



Petitcodiac And Memramcook Water Quality Report

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The Petitcodiac Watershed Monitoring Group (PWMG-GSBP Inc.) is a non-profit environmental science and education organization that promotes sustainable use of the Petitcodiac River and its tributaries. In addition, since 1997, the group has been involved in a monitoring program of established sites in Petitcodiac tributaries of concern or interest. These sites are verified through the following stream health indicators: temperature, dissolved oxygen content, total coliforms, E.Coli, Nitrate nitrogen, Phosphorus, bottom substrate and observable changes. More information about the group's activities are available on the following website: www.pwmg-gsbp.org



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Reference to be cited:

Arseneau, E. and B.Pavey, W.Kingston, L.Doiron. 2006. Petitcodiac and Memramcook Water Quality Report. Report produced by the Petitcodiac Watershed Monitoring Group. Moncton, New Brunswick. 44pp.

1.0 INTRODUCTION

1.1 Context

Between July and October 2005, the Petitcodiac Watershed Monitoring Group (PWMG) undertook water quality testing in the Petitcodiac and Memramcook River watersheds. Testing was done within the long-term water quality monitoring program that was initiated in the summer of 1999 with the help of the Department of Environment and Local Government (Appendix 1 - Station listings). Since 2003, in collaboration with l'Université de Moncton, the PWMG implemented a cost-effective long-term water quality program which looks at several key parameters such as bacteria, dissolved oxygen, water temperature, pH and meteorological data. As a result of our long-term database and continuous monitoring of water quality in these systems, we are able to determine the overall health of a watercourse and the scope of positive or negative changes.

For several years now, urban development in the Moncton area has been putting increasing pressure on local aquatic ecosystems. Several urban streams are showing negative signs resulting from development. Elevated bacteria counts due to defective sewer lines emptying directly into these watercourses, habitat destruction due to careless development and lax environmental regulations contribute to the continued deterioration of these ecosystems.

Through continued education efforts and collaboration initiatives with local partners, the PWMG is slowly changing the perception that urban streams should not be treated as ditches but rather regarded as important ecosystems.

1.2 Objective

The following report will focus on water quality results gathered in 2005 (Appendix 2 – Raw water quality data 2005). Also, a brief comparison will be made between data collected in 2004 and current data to see if there have been any significant changes.

2.0 METHODOLOGY

Water quality testing was generally conducted on a monthly basis, but some sites were done on a by-monthly schedule as time permitted. Each sample was tested for *E.coli*, Total coliforms, Dissolved oxygen (DO), water temperature, suspended sediments (SS) and pH.

2.1 *E.coli* and Total coliforms

The ColiPlate© method was used to test for *E.coli* and Total coliforms (Figure 1). The tests were done in conjunction with l'Université de Moncton at their laboratory facilities. Once the plates were prepared, they were put into an incubator at 35°C for 24 hours. The incubated microplates were placed on a white surface and the number of wells that turned blue indicated a positive reaction for Total coliforms (EBPI 2003). To determine *E.coli* levels, the incubated plates were then placed on a black surface and observed under a long wavelength UV light (366 nm). The wells that both turn blue and fluoresce under the UV light are *E.coli* positive. Bacteria levels are determined by Most Probable Number of bacterial colonies in 100 ml of water. Note that all equipment was sterilized prior to use.

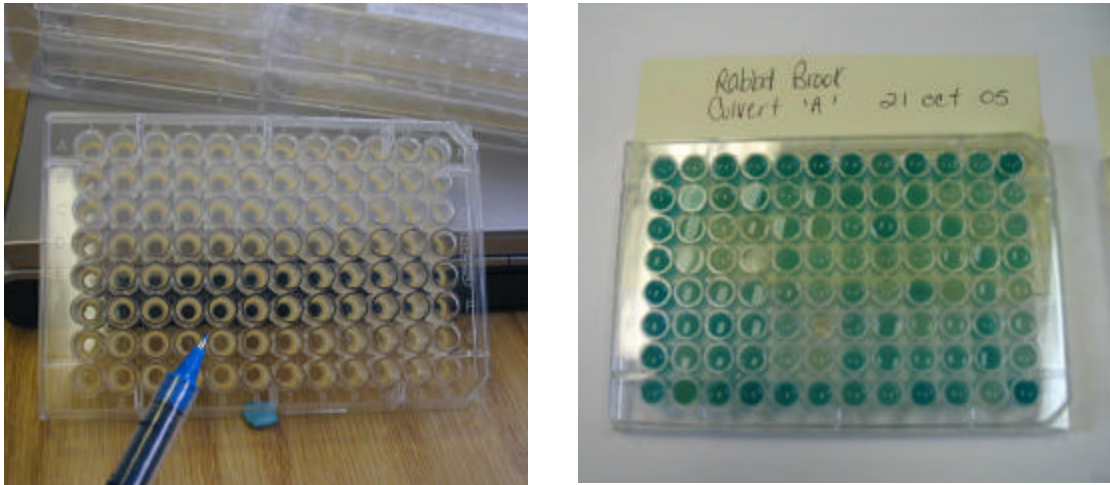


Figure 1. Coliplate©

2.2 Suspended Sediments

Suspended sediment concentrations were measured by filtering 1-L grab samples taken *in situ*. Water samples were vacuum filtered through an 11.5 cm Whatman filter with a 1.2 µm pore size. The filters were then oven dried at 75°C for 24 hours and re-weighed. The seston mass was calculated and subsequently suspended sediment concentration in mg/L was calculated (State of Jonathan Creek 2005).

2.3 Dissolved Oxygen, Water Temperature and pH

DO and water temperature were monitored using a YSI 55 meter. The pH was calculated using a Lamotte Kit (Figure 2).



Figure 2. YSI 55 meter and Lamotte pH kit

3.0 RESULTS

3.1 Climate

The Petitcodiac and Memramcook River watersheds typically fall within a temperate continental climate, where the ocean modifies continental air masses. Average temperatures vary between -10°C to $+20^{\circ}\text{C}$ and the average monthly precipitation rate is between 80 mm to 100 mm (Demangeot, 1996). During the summer months, this precipitation falls mostly as rain, while the fall and winter months see a mix of snow, rain and freezing rain.

Monthly air temperature maximum, minimum and means were calculated for the months of July through October 2005 as well as total solid and liquid precipitation. These weather observations were accessed from available Environment Canada data collected at the Moncton airport during the period of interest (Station 8103200, $46^{\circ}6'\text{N}$, $64^{\circ}41'\text{W}$). Although the study area has a combined area of 2400 km^2 , experience dictates that the Moncton data can be applied to both watersheds.

3.1.1 Temperature

From July to October, mean air temperature varied from approximately 19 C to around 10 C respectively (Table 1). The highest temperature recorded during our sampling period was 25 C in July and the lowest was 2 C in October (Figure 3). Note that no data was available for September 16.

Table 1. Average monthly temperatures between July and October 2005

Month	Min	Max	Ave
Jul	14.8	25.3	19.3
Aug	14.0	24.0	19.3
Sep	9.3	23.0	15.9
Oct	2.0	19.3	10.3

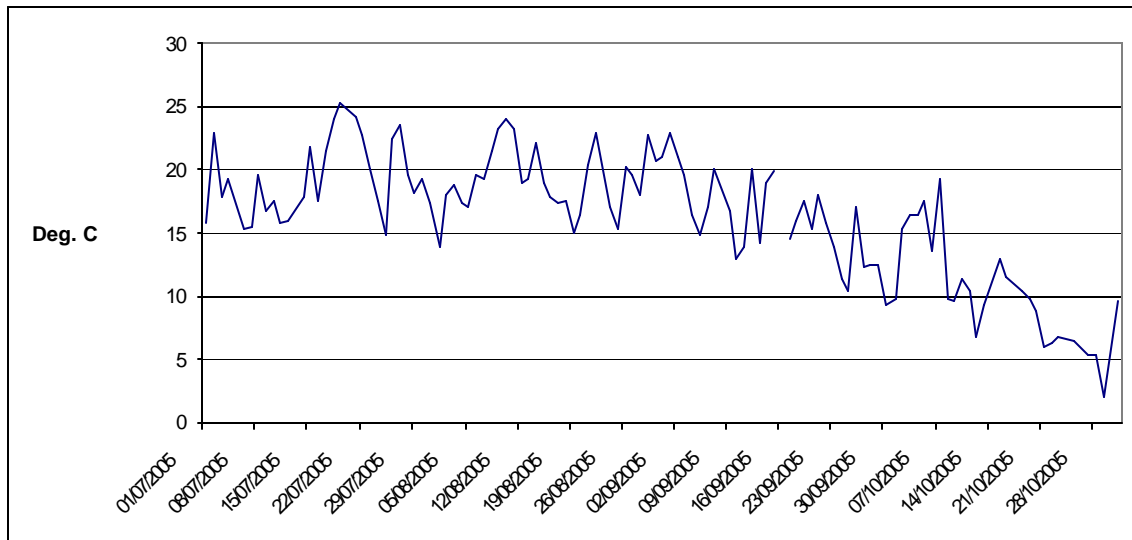


Figure 3. Mean Daily Temperature (Jul-Oct 2005)

3.1.2 Precipitation

Monthly precipitation for the sampling period (i.e. July-October) ranged from average (100 mm) to above average accumulations (Table 2). More specifically, above average accumulations were noted for the month of October which saw 272 mm which is 2.5 times more precipitation than normal (Figure 4). Of that 272 mm, half (135 mm) fell within a 48 hour period (October 7 and 8).

