR	RIFFLE		CLEAR	NO RAIN FOR PRECEDING 48 HOURS WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
MILL BROOK	MILL BROOK-NBGMB	7/7/2011	9:20 AM	N	BASE FLOW	LOW	20.6	WADING	PARTLY CLOUDY	CALM	CLEAR	RIFFLE		CLEAR	ONLY RAIN IN PAST TWO WEEKS WAS 0.15" LAST NIGHT; DOWNSTREAM SITE CONDUCTIVITY 35.6; WATER LEVEL LOW FOR EARLY JULY WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
MILL BROOK	MILL BROOK-NBGMB	7/19/2011	9:00 AM	N	BASE FLOW	LOW	25.6	WADING	CLEAR, PARTLY CLOUDY	CALM	CLEAR, PARTLY CLOUDY	RIFFLE		CLEAR	NO RAIN SINCE ONE WEEK AGO; CONDUCTIVITY DOWNSTREAM 32.8; LOW WATER, STILL A PRETTY GOOD FLOW WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
MILL BROOK	MILL BROOK-NBGMB	8/8/2011	9:40 AM	N	BASE FLOW	LOW	21.1	WADING	CLOUDY, FOGGY	CALM	CLOUDY, HEAVY RAIN, SHOWERS	RIFFLE		CLEAR	1" RAIN LAST 24 HOURS; WATER LEVEL A BIT HIGHER THAN 2 WEEKS AGO - STILL LOW; CONDUCTIVITY DOWNSTREAM 33 WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
MILL BROOK	MILL BROOK-NBGMB	8/25/2011	9:00 AM	N	BASE FLOW	MEDIU M	20.0	WADING	MOSTLY CLOUDY	BREEZE	FOGGY, HEAVY RAIN, PARTLY CLOUDY	RUN		CLEAR	GOOD WATER LEVEL AND FLOW. 1.8" RAIN 48 HOURS AGO; DOWNSTREAM CONDUCTIVITY 24.7 WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK; TURBIDITY RECORDED AS > 120
MILL BROOK	MILL BROOK-NBGMB	9/15/2011	9:05 AM	N	BASE FLOW	MEDIU M	17.2	WADING	FOGGY, SHOWER S	CALM	CLEAR, PARTLY CLOUDY	RIFFLE		CLEAR	LOOKS GOOD - MORE FLORA GROWING FROM STREAM BED THAN PAST YEARS WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
MILL BROOK	MILL BROOK-NBGMB	10/17/2011	2:00 PM	N	BASE FLOW	LOW	17.2	WADING	PARTLY CLOUDY	BREEZE	CLEAR, LIGHT RAIN, PARTLY CLOUDY, SHOWERS	RIFFLE		CLEAR	0.1" OF RAIN IN LAST 12 HOURS; 1.1" RAIN 4 DAYS AGO. VERY LOW WATER LEVEL. LOTS OF FLOATING/FALLEN LEAVES AND STONE MOSS OUT OF THE WATER. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
MILL STREAM	MILL STREAM-NBGMB	6/16/2011	4:50 PM	N	BASE FLOW	MEDIU M	21.0	WADING	CLEAR	CALM	MOSTLY CLOUDY, SHOWERS	RUN		CLEAR	WADEABLE/MID-DEPTH
MILL STREAM	MILL STREAM-NBGMB	9/6/2011	4:45 PM	N	BASE FLOW	LOW	19.5	WADING	CLEAR	CALM	CLEAR, CLOUDY, PARTLY CLOUDY, SHOWERS	RUN		CLEAR	WADEABLE/MID-DEPTH
MILL STREAM	MILL STREAM-NBGMB	10/18/2011	9:15 AM	N	BASE FLOW	MEDIU M	10.5	WADING	CLEAR, PARTLY CLOUDY		CLEAR, PARTLY CLOUDY	RUN		CLEAR	WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
WINSLOW STR	WINSLOW STREAM-N	5/19/2011	9:30 AM	N	BASE FLOW	HIGH	55.0	WADING	CLOUDY, FOGGY	CALM	CLOUDY, FOGGY, HEAVY RAIN, SHOWERS	RIFFLE		CLEAR	2 INCHES RAIN IN LAST 72 HOURS. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
WINSLOW STR	WINSLOW STREAM-N	6/15/2011	10:40 AM	N	BASE FLOW	MEDIU M	18.0	WADING	PARTLY CLOUDY	CALM	HEAVY RAIN, LIGHT RAIN, MOSTLY CLOUDY, SHOWERS	RUN		CLEAR	WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
WINSLOW STR	WINSLOW STREAM-N	6/30/2011	9:15 AM	N	BASE FLOW	MEDIU M	21.0	WADING	PARTLY CLOUDY	CALM	MOSTLY CLOUDY, SHOWERS	RUN		CLEAR	WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET.