Table 2. Total Monthly Precipitation between July and October 2005

Month	Total Monthly Precipitation
Jul	115.2
Aug	63.7
Sep	105
Oct	272.4

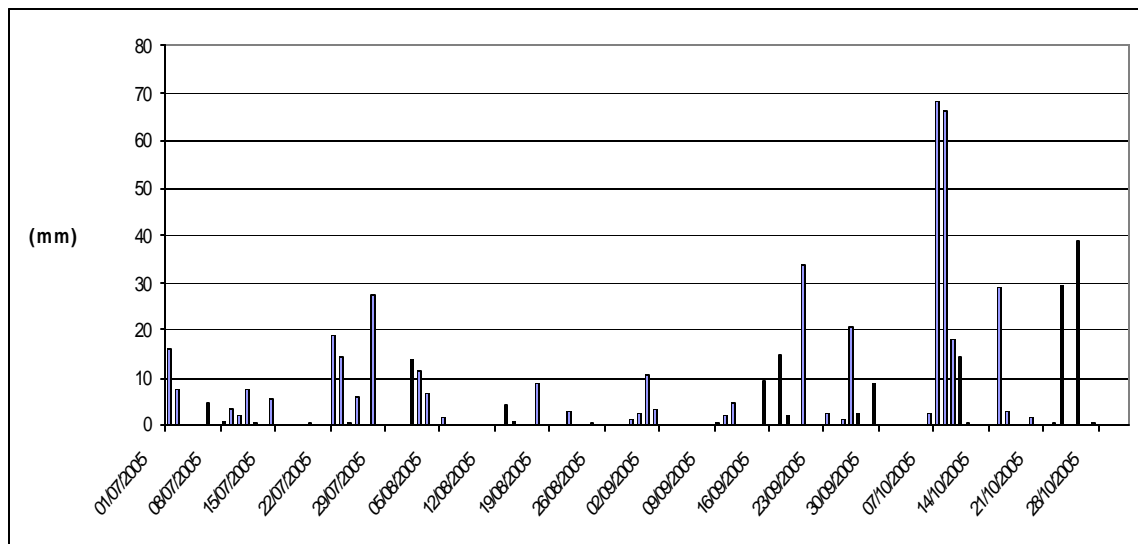


Figure 4. Daily Precipitation (Jul to Oct 2005)

3.2 Water quality results

Past studies of the water quality in the Petitcodiac and Memramcook River watersheds have consistently shown that the urban streams have been and continue to be negatively impacted by development. Elevated bacteria levels, low dissolved oxygen and aquatic habitat degradation due to habitat destruction have all been well documented. Again in 2005, some of these problems persist and these are again reflected in our water quality results.

On a more positive note, watercourses in rural settings have maintained their generally high water quality. Consistently good to excellent water quality has been observed in these areas. This is important since these waters form the head waters for most urban stream.

Table 3 lists each site and minimum, maximum, average value and number of samples for the following parameters: total coliform, *E.Coli*, Suspended Sediment, pH, dissolved

oxygen, percent saturation and temperature. Each parameter will be discussed in further detail in Sections 3.2.1 and 3.2.2.

Table 3. Statistical analysis for the Petitcodiac and Memramcook River Watersheds (Jul-Oct 2005)

Site		MPN total coliform	MPN <i>E.coli</i>	Suspended Sediment (mg/L)	pH	Dissolved Oxygen (mg/L)	Percent Saturation (%)	Temp. (deg C)
PWMG 11	Min	46	8	-0.8	6.8	8.3	93.9	9.5
	Max	123	25	4.7	6.8	11.2	96.8	23.3
	Std	35.7	6.7	3.9	0	1	1.5	4.7
	Ave	85.4	19.6	2	6.8	9.2	95.2	19.7
	Count (n)	7	7	2	2	7	3	7
PWMG 16	Min	30	5	-0.3	6.7	8.2	88.8	10.1
	Max	132	72	3.4	7.1	10.7	96.5	25
	Std	36.1	25.7	2.6	0.3	0.9	3.9	5
	Ave	66.9	26.1	1.6	6.9	9.5	92.8	20.7
	Count (n)	7	7	2	2	7	3	7
PWMG 17	Min	11	5	-0.9	7.1	8.3	96.3	10
	Max	114	46	1.5	7.3	10.92	104	27.1
	Std	38.8	15.4	1.7	0.1	0.9	4.2	5.6
	Ave	68.4	24.4	0.3	7.2	9.4	99.2	21.5
	Count (n)	7	7	2	2	7	3	7
PWMG 20	Min	39	5	12.9	6	5.5	58.9	17
	Max	280	219	12.9	6	9.3	89.8	22.1
	Std	107.2	100.8		0	1.4	21.8	1.9
	Ave	123	68.5	12.9	6	7.7	74.4	19.3
	Count (n)	4	4	1	2	6	2	6
PWMG 24	Min	94	87	-0.5	6.8	7.5	79	12.9
	Max	2424	2424	22.3	8	10.2	105	23.9
	Std	1114.5	876.2	16.1	0.8	1.1	13.1	3.5
	Ave	1374.9	637.4	10.9	7.4	9	90.9	18
	Count (n)	7	7	2	2	7	3	7
PWMG 27	Min	127	114	0.8	7.5	8.6	90.3	11.4
	Max	2424	1370	13.3	7.8	10.3	95.7	17.7
	Std	898.6	541.3	8.8	0.2	0.6	2.9	2.2
	Ave	887.5	609.7	7.1	7.7	9.4	92.4	15.9
	Count (n)	6	6	2	2	7	3	7

		MPN Total Coliform	MPN <i>E.coli</i>	Suspended Sediment (mg/L)	pH	Dissolved Oxygen (mg/L)	Percent Saturation (%)	Temp. (deg C)
PWMG 82	Min	62	30	0.2	7.8	8.1	92.8	12.2
	Max	298	213	0.4	7.9	10.3	104.6	24
	Std	15.7	0.1	0.1	0.1	6.1	3.6	0.1
	Ave	148.9	82.9	0.3	7.9	9.4	99.6	18.2
	Count (n)	7	7	2	2	7	3	7
PWMG 29	Min	65	30	3.1	7.4	7.4	85.9	10.8
	Max	534	200	5.9	7.7	11	99.2	24.4
	Std	165	61.8	2	0.2	1.3	7	4.1
	Ave	214	97.3	4.5	7.6	8.7	91.2	18.3
	Count (n)	7	7	2	2	7	3	7
PWMG 30	Min	62	11	20.6	7.6	9.2	105.7	16.3
	Max	2424	194	56.2	7.6	10.8	107.3	22.9
	Std	1020.2	78.7	25.2	0	0.5	1.1	2.5
	Ave	603.6	56.6	38.4	7.6	9.9	106.5	18.4
	Count (n)	5	5	2	2	6	2	6
PWMG 31	Min	65	33	9.1	6.9	5.6	63	16.8
	Max	2424	938	24.4	7.3	8.5	79	21.5
	Std	982	407.3	10.8	0.2	1.1	11.3	1.7
	Ave	777.2	347.7	16.8	7.1	7.1	71	18.5
	Count (n)	5	6	2	3	6	2	6
PWMG 35	Min	65	19		6.6	8.1	86.5	8
	Max	308	226		6.6	11	102	22.8
	Std	134.4	109.2			1.1	7.8	6.6
	Ave	153.3	102.3		6.6	9.7	93.8	17
	Count (n)	3	3	0	1	5	3	5
PWMG 5	Min	33	8	0.3	7.5	8.5	83.3	10.3
	Max	166	123	3.7	7.9	11.8	103.9	22.2
	Std	46	38.1	2.4	0.3	1.1	14.6	4.1
	Ave	93.6	48.9	2	7.7	10	93.6	19
	Count (n)	7	7	2	2	7	2	7