WINSLOW STR	WINSLOW STREAM-N	7/21/2011	9:10 AM	N	BASE FLOW	MEDIU M	22.0	WADING	PARTLY CLOUDY	CALM	PARTLY CLOUDY	RUN		CLEAR	WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
WINSLOW STR	WINSLOW STREAM-N	8/9/2011	8:50 AM	N	BASE FLOW	MEDIU M	20.0	WADING	CLEAR	CALM	PARTLY CLOUDY	RUN		CLEAR	WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
WINSLOW STR	WINSLOW STREAM-N	8/30/2011	9:22 AM	N	BASE FLOW	LOW	15.0	WADING	CLEAR	CALM	CLEAR	RUN		CLEAR	WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET

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	Tide Stage	Water Appearance	Comments
WINSLOW STR	WINSLOW STREAM-N	9/29/2011	9:15 AM	N	BASE FLOW	LOW	16.0	WADING	PARTLY CLOUDY		PARTLY CLOUDY	RUN		CLEAR	WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET
WINSLOW STR	WINSLOW STREAM-N	10/18/2011	9:15 AM	N	BASE FLOW	HIGH	13.0	WADING	PARTLY CLOUDY	BREEZE	PARTLY CLOUDY	RUN		CLEAR	AFTER ADDING SULFURIC ACID, THE PRECIPITATE WOULD NOT TOTALLY DISSOLVE-IT SETTLED TO THE BOTTOM. WE THEN CONTINUED WITH THE PROCESS WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK. DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET

Bagaduce River - Bagaduce Watershed Association (Non-approved Sites)															
BRIDGES POIN	BAGADUCE RIVER-N	5/10/2011	9:00 AM	N		MEDIUM	17.2	WADING	CLEAR	BREEZE	HEAVY RAIN, PARTLY CLOUDY, SHOWERS		HIGH EBB	MILKY	0.9" RAIN IN LAST 48 HOURS. SLIGHTLY SILTED - STRONG NORTH BREEZE STIRRING MUDDY BOTTOM. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
BRIDGES POIN	BAGADUCE RIVER-N	5/12/2011	7:25 PM	N	BASE FLOW	HIGH	15.0	WADING	PARTLY CLOUDY	CALM	CLEAR, FOGGY, LIGHT RAIN, SHOWERS	RUN	HIGH	CLEAR	TIDE INCOMING - NEAR FULL. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
BRIDGES POIN	BAGADUCE RIVER-N	6/21/2011	3:45 PM	N	BASE FLOW	HIGH	26.7	WADING	CLEAR	BREEZE	CLEAR, PARTLY CLOUDY	RUN	HIGH	CLEAR	WARM WESTERLY BREEZE WADEABLE/MID-DEPTH
BRIDGES POIN	BAGADUCE RIVER-N	7/11/2011	9:45 AM	N	BASE FLOW	HIGH	27.2	WADING	PARTLY CLOUDY	BREEZE	CLEAR, PARTLY CLOUDY	RUN	HIGH EBB	CLEAR	1.3 INCHES OF RAIN 48 HOURS AGO WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
BRIDGES POIN	BAGADUCE RIVER-N	7/26/2011	9:20 AM	N	BASE FLOW	HIGH	16.1	WADING	CLOUDY	CALM	CLEAR	RUN	HIGH	MILKY	0.25" RAIN IN PAST 12 HOURS WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
BRIDGES POIN	BAGADUCE RIVER-N	8/11/2011	9:55 AM	N	BASE FLOW	HIGH	18.9	WADING	CLOUDY	BREEZE	CLOUDY, HEAVY RAIN, LIGHT RAIN, SHOWERS	RUN	HIGH	MILKY	1.1" RAIN LAST 24 HOURS. SLIGHTLY MILKY, BUT ENOUGH TO CLOUD TURBIDITY TUBE TO READING OF 80 CM. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
BRIDGES POIN	BAGADUCE RIVER-N	8/25/2011	9:30 AM	N	BASE FLOW	HIGH	20.0	WADING	MOSTLY CLOUDY	BREEZE	FOGGY, HEAVY RAIN, PARTLY CLOUDY	RUN	HIGH EBB	MILKY	WATER STIRRED UP - STIFF BREEZES ALL NIGHT AND THIS AM. +1.8" OF RAIN 48 HOURS AGO. WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
BRIDGES POIN	BAGADUCE RIVER-N	9/15/2011	2:20 PM	N	BASE FLOW	HIGH	18.3	WADING	FOGGY, SHOWER	CALM	CLEAR, FOGGY, PARTLY CLOUDY	RUN	HIGH	CLEAR	WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
BRIDGES POIN	BAGADUCE RIVER-N	10/17/2011	2:40 PM	N	BASE FLOW	HIGH	17.2	WADING	PARTLY CLOUDY	BREEZE	CLEAR, LIGHT RAIN, PARTLY CLOUDY, SHOWERS	RUN	HIGH	CLEAR	0.1" RAIN IN LAST 12 HOURS; 1.1" RAIN 4 DAYS AGO; STRONG WESTERLY BREEZE WADEABLE/MID-DEPTH DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
LORDS COVE	BAGADUCE RIVER-N	5/31/2011	9:00 AM	N			21.0		PARTLY CLOUDY	BREEZE	CLEAR		HIGH FLOOD		DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET; SAMPLE TAKEN FROM DOCK AT HALF-ARM'S LENGTH
LORDS COVE	BAGADUCE RIVER-N	6/15/2011	3:00 PM	N			23.0		PARTLY CLOUDY	BREEZE	HEAVY RAIN		LOW EBB		SEVERAL DAYS OF COLD RAIN MAY HAVE DROPPED WATER TEMPERATURE DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET; SAMPLE TAKEN FROM DOCK AT HALF-ARM'S LENGTH; TIME SAMPLED WAS NOT WRITTEN DOWN, SO ESTIMATE DERIVED FROM LOOKING AT START TIME

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	Tide Stage	Water Appearance	Comments
LORDS COVE	BAGADUCE RIVER-N	6/27/2011	5:15 PM	N			25.0		CLEAR	CALM	HEAVY RAIN, LIGHT RAIN		LOW FLOOD		HEAVY RAIN IN PAST 48 HOURS DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET; SAMPLE TAKEN FROM DOCK AT HALF-ARM'S LENGTH; TIME SAMPLED WAS NOT WRITTEN DOWN, SO ESTIMATE DERIVED FROM LOOKING AT START TIME
LORDS COVE	BAGADUCE RIVER-N	7/17/2011	10:15 AM	N		MEDIUM	27.0		CLOUDY		PARTLY CLOUDY		LOW FLOOD	OPAQUE	DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET; SAMPLE TAKEN FROM DOCK AT HALF-ARM'S LENGTH; TIME SAMPLED WAS NOT WRITTEN DOWN, SO ESTIMATE DERIVED FROM LOOKING AT START TIME; DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
LORDS COVE	BAGADUCE RIVER-N	8/17/2011	10:30 AM	N	STRM FLOW	MEDIUM	21.0		CLEAR	CALM	HEAVY RAIN		LOW FLOOD	DARKLY STAINED	OVER 1 INCH OF RAIN YESTERDAY-MAYBE CAUSE OF MURKY WATER, WATER NOTED AS BEING GREEN DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET; SAMPLE TAKEN FROM DOCK AT HALF-ARM'S LENGTH; DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
LORDS COVE	BAGADUCE RIVER-N	9/17/2011	10:20 AM	N		LOW	21.0						LOW FLOOD	TURBID	DID NOT COMPLETE CHAIN OF CUSTODY FOR DATASHEET; SAMPLE TAKEN FROM DOCK AT HALF-ARM'S LENGTH; DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
TILLS POINT	BAGADUCE RIVER-N	6/10/2011	7:10 AM	N		HIGH	20.0	WADING	CLEAR	BREEZE	SHOWERS		HIGH	CLEAR	COULD NOT SAMPLE BY KAYAK-WADED INTO EEL GRASS FOR SAMPLE AT 12" WADEABLE/MID-DEPTH SAMPLE LOCATION WAS WADING AND NOT FROM CENTER OF FLOW (GENERALLY OBTAINED BY BOAT).
TILLS POINT	BAGADUCE RIVER-N	6/26/2011	7:10 AM	N		HIGH	28.0	WADING	CLOUDY, FOGGY	CALM	FOGGY, SHOWERS		HIGH	CLEAR	WADEABLE/MID-DEPTH SAMPLE LOCATION WAS WADING AND NOT FROM CENTER OF FLOW (GENERALLY OBTAINED BY BOAT). DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
TILLS POINT	BAGADUCE RIVER-N	7/11/2011	10:00 AM	N		HIGH	31.0	BOAT	CLEAR	CALM	CLEAR, LIGHT RAIN		HIGH EBB	TURBID	SAMPLE AT 13" BELOW SURFACE. DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
TILLS POINT	BAGADUCE RIVER-N	7/11/2011	10:00 AM	D				BOAT							SAMPLE AT 13" BELOW SURFACE. DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
TILLS POINT	BAGADUCE RIVER-N	8/31/2011	7:10 AM	N		LOW	21.0	WADING	CLEAR	CALM	CLEAR		LOW FLOOD		WADEABLE/MID-DEPTH SAMPLE LOCATION WAS WADING AND NOT FROM CENTER OF FLOW (GENERALLY OBTAINED BY BOAT). DO CHEMICAL KIT - DID NOT DO QA/QC CHECK.