		MPN Total Coliform	MPN <i>E.coli</i>	Suspended Sediment (mg/L)	pH	Dissolved Oxygen (mg/L)	Percent Saturation (%)	Temp. (deg C)
PWMG 52	Min	65	33	0.4	6.7	6.9	72.4	8.7
	Max	219	132	1.1	7.5	10.9	93	22.3
	Std	66.8	50.3	0.5	0.3	1.3	10.9	4.4
	Ave	130.2	72.6	0.8	7.1	8.7	80.7	15.6
	Count (n)	5	5	2	4	7	3	7
PWMG 58	Min	28	3	1.6	6.4	5.8	63	7.8
	Max	339	141	4.1	7.6	10.3	87.4	21.2
	Std	110.3	53.2	1.8	0.5	1.6	14	4.5
	Ave	127.2	67.5	2.9	6.9	8.5	79.2	15.4
	Count (n)	6	6	2	4	7	3	7
PWMG 59	Min	49	11	0	5.7	6.2	67.5	8.3
	Max	123	90	0.4	6.8	9.7	84.5	22.3
	Std	31	29.3	0.3	0.5	1.3	8.8	4.7
	Ave	89.8	41.8	0.2	6.1	8.5	77.2	15.9
	Count (n)	5	5	2	4	7	3	7
PMWG 72	Min	52	28	1.8	5.8	2.5	24.2	8.6
	Max	263	114	1.8	6.6	9.7	83	19.8
	Std	81.7	36	0	0.4	2.5	29.7	3.7
	Ave	141	52.8	1.8	6.3	6.4	55.9	14.9
	Count (n)	5	5	2	4	7	3	7
PWMG 61	Min	28	5			7.9	85.4	8.3
	Max	141	98			10.4	96.6	19.6
	Std	79.9	65.8			1.3	6.3	5.8
	Ave	84.5	51.5			9.5	89.4	13.3
	Count (n)	2	2	0	0	3	3	3
PWMG 73	Min	8	3	0.1	6.8	6.1	65.3	8.2
	Max	255	194	0.6	7.6	10.8	91.7	20.9
	Std	88.2	71.2	0.4	0.4	1.7	13.7	4.4
	Ave	90.8	53.3	0.4	7.1	9	80.7	15.6
	Count (n)	6	6	2	4	7	3	7
PWMG 74	Min	13	3	0	6.8	7.6	84.7	8.1
	Max	102	69	0	6.8	10.6	100	25.1
	Std	46.2	33.3			1.3	8.7	6.8
	Ave	64.7	33.3		6.8	8.9	90	17.6
	Count (n)	3	3	0	1	5	3	5

		MPN Total Coliform	MPN <i>E.coli</i>	Suspended Sediment (mg/L)	pH	Dissolved Oxygen (mg/L)	Percent Saturation (%)	Temp. (deg C)
PWMG 75	Min	8	3	4.2	6	4.2	70	8.5
	Max	177	16	7.6	6.8	10.5	90.3	23.6
	Std	64.4	6.8	2.4	0.3	2	14.4	5.3
	Ave	87.8	8.6	5.9	6.5	7.2	80.2	17.9
	Count (n)	5	5	2	4	7	2	7
PWMG 80	Min	206	59	2.2	7.4	7.9	80.5	12.9
	Max	2424	2424	76.5	7.8	10.2	91.3	16.1
	Std	973.3	936.1	52.5	0.3	0.7	5.6	1
	Ave	1326.1	969.7	39.4	7.6	9.2	85.1	14.8
	Count (n)	9	9	2	2	8	3	8
PWMG 81	Min	43	13		6	10.3	93.7	11.1
	Max	166	49		6	10.3	93.7	11.1
	Std	87	25.5					
	Ave	104.5	31		6	10.3	93.7	11.1
	Count (n)	2	2		1	1	1	1

3.2.1 Bacteria results

A total of 7 sites on a total of 21 showed *E.coli* levels above the Canadian Water Quality Guideline (CWQG) for recreation which is 200 MPN/100 mL (Table 3). Influenced PWMG sites 24, 27, 28, 31, 80 are all found within urban areas (Figure 5).

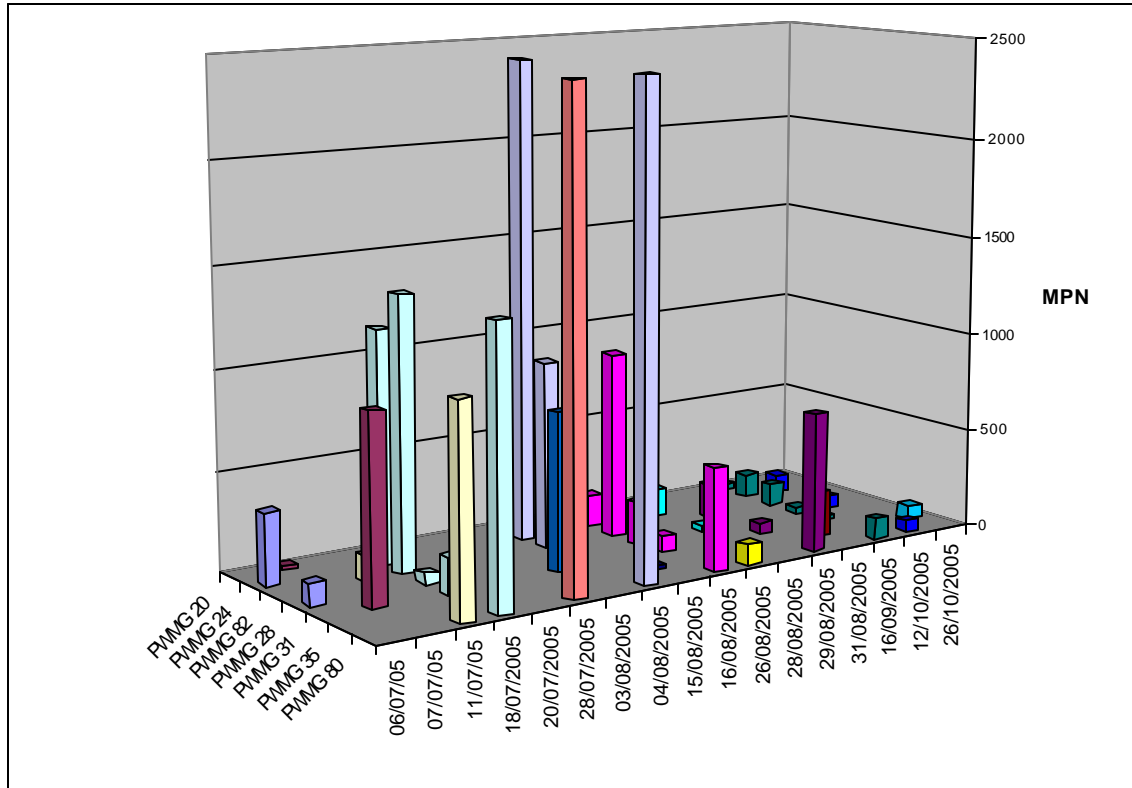


Figure 5. *E.coli* concentrations for affected sites between Jul-Oct 2005

Since 1997, Rabbit Brook (PWMG 24, 80) has consistently shown elevated bacteria levels exceeding the CWQG. This year is no different with an average *E.coli* level of 610 MPN/100 mL at PWMG 24 (near mouth), while PWMG 80 (head waters) had an average of 970 MPN/100 mL. Furthermore, maximum *E.coli* levels for these two sites exceeded 2424 MPN/100 mL on at least 2 occasions. At site PWMG 24, maximum *E.Coli* levels were observed in July and August. On July 18, the *E.coli* level at PWMG 24 was 1174 MPN/100mL. No precipitation fell for the 3 previous days, suggesting that this high level is due to sewage cross connections which is a major problem in Rabbit Brook. On August 4, *E.coli* levels topped 2424 MPN/100 mL. A total of 31.6 mm of rain fell 3 days prior to sampling. This small rain event coupled with sewage cross connection might explain this elevated bacteria count. The same reasoning can be applied for site PWMG 80 which shows the same tendencies as site PWMG 24.

West Branch Halls Creek (PWMG 27) is also within an urban setting. West Branch Halls Creek which is seeing more and more development along its shores shows very high bacteria counts. Samples taken at this location during the months of July and August have elevated *E.coli* counts ranging from 938-1370 MPN/100 mL. With an average count of 610 MPN/100 mL, the water quality of this site far exceeds the CWQG of 200 MPN/100 mL. Anthropogenic effects such as sewage outflows might explain these elevated levels. While on August 4, high *E.coli* levels (i.e. 938 MPN/100 mL) may be

related to a rain event that occurred the day before, the same high levels were again found on August 16 with no significant rain events recorded several days prior to sampling. Furthermore, under similar conditions, on August 29, *E.coli* levels fell to 171 MPN/100 mL. This suggests that these types of fluctuations in bacteria might again be caused by human activities.

In 2005, Fox Creek (PWMG 31) *E.coli* levels were found to be elevated with an average of 348 MPN/100 mL. The maximum level recorded was on July 7, with 938 MPN/100 mL while the lowest was on September 16 (33 MPN/100 mL). Again, these varying bacteria counts cannot be correlated with rain events alone. Other unknown factors are likely influencing the bacteria levels within this creek. Fox Creek has seen tremendous development along its shores since 1999.

Rural sites (PWMG 5, 11, 16, 17, 52, 58, 59, 72, 61, 73, 74, 75, 82) did not show the same trends despite potential problems from agricultural runoffs, faulty septic systems and quarry activities. For instance, data collected on Ogilvie Brook (PWMG 82) suggest good water quality. With an average *E.coli* count of 83 MPN/100 mL and with only one sample over the CWQG standards (sampled August 16) at 213 MPN/100 mL, it suggests there is little urban influence.

3.2.2 Dissolved Oxygen, Suspended Sediments, pH, and Temperature

Dissolved Oxygen (DO) is an important parameter when evaluating the health of an aquatic system. DO is directly linked with water temperature since cold water has the ability to hold more oxygen than warm water. Since the Petitcodiac and Memramcook rivers support mostly cold water fish species (i.e. salmonids), cool water temperatures are essential.

In terms of dissolved oxygen concentrations, only a hand full of samples showed low concentrations, notably at sites PWMG 72, 75 with 2.5 mg/L and 4.2 mg/L respectively on August 31 (Appendix 2). For that same day, percent saturation at site PWMG 72 was also very low with a concentration of 24.2%. At this level, there may be serious consequences for aquatic life. Elevated bacteria levels or bacteria using up the oxygen might explain this situation. The temperature was approximately 17°C which is not abnormally high. Unfortunately, no bacteria samples were taken at that location on that day so it is difficult to pin point the cause. Site PWMG 72 (South Branch Memramcook River) is characterized by slow moving water and its flow is often slowed by beaver dams located down stream. Slow moving water is also characteristic of site PWMG 75 (Smith Creek).

Regarding the pH levels, the Memramcook River has been known to have elevated humic acid concentrations. On-site observation of tea coloured water at sites PWMG 72 and PWMG 75 is an indication of this. pH levels of = 6 at both these sites also hint towards the presence of humic acid. These acidity levels can be associated with the

decomposition of organic material which leaches into the watercourse, thus the tea coloured water.

Concerning suspended sediment concentrations, urban streams and rivers show elevated levels (=10 mg/L) compared to water courses found in rural settings (=5 mg/L). Rabbit Brook sites PWMG 24 and 80 are amongst urban sites which show elevated levels of suspended sediments with averages of 11 mg/L and 40 mg/L respectively. Depending on the period, concentration levels vary from 0 mg/L up to 77 mg/L for these two urban sites (Appendix 2). Other urban sites such as Humphrey's Brook and Fox Creek also show similar results with average concentrations of 38 mg/L at site PWMG 30 and of 17 mg/L at site PWMG 31 (Table 3).

4.0 DISCUSSION & CONCLUSION

For the past 7 years (1999), the Petitcodiac and Memramcook River Watersheds have been monitored for water quality. During this time few water quality changes have been observed in watercourses that travel through primarily rural areas, while steady degradation has occurred for those that flow through urban areas.

Brooks and streams that are influenced by urbanization show alarming signs of degradation, either through water quality and habitat loss, and since 1999 this downward trend does not show any signs of stopping. Rabbit Brook and West Branch Halls Creek are two of these watercourses which show increasing degradation year after year. Elevated bacteria levels (i.e. =900 MPN/100mL) at both these sites indicate that they are not able to assimilate the development that is taking place around them. Past water quality reports suggest that sewage cross connections are prevalent in these watercourses, and this is still the case today. While some work has been undertaken by this organization in collaboration with the City of Moncton, it is clear that more has to be done in order to rehabilitate these urban watercourses (Appendix 3 – Summary of PWMG 2005-2006 activities).

Strict management policies dealing with urban streams have to be developed in order to help protect what is left of these small urban ecosystems. To start, buffer zones should be maintained and/or rehabilitated depending on the situation. However, buffer zones will only solve part of the problem. Special zoning by-laws should be implemented to protect green space along watercourses. In Ontario, certain cities have enacted zoning along streams that can only be revised every 5 years. Having this type of zoning helps to prevent quick and uncontrolled development. Instead a developer must approach the city with a development request and wait for the local population to examine the project and react, in addition to the city council. In this case, if development is deemed necessary, then a comprehensive development plan can be produced and put in place.

In the Moncton area, developers have started using Storm Septor™ units to limit the amount of debris, oil and sediment entering watercourses. Several of these units have been installed along Rabbit Brook, but suspended sediments and bacteria levels are still

high. While this method is effective in theory, these units have to be maintained on a regular basis to be effective. In the case of Rabbit Brook, either the maintenance is not being done, or the units installed cannot cope with the amount of debris coming into the storm sewers. Either way, a revision of this system should be done by the city.

Fox Creek is another site which is under severe pressure from development. A golf course, road work, residential and industrial development have all had some impact on this creek. For example, in the spring of 2006 during an important rain event, the culvert on Melanson Road was washed out. Needless to say, significant amounts of sediments were washed directly into Fox Creek. Elevated bacteria and suspended sediment concentrations in this creek were not surprising considering the observed impacts. With its buffers being thinned and removed, spikes in bacteria levels for no apparent reasons (except for booming residential development along its shores) will likely continue unless proper management policies are adopted to protect and rehabilitate the creek.

In conclusion, urban streams assessed in this report show signs of fatigue, while rural watercourses show stability in terms of water quality. Particular attention has to be put towards rehabilitating urban streams while at the same time implementing proper conservation policies and strategies.

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APPENDIX 1. Station Listings

Station Name: Anagance River Above Mouth PWMG 2

Description: sampled upstream from bridge located just up from mouth . Westmorland Co, Elgin Pa. Follow road through town, turn onto dirt road where DNRE building is located. Drive past DNRE

Site:

Water Body:		Historical ID:	00BR01BU0092
StationID:	1211	UTM Zone:	20
PID:		UTM Northing:	5088079
Station Status:	Inactive	UTM Easting:	330330
		Latitude:	45.927296
		Longitude:	65.1875

Station Name: Anagance River above North River confluence

Description: below bridge just above the confluence with the North River. Riffle. Stn. 2; For fall 1998 benthic study: (1) rubble substrate (2) unshaded (3) water 1-1.5' deep (4) swamp hardwood

Site:

Water Body:	Anagance River; . aka Annagance River	Historical ID:	00BR01BU0166
StationID:	8184	UTM Zone:	20
PID:		UTM Northing:	5088399
Station Status:	Inactive	UTM Easting:	330400
		Latitude:	45.930191
		Longitude:	65.186711

Station Name: Anagance River Above Rte 895 Bridge PWMG 1

Description: upstream from route 895 bridge.,Kings Co, Cardwell Pa

Site:

Water Body:		Historical ID:	00BR01BU0091
StationID:	1210	UTM Zone:	20
PID:		UTM Northing:	5082269
Station Status:	Inactive	UTM Easting:	324700
		Latitude:	45.87363
		Longitude:	65.257935

Station Name: Bennett Brook below old ford site

Description: 30m downstream from old ford site located approx. 2km off Rte. 885. Riffle. Stn. 11; For fall 1998 benthic study: (1) rubble substrate with silt (2) fast-moving, < 1' deep (3) narrow brook, some shade from marsh, alder

Site:

Water Body:		Historical ID:	00BR01BU0174
StationID:	8192	UTM Zone:	20
PID:		UTM Northing:	5092799
Station Status:	Inactive	UTM Easting:	328350
		Latitude:	45.969255
		Longitude:	65.214709

Station Name: Bennett Brook near mouth PWMG 45

Description: Approx 15 m U/ S from the mouth. To access site, take sample from North River at bridge near Intervale. Walk downstream along North River to Bennett. Walk u/s approx 15 - 20 m.

Site:

Water Body:	Bennett Brook	Historical ID:	
StationID:	9848	UTM Zone:	20
PID:		UTM Northing:	5091649
Station Status:	Inactive	UTM Easting:	329350
		Latitude:	45.959161
		Longitude:	65.201402

Station Name: Bennett Brook PWMG 6

Description: Upstream from fording site located approx 2km off rte 885, south side of rd,Westmorland Co, Salisbury Pa

Site:

Water Body:		Historical ID:	00BR01BU0093
StationID:	1180	UTM Zone:	20
PID:		UTM Northing:	5092499
Station Status:	Inactive	UTM Easting:	328600
		Latitude:	45.966619
		Longitude:	65.211377

Station Name: Fox Creek at route 106 PWMG 31
Description: Upstream from culvert on route 106 south of St. Anselme, Westmorland Co. Moncton Pa. Station 1
Site:
Water Body:
StationID: 976
PID:
Station Status: Active
Historical ID: 00BR01BU0036
UTM Zone: 20
UTM Northing: 5102249
UTM Easting: 368025
Latitude: 46.06305
Longitude: 64.705499

Station Name: Fox Creek at Pascal St.
Description: Upstream from culvert on Pascal St., Westmorland Co. Moncton Pa.
Site:
Water Body:
StationID:
PID:
Station Status: Inactive
Historical ID:
UTM Zone:
UTM Northing:
UTM Easting:
Latitude:
Longitude:

Station Name: Halls Creek near mouth PWMG 44
Description: D/S from confluence of NBR and WBR. Site is on creek near baseball field and across the field from new Law Building. The banks are muddy but the site can be accessed from some boulders on the bank. Pull off Wheeler Blvd and park between the baseball and soccer fields.
Site:
Water Body: Halls Creek; Within City of Moncton. aka Hall Creek
StationID: 9847
PID:
Station Status: Inactive
Historical ID:
UTM Zone: 20
UTM Northing: 5106649
UTM Easting: 361600
Latitude: 46.101362
Longitude: 64.789807

Station Name: Humphreys Brook @ Mill Rd Bridge PWMG 29
Description: located below spillway under bridge on mill rd below humphreys mills pond., Westmorland Co, Moncton Pa; For fall 1998 benthic study: (1) substrate mixed large and small rocks (2) lots of debris in brook, including bike frame (3) water about 1' deep, brown, fast moving (4) sewage smell
Site:
Water Body:
StationID: 888
PID:
Station Status: Active
Historical ID: 00BR01BU0120
UTM Zone: 20
UTM Northing: 5107499
UTM Easting: 363300
Latitude: 46.109351
Longitude: 64.768068

Station Name: Humphreys Brook @ Stn 1
Description: U/s from lewisville rd, behind metro stn 1997, Westmorland Co. Moncton Pa. Station 1
Site:
Water Body:
StationID: 887
PID:
Station Status: Inactive
Historical ID: 00BR01BU0034
UTM Zone: 20
UTM Northing: 5106578
UTM Easting: 362975
Latitude: 46.101
Longitude: 64.772

Station Name: Humphreys Brook @ TCH PWMG 30
Description: approx 100m u/s from culvert at TCH xing, Westmorland Co. Moncton Pa. Station 2. Walk past standpipe located beside river.
Site:
Water Body:
StationID: 886
PID:
Station Status: Inactive
Historical ID: 00BR01BU0035
UTM Zone: 20
UTM Northing: 5109379
UTM Easting: 365200
Latitude: 46.126641
Longitude: 64.744028

Station Name: Jonathan Creek 7 - Below Horsman Road (PWMG 23)
Description: approx 15m d/s from culvert under Horsman Road., Westmorland Co, Moncton
Site:
Water Body:
StationID: 863
PID:
Station Status: Inactive
Historical ID: 00BR01BU0118
UTM Zone: 20
UTM Northing: 5106849
UTM Easting: 356100
Latitude: 46.102024
Longitude: 64.860988

Station Name: Jonathan Creek 20m above Horsman Road culvert
Description: 20m above culvert under Horsman Road. Riffle. Stn. 10; For fall 1998 benthic study: (1) substrate gravelly with rock outcrops (2) water murky, deep (3) partly shaded
Site:

Water Body: Jonathan Creek
StationID: 8191
PID:
Station Status: Inactive
Latitude: 46.102003
Longitude: 64.862281
Historical ID: 00BR01BU0173
UTM Zone: 20
UTM Northing: 5106849
UTM Easting: 356000

Station Name: Jonathan Creek Below Wheeler Blvd
Description: approx 100m downstream from culvert passing under wheeler blvd.,Westmorland Co.

Site:
Water Body:
StationID: 860
PID:
Station Status: Inactive
Latitude: 46.092987
Longitude: 64.835459
Historical ID: 00BR01BU0096
UTM Zone: 20
UTM Northing: 5105799
UTM Easting: 358050

Station Name: Jones Lake PWMG 22
Description: sample taken at culvert outlet across Main Street from Jones Lake.,Westmorland Co, Moncton Pa

Site:
Water Body:
StationID: 858
PID:
Station Status: Inactive
Latitude: 46.08241
Longitude: 64.793074
Historical ID: 00BR01BU0097
UTM Zone: 20
UTM Northing: 5104549
UTM Easting: 361300

Station Name: Little River below Mitton Brook confluence
Description: 200m downstream of confluence of Mitton Brook (below bridge over Little River). Riffle. Stn. 9; For fall 1998 benthic study: (1) substrate ? (2) water fast moving, 1.5-2' deep, murkier and warmer than Prosser (3) shoreline dense alder and willow

Site:
Water Body: Little River; Flows NW. into Petitcodiac River. aka Coverdale
StationID: 8190
PID:
Station Status: Inactive
Latitude: 45.8662
Longitude: 64.994814
Historical ID: 00BR01BU0172
UTM Zone: 20
UTM Northing: 5080899
UTM Easting: 345100

Station Name: Little River below Prosser Brook PWMG 41
Description: Turn left (north) on 895 after crossing bridge in Parkindale. Turn on road leading to cemetery. Park beside cemetery and follow dirt road to camp with trailer. Sample site is located approx. 25 m D/S from dock in front of camp. Cobble/boulder bottom.

Site:
Water Body:
StationID: 9846
PID:
Station Status: Inactive
Latitude: 45.869572
Longitude: 64.98205
Historical ID: 00BR01BU0178
UTM Zone: 20
UTM Northing: 5081249
UTM Easting: 346100

Station Name: Little River near mouth PWMG 17
Description: upstream from route 112 bridge, just west of five points.,Albert Co, Coverdale Pa; For fall 1998 benthic study: (1) substrate small stones (2) marsh/hay shore, unshaded

Site:
Water Body:
StationID: 784
PID:
Station Status: Active
Latitude: 46.019628
Longitude: 65.02229
Historical ID: 00BR01BU0098
UTM Zone: 20
UTM Northing: 5097999
UTM Easting: 343400

Station Name: Memramcook River @ Calhoun PWMG 35
Description: Memramcook river @ calhoun ,Westmorland Co, Dorchester Pa

Site:
Water Body:
StationID: 702
PID:
Station Status: Active
Latitude: 46.067
Longitude: 64.572
Historical ID: NB01BU0008
UTM Zone: 20
UTM Northing: 5102475
UTM Easting: 378359

Station Name: Memramcook River @ College Bridge PWMG 36
Description: Memramcook river @ college bridge ,Westmorland Co, Dorchester Pa
Site:
Water Body:
StationID: 701
PID:
Station Status: Inactive
Historical ID: 00BR01BU0121
UTM Zone:
UTM Northing:
UTM Easting:
Latitude:
Longitude:

Station Name: Mill Creek below Pine Glen highway
Description: 30m below Pine Glen highway. Riffle. Stn. 14; For fall 1998 benthic study: (1) substrate large rocks at riffle (2) deep pools of water either side of culvert under road (3) water very turbid, possible rain the previous night (4) willow, alder, swamp shoreline
Site:
Water Body:
StationID: 8195
PID:
Station Status: Inactive
Historical ID: 00BR01BU0177
UTM Zone: 20
UTM Northing: 5100099
UTM Easting: 361750
Latitude: 46.042469
Longitude: 64.785964

Station Name: Mill Creek below reservoir PWMG 20
Description: 70-100m below spillway of reservoir at an old crossing (no bridge structure).,Westmorland Co, Coverdale Pa
Site:
Water Body:
StationID: 694
PID:
Station Status: Inactive
Historical ID: 00BR01BU0099
UTM Zone: 20
UTM Northing: 5101999
UTM Easting: 363950
Latitude: 46.060003
Longitude: 64.758088

Station Name: North Branch Halls Creek PWMG 28
Description: approx 50m upstream from culvert under TCH.
Site:
Water Body:
StationID: 565
PID:
Station Status: Inactive
Historical ID: 00BR01BU0100
UTM Zone: 20
UTM Northing: 5109619
UTM Easting: 360420
Latitude: 46.127839
Longitude: 64.805939

Station Name: North River @ Pacific Junct Rd Bridge PWMG 9
Description: Approx 75m u/s from bridge on Pacific Junct Rd, u/s from garbage thrown on river banks,Westmorland Co, Moncton Pa; Follow path under bridge upstream.
Site:
Water Body:
StationID: 548
PID:
Station Status: Inactive
Historical ID: 00BR01BU0103
UTM Zone: 20
UTM Northing: 5103149
UTM Easting: 338125
Latitude: 46.064722
Longitude: 65.092141

Station Name: North River Above Rte 885 Bridge PWMG 5
Description: 30-40m u/s of rte 885 bridge, just west of Intervale; request owner's permission,Westmorland Co, Salisbury Pa
Site:
Water Body:
StationID: 546
PID:
Station Status: Active
Historical ID: 00BR01BU0101
UTM Zone: 20
UTM Northing: 5091949
UTM Easting: 329550
Latitude: 45.961909
Longitude: 65.19893

Station Name: North River above Rte. 880 crossing PWMG 43
Description: 200m upstream from Rte. 880 crossing. Riffle. Stn. 4; For fall 1998 benthic study: (1) rocky substrate with some silt and algae on rocks (2) about 1' deep (3) partial shade from alder, mixed-wood banks
Site:
Water Body: North River
StationID: 8186
PID:
Station Status: Inactive
Historical ID: 00BR01BU0168
UTM Zone: 20
UTM Northing: 5101449
UTM Easting: 335850
Latitude: 46.04889
Longitude: 65.120949

Station Name: North River below bridge on Morton Rd PWMG 7
Description: Bridge over North R on Morton Road between Fawcett & Wheaton Settlements. Sample D/S from bridge.
Site:
Water Body:
StationID: 547 **Historical ID:** 00BR01BU0013
PID: **Latitude:** 46.018922 **UTM Zone:** 20
Station Status: *Inactive* **Longitude:** 65.182846 **UTM Northing:** 5098249
UTM Easting: 330970

Station Name: North River Below Rte 112 Bridge PWMG 8
Description: Downstream from route 112 bridge approx 5 to 10 m (upstream side too muddy),Westmorland Co, Salisbury Pa
Site:
Water Body:
StationID: 545 **Historical ID:** 00BR01BU0102
PID: **Latitude:** 46.064701 **UTM Zone:** 20
Station Status: *Inactive* **Longitude:** 65.092786 **UTM Northing:** 5103148
UTM Easting: 338075

Station Name: North River below Tingley Hill Bridge PWMG 40
Description: 50m downstream from Tingley Hill bridge. Riffle. Stn. 3; For fall 1998 benthic study: (1) mixed substrate, mostly rubble-sized, some much larger (2) unshaded (3) < 1' deep, water clear
Site:
Water Body: North River **Historical ID:** 00BR01BU0167
StationID: 8185 **UTM Zone:** 20
PID: **Latitude:** 45.939911 **UTM Northing:** 5089499
Station Status: *Inactive* **Longitude:** 65.196124 **UTM Easting:** 329700

Station Name: Petitcodiac River @ Causeway Fishway PWMG 21
Description: From causeway, new lane, adjacent to fishway from headpond (sample iron used),Albert Co, Coverdale
Site:
Water Body:
StationID: 469 **Historical ID:** 00BR01BU0117
PID: **Latitude:** **UTM Zone:**
Station Status: *Inactive* **Longitude:** **UTM Northing:**
UTM Easting:

Station Name: Petitcodiac River 30m below covered bridge
Description: 30m downstream from covered bridge. Turn right on road (approx. 1km after TCH) off Hwy. 6. Run. Stn. 12; For fall 1998 benthic study: (1) substrate large rocks with abundant algal growth (2) slow water, samplers in "run", all others in "riffles"
Site:
Water Body: Petitcodiac River; Flows S. into Shepody Bay. aka Petcoudiac **Historical ID:** 00BR01BU0175
StationID: 8193 **UTM Zone:** 20
PID: **Latitude:** 46.000418 **UTM Northing:** 5095999
Station Status: *Inactive* **Longitude:** 65.089391 **UTM Easting:** 338150

Station Name: Petitcodiac River 50m above Rte. 112 bridge
Description: 50m above Rte. 112 bridge. Riffle. Stn. 13; For fall 1998 benthic study: (1) substrate rocks smaller than those in sampler (2) water < 1' deep (3) marsh shoreline; unshaded
Site:
Water Body: Petitcodiac River; Flows S. into Shepody Bay. aka Petcoudiac **Historical ID:** 00BR01BU0176
StationID: 8194 **UTM Zone:** 20
PID: **Latitude:** 46.021209 **UTM Northing:** 5098199
Station Status: *Inactive* **Longitude:** 65.034621 **UTM Easting:** 342450

Station Name: Petitcodiac River Above French Brook PWMG 15
Description: U/s from mouth of french brook on rte 106 (by mail box # 3447, river on east side),Westmorland Co, Salisbury Pa; Approx 1km
Site:
Water Body:
StationID: 461 **Historical ID:** 00BR01BU0106
PID: **Latitude:** 46.011592 **UTM Zone:** 20
Station Status: *Inactive* **Longitude:** 65.068886 **UTM Northing:** 5097199
UTM Easting: 339770

Station Name: Petitcodiac River Above Rte 905 Bridge PWMG 3
Description: Sampled approx 50 m upstream from bridge on rte 905 in town of Petitcodiac, Westmorland Co.
Site:
Water Body:
StationID: 460 **Historical ID:** 00BR01BU0104
PID: **Latitude:** 45.933077 **UTM Zone:** 20
Station Status: Inactive **Longitude:** 65.177022 **UTM Northing:** 5088699
UTM Easting: 331160

Station Name: Petitcodiac River at TCH Bridge PWMG 4
Description: east of Petitcodiac at TCH bridge. 1997 - sample adjacent to wsc gauge stn upstream from tributary, Westmorland Co, Sals Pa, Petitcodiac
Site:
Water Body:
StationID: 470 **Historical ID:** NB01BU0003
PID: **Latitude:** 45.946761 **UTM Zone:** 20
Station Status: Inactive **Longitude:** 65.167365 **UTM Northing:** 5090199
UTM Easting: 331950

Station Name: Petitcodiac River Below Rte 112 Bridge PWMG 16
Description: 100m downstream from bridge on route 112, Westmorland Co, Salisbury Pa
Site:
Water Body:
StationID: 459 **Historical ID:** 00BR01BU0107
PID: **Latitude:** 46.022581 **UTM Zone:** 20
Station Status: Active **Longitude:** 65.03338 **UTM Northing:** 5098349
UTM Easting: 342550

Station Name: Petitcodiac River near mouth of Pollett R PWMG 10
Description: U/s from mouth of Pollett. Cross covered bridge on Powers Pit rd. Sample u/s from bridge, Westmorland Co., Sals Pa; Stn 3,
Site:
Water Body:
StationID: 465 **Historical ID:** 00BR01BU0010
PID: **Latitude:** 45.996875 **UTM Zone:** 20
Station Status: Inactive **Longitude:** 65.091195 **UTM Northing:** 5095609
UTM Easting: 338000

Station Name: Pollett River @ Church's Corner PWMG 14
Description: At bridge west of Church's Corner(cc) 1997 - approx 30m u/s of bridge, Albert Co., Elgin Pa. Station 4. / For benthic study: 30m upstream from bridge at Church's Corner. Riffle. Stn. 5; (1) substrate mixed with several large rocks above water surface (2) marsh and mixed forest on banks (3) < 1' deep, very clear
Site:
Water Body: Pollett River; . aka Pollet River **Historical ID:** 00BR01BU0018
StationID: 442 **UTM Zone:** 20
PID: **Latitude:** 45.756879 **UTM Northing:** 5068919
Station Status: Inactive **Longitude:** 65.078347 **UTM Easting:** 338300

Station Name: Pollett River @ Mapleton Bridge PWMG 13
Description: approx 30m u/s from bridge on Mapleton Road., Elgin Pa. Station 3.
Site:
Water Body:
StationID: 443 **Historical ID:** 00BR01BU0017
PID: **Latitude:** 45.812 **UTM Zone:** 20
Station Status: Inactive **Longitude:** 65.105882 **UTM Northing:** 5075099
UTM Easting: 336320

Station Name: Pollett River 1km Above Mouth PWMG 11
Description: approx 1km u/s from mouth. Adjacent to stn BU0010 on Petitcodiac, Westmorland Co, Salisbury Pa. Continue down Powers Pitt Road after covered bridge, approx 100metres. Follow clearing to river; For fall 1998 benthic study: (1) substrate small rocks similar size and colour to sampler rocks (2) shallow, very clear (3) mixed-wood
Site:
Water Body:
StationID: 441 **Historical ID:** 00BR01BU0109
PID: **Latitude:** 45.995904 **UTM Zone:** 20
Station Status: Active **Longitude:** 65.090189 **UTM Northing:** 5095499
UTM Easting: 338075

Station Name: Pollett River 30m above Church's Corner bridge

Description: 30m upstream from bridge at Church's Corner. Riffle. Stn. 5; For fall 1998 benthic study: (1) substrate mixed with several large rocks above water surface (2) marsh and mixed forest on banks (3) < 1' deep, very clear

Site:

Water Body: Pollett River; . aka Pollet River

Historical ID: 00BR01BU0169

StationID: 8187

UTM Zone: 20

PID:

Latitude: 45.756699

UTM Northing: 5068899

Station Status: Inactive

Longitude: 65.07834

UTM Easting: 338300

Station Name: Pollett River east of Pollett R Settlement PWMG 12

Description: Bridge xing on pollett river located just east of pollett river settlement,Westmorland Co, Sals Pa; Sample approx 30 m u/s from bridge.

Site:

Water Body:

Historical ID: NB01BU0041

StationID: 446

UTM Zone: 20

PID:

Latitude: 45.888092

UTM Northing: 5083529

Station Status: Inactive

Longitude: 65.094194

UTM Easting: 337450

Station Name: Pollett River near Elgin above Gordon Falls

Description: Pollett River near Elgin above Gordon Falls

Site:

Water Body: Pollett River; . aka Pollet River

Historical ID: 00BR01BU0165

StationID: 8998

UTM Zone: 20

PID:

Latitude: 45.784301

UTM Northing: 5071999

Station Status: Inactive

Longitude: 65.094804

UTM Easting: 337100

Station Name: Prosser Brook above Little River confluence

Description: 30m above the confluence with Little River through woods at bend in ATV trail. Riffle. Stn. 8; For fall 1998 benthic study: (1) substrate rocks about same size as sampler rocks (2) water cold and fast moving (3) samplers in "holes" > 1.5' deep (4) brook mostly shaded with overhanging willow and alder

Site:

Water Body: Prosser Brook

Historical ID: 00BR01BU0171

StationID: 8189

UTM Zone: 20

PID:

Latitude: 45.86548

UTM Northing: 5080799

Station Status: Inactive

Longitude: 64.984481

UTM Easting: 345900

Station Name: Prosser Brook near mouth PWMG 18

Description: at bridge, on small road leading to house just before mouth, off road from Parkindale to Prosser Brook.

Site:

Water Body:

Historical ID: 00BR01BU0111

StationID: 438

UTM Zone: 20

PID:

Latitude: 45.863107

UTM Northing: 5080529

Station Status: Inactive

Longitude: 64.981176

UTM Easting: 346150

Station Name: Rabbit Brook @ Mapleton Rd PWMG 25

Description: few metres upstream from culvert under Mapleton road.,Westmorland Co, Moncton Pa

Site:

Water Body:

Historical ID: 00BR01BU0116

StationID: 434

UTM Zone: 20

PID:

Latitude: 46.112853

UTM Northing: 5107989

Station Status: Inactive

Longitude: 64.825766

UTM Easting: 358850

Station Name: Rabbit Brook near Mouth PWMG 24

Description: Near the mouth , approx 10m upstream from culvert under Wheeler blvd.,Westmorland Co, Moncton Pa

Site:

Water Body:

Historical ID: 00BR01BU0105

StationID: 433

UTM Zone: 20

PID:

Latitude: 46.111406

UTM Northing: 5107799

Station Status: Active

Longitude: 64.809219

UTM Easting: 360125

Station Name: Rabbit Brook at Cedar St.
Description: sampled 5 metres u/s from Cedar St. ,Westmorland Co, Moncton Pa
Site:

Water Body:
StationID:
PID:
Station Status: Inactive

Latitude:
Longitude:

Historical ID:
UTM Zone:
UTM Northing:
UTM Easting:

Station Name: Turtle Creek @ Bypass Channel
Description: Below pumphouse where bypass channel enters creek,Albert Co, Coverdale Pa
Site:

Water Body:
StationID: 104
PID:
Station Status: Inactive

Latitude: 46.005542
Longitude: 64.899078

Historical ID: 00BR01BU0112
UTM Zone: 20
UTM Northing: 5096199
UTM Easting: 352900

Station Name: Turtle Creek @ Bypass channel by pumphouse PWMG 19
Description: Station created in 1998. Previous Turtle Creek station could not be accessed for safety reasons. Site manager, Paul Richard must be contacted to unlock the gates. Call 387-8448. Drive down dirt road to pumphouse. Go through gates. Sample channel behind pumphouse.

Site:

Water Body: Turtle Creek
StationID: 8323
PID:
Station Status: Inactive

Latitude: 46.004069
Longitude: 64.892957

Historical ID:
UTM Zone: 20
UTM Northing: 5096024
UTM Easting: 353370

Station Name: Turtle Creek above Rte. 910 bridge PWMG 42
Description: 30m upstream from Rte. 910 bridge crossing. Riffle. Stn. 7; For fall 1998 benthic study: (1) substrate large rocks (2) water knee-deep in places, brown, fast moving

Site:

Water Body: Turtle Creek
StationID: 8188
PID:
Station Status: Inactive

Latitude: 45.959085
Longitude: 64.878132

Historical ID: 00BR01BU0170
UTM Zone: 20
UTM Northing: 5090999
UTM Easting: 354400

Station Name: Weldon Creek D/S from Salem PWMG 32
Description: sampled u/s from covered bridge near Salem settlement.,Albert Co, Hillsborough Pa; For fall 1998 benthic study: (1) substrate rocks larger than in sampler at riffle (2) water clear and fast moving (3) steep banks,

Site:

Water Body:
StationID: 61
PID:
Station Status: Inactive

Latitude: 45.916868
Longitude: 64.700367

Historical ID: 00BR01BU0113
UTM Zone: 20
UTM Northing: 5085999
UTM Easting: 368075

Station Name: West Branch Halls Creek @ Briardale St PWMG 27
Description: between Briardale and TCH .Access from Briardale st, Park on east end of street and follow (nature ?) path located adjacent to houses to river. Westmorland Co, Moncton

Site:

Water Body:
StationID: 60
PID:
Station Status: Inactive

Latitude: 46.127553
Longitude: 64.851881

Historical ID: 00BR01BU0119
UTM Zone: 20
UTM Northing: 5109669
UTM Easting: 356870

Station Name: West Branch Halls Creek @ Meadowvale Rd
Description: Near meadowvale road, past new housing area,Westmorland Co, Moncton Pa

Site:

Water Body:
StationID: 59
PID:
Station Status: Inactive

Latitude: 46.124848
Longitude: 64.841048

Historical ID: 00BR01BU0115
UTM Zone: 20
UTM Northing: 5109349
UTM Easting: 357699

Station Name: West Branch Halls Creek @ Wheeler Blvd PWMG 26
Description: d/s from mouth of rabbit brook on east side of wheeler blvd., Westmorland Co, Moncton
Site:
Water Body:
Station ID: 58
PID:
Station Status: Inactive
Historical ID: 00BR01BU0114
UTM Zone: 20
UTM Northing: 5107749
UTM Easting: 360400
Latitude: 46.111013
Longitude: 64.805648

Station Name: Ogilvie Brook at Hwy.2 PWMG 81
Description: 10 m upstream from TransCanada Hwy heading west.
Site:
Water Body: Ogilvie Brook
Station ID:
PID:
Station Status: Active
Latitude: 46.12883
Longitude: 64.80356

Station Name: Memramcook River @ Aboujagane Rd. PWMG 59
Description: sampled 5 metres u/s from Aboujagane Rd. culvert; upper parts of M'cook river, the area is forested
Site:
Water Body: Memramcook River
Station ID:
PID:
Station Status: Active
Latitude: 46.0714
Longitude: 64.4475

Station Name: Memramcook River South Branch @ Aboujagane Rd. PWMG 72
Description: sampled 5 metres u/s from Aboujagane Rd. culvert; upper parts of M'cook river, the area is forested
Site:
Water Body: Memramcook River
Station ID:
PID:
Station Status: Active
Latitude: 46.04360
Longitude: 64.47386

Station Name: Stony Creek @ mouth PWMG 73
Description: sampled 20 metres u/s from old TCH (dead end); the buffer zone at this location is thick on both sides of the creek
Site:
Water Body: Memramcook River
Station ID:
PID:
Station Status: Active
Latitude: 46.0425
Longitude: 64.5620

Station Name: Meadow Brook @ mouth PWMG 58
Description: sampled 10 metres u/s from confluence. Five minute walk D/S from RR bridge that crosses the Memramcook River.
Site:
Water Body: Memramcook River
Station ID:
PID:
Station Status: Active
Latitude: 46.0911
Longitude: 64.5967

Station Name: Memramcook River @ Covered Bridge (Gayton) PWMG 60
Description: sampled 5 metres u/s from covered bridge; the banks of the river are bordered by dense vegetation and the banks of the river made of silt.
Site:
Water Body: Memramcook River
Station ID:
PID:
Station Status: Inactive
Latitude: 46.0269
Longitude: 64.565

Station Name: Memramcook River @ RR tracks – PWMG 74
Description: access site from old TCH dead end (same as Stony Creek). Sample taken appx. 200 metres above where Stony Creek confluence enters the Memramcook River. Walk along RR tracks to access sampling site. This SS replaces PWMG 60.
Site:
Water Body: Memramcook River
Station ID:
Station Status: Active
Longitude:

Station Name: Breau Creek @ bridge off the Rt. 106 PWMG 52; dense vegetation border both sides of the creek. The substrate is made of rock with some sand.

Description: sampled 10 metres u/s from bridge

Site:

Water Body: Memramcook River

Station ID:

PID:

Station Status: Active

Latitude: 45.9700

Longitude: 64.5183

Station Name: Smith Brook @ Armour bridge PWMG 71

Description: sampled 15 metres u/s from Armour bridge; the banks of the brook are bordered by abandoned fields and a few residents are found 300 metres u/s from sampling site.

Site:

Water Body: Memramcook River

Station ID:

PID:

Station Status: Inactive

Latitude: 46.0206

Longitude: 64.5761

Station Name: Smith Brook off Sifroid Road – PWMG 75

Description: access Sifroid Road and drive appx. 1 km to brook on dirt road. Sample taken upstream of dirt road. Beaver impoundments are also present in the area. This site replaces PWMG 71.

Site:

Water Body: Memramcook River

Station ID:

PID:

Station Status: Active

Latitude:

Longitude:

Station Name: Memramcook River @ Calhoun PWMG 61 (benthic station – 2001)

Description: Same as PWMG 35

Site:

Water Body: Memramcook River

Station ID:

PID:

Station Status: Inactive

Historical ID: NB01BU0008

UTM Zone: 20

Latitude: 46.067

UTM Northing: 5102475

Longitude: 64.572

UTM Easting: 378359

Station Name: Memramcook River @ Rail Road Bridge (benthic station – 2001)

Description: 200 metres above Meadow brook confluence with the Memramcook river

Site:

Water Body: Memramcook River

Station ID:

PID:

Station Status: Inactive

Latitude: N/A

Longitude: N/A

Historical ID:

UTM Zone:

UTM Northing:

UTM Easting:

Appendix 2. Raw water quality data
(2005)

	Site	River	Date (dd/mm/yy)	MPN total coliform	# <i>E. coli</i>	MPN <i>E. coli</i>	Suspended Sediment (mg/L)	pH	Time	Dissolved Oxygen (mg/L)	Percent Saturation (%)	Water Temp (C)	Depth @ sample (m)	Weather
	PWMG 11	Pollett River	04/07/05	102	3	8	4.7		13:30	9.38		23.3		Sunny, 32 C, no rain for 2 days
	PWMG 11	Pollett River	18/07/05	123	9	25	-0.8	6.8	11:00	8.42		23.1	0.9	Sunny, hot, no rain in last 48 hrs
	PWMG 11	Pollett River	03/08/05	46	5	13			13:30	9.44		20.5	0.69	Rained all afternoon
	PWMG 11	Pollett River	16/08/05	49	9	25		6.8	11:35	9.05		20.2	0.29	Sunny, no rain
	PWMG 11	Pollett River	28/08/05	119	7	19			11:26	8.31	93.9	21.5	Bronwyns Knees	Rain, Cloud and Sun
	PWMG 11	Pollett River	16/09/05	110	9	25			11:22	8.9	95	19.6	Knee B	Sunny, Rain last night, green alga, manure smell in the air
	PWMG 11	Pollett River	12/10/05	49	8	22			11:55	11.17	96.8	9.5	belt on waders	After big fall rains, incredibly high waters
PWMG 11	Min			46.0	3.0	8.0	-0.8	6.8		8.3	93.9	9.5		
	Max			123.0	9.0	25.0	4.7	6.8		11.2	96.8	23.3		
	Std			35.7	2.3	6.7	3.9	0.0		1.0	1.5	4.7		
	Ave			85.4	7.1	19.6	2.0	6.8		9.2	95.2	19.7		
	Count (n)			7	7	7	2	2		7	3	7		
	PWMG 16	Petitcodiac River	04/07/05	46	2	5	3.4		14:20	10.66		24.5		Sunny, 32 C, no rain for 2 days
	PWMG 16	Petitcodiac River	18/07/05	36	2	5	-0.3	6.7	12:15	8.94		25	0.44	Sunny, hot, no rain in last 48 hrs
	PWMG 16	Petitcodiac River	04/08/05	90	24	72			14:17	10.36		20.7	0.71	Rained all afternoon
	PWMG 16	Petitcodiac River	16/08/05	55	3	8		7.1	12:40	9.57		22.2	0.44	Sunny, no rain
	PWMG 16	Petitcodiac River	28/08/05	30	6	16			11:40	8.15	93.2	22.1	0.45	Rain, Cloud and Sun

	PWMG 16	Petitcodiac River	16/09/05	79	10	28			11:48	8.69	96.5	20.3	Top of boot B	sunny, rain last night, brown algae, very low water level
	PWMG 16	Petitcodiac River	12/10/05	132	17	49			12:33	10.02	88.8	10.1	past waist	After big fall rains, incredibly high waters
PWMG 16	Min			30.0	2.0	5.0	-0.3	6.7		8.2	88.8	10.1		
	Max			132.0	24.0	72.0	3.4	7.1		10.7	96.5	25.0		
	Std			36.1	8.5	25.7	2.6	0.3		0.9	3.9	5.0		
	Ave			66.9	9.1	26.1	1.6	6.9		9.5	92.8	20.7		
	Count (n)			7	7	7	2	2		7	3	7		
	PWMG 17	Little River	04/07/05	102	2	5	1.5		15:30	9.03		27.1		Sunny, 32 C, no rain for 2 days
	PWMG 17	Little River	18/07/05	114	16	46	-0.9	7.3	12:30	8.85		26.3	0.9	Sunny, hot, no rain in last 48 hrs
	PWMG 17	Little River	03/08/05	83	11	30			14:05	10.35		21.2	0.83	Rained all afternoon
	PWMG 17	Little River	16/08/05	11	2	5		7.1	12:55	9.24		22.8	1	Sunny, no rain
	PWMG 17	Little River	29/08/05	90	12	33			12:00	8.3	97.4	22.1	0.71	Rain, Cloud and Sun
	PWMG 17	Little River	16/09/05	49	12	33			12:07	9.34	104	20.8	above knees	Sunny, rain last night, lots of brown algae, lots of bird feces