TILLS POINT	BAGADUCE RIVER-N	9/9/2011	11:20 AM	N		HIGH	26.5	WADING	CLEAR	BREEZE	FOGGY, PARTLY CLOUDY		HIGH EBB	MILKY	WADEABLE/1.5 FT BELOW SURFACE SAMPLE LOCATION WAS WADING AND NOT FROM CENTER OF FLOW (GENERALLY OBTAINED BY BOAT). DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
TILLS POINT	BAGADUCE RIVER-N	9/27/2011	11:10 AM	N		HIGH	25.5	WADING	CLEAR	CALM	CLEAR		HIGH	MILKY	TIDE HEIGHT 122"-2' ABOVE NORMAL WADEABLE/1.5 FT BELOW SURFACE SAMPLE LOCATION WAS WADING AND NOT FROM CENTER OF FLOW (GENERALLY OBTAINED BY BOAT). DO CHEMICAL KIT - DID NOT DO QA/QC CHECK
YOUNGS ISLAND	BAGADUCE RIVER-N	5/13/2011	6:45 PM	N			15.0	BOAT	CLEAR	CALM	CLEAR		HIGH FLOOD	CLEAR	NON-WADEABLE/MID-DEPTH DID NOT RECORD "READING/VALUE AFTER CALIBRATION", NO VALUE FOR D.O. IN % SATURATION
YOUNGS ISLAND	BAGADUCE RIVER-N	6/26/2011	10:45 AM	N			16.0	BOAT	CLOUDY	CALM	CLOUDY, FOGGY, HEAVY RAIN, LIGHT RAIN		HIGH EBB	CLEAR	NON-WADEABLE/MID-DEPTH DISSOLVED OXYGEN MEASURED WITH KIT INSTEAD OF METER, RECORDED VERTICAL DEPTH AS MID-DEPTH BUT NOT SURE SINCE MONITORS MEASURED WITH KIT
YOUNGS ISLAND	BAGADUCE RIVER-N	7/18/2011	10:45 AM	N			27.0	BOAT	CLOUDY	CALM	CLEAR		LOW FLOOD	CLEAR	NON-WADEABLE/MID-DEPTH DISSOLVED OXYGEN MEASURED WITH KIT INSTEAD OF METER?, RECORDED VERTICAL DEPTH AS MID-DEPTH BUT NOT SURE SINCE MONITORS MEASURED WITH KIT

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	Tide Stage	Water Appearance	Comments
YOUNGS ISLAND	BAGADUCE RIVER-N	8/25/2011	9:05 AM	N			21.0	BOAT	CLOUDY	BREEZE	CLEAR, CLOUDY		HIGH EBB	TURBID	NON-WADEABLE/MID-DEPTH DISSOLVED OXYGEN MEASURED WITH KIT INSTEAD OF METER?, RECORDED VERTICAL DEPTH AS MID-DEPTH BUT NOT SURE SINCE MONITORS MEASURED WITH KIT.
YOUNGS ISLAND	BAGADUCE RIVER-N	8/30/2011	9:00 AM	N			20.0	BOAT	CLEAR	CALM	CLEAR		LOW FLOOD	TURBID	POST HURRICANE/TROPICAL STORM, NOTE TURBIDITY ALL TIME LOW NON-WADEABLE/MID-DEPTH DISSOLVED OXYGEN MEASURED WITH KIT INSTEAD OF METER?, RECORDED VERTICAL DEPTH AS MID-DEPTH BUT NOT SURE SINCE MONITORS MEASURED WITH KIT.
YOUNGS ISLAND	BAGADUCE RIVER-N	9/26/2011	4:45 PM	N			25.0	BOAT	CLEAR	CALM	CLEAR		LOW EBB		NON-WADEABLE/MID-DEPTH DISSOLVED OXYGEN MEASURED WITH KIT INSTEAD OF METER?, RECORDED VERTICAL DEPTH AS MID-DEPTH BUT NOT SURE SINCE MONITORS MEASURED WITH KIT.
YOUNGS ISLAND	BAGADUCE RIVER-N	10/22/2011	4:00 PM	N			13.0	BOAT	MOSTLY CLOUDY	CALM	MOSTLY CLOUDY		LOW EBB	CLEAR	NON-WADEABLE/MID-DEPTH DISSOLVED OXYGEN MEASURED WITH KIT INSTEAD OF METER?, RECORDED VERTICAL DEPTH AS MID-DEPTH BUT NOT SURE SINCE MONITORS MEASURED WITH KIT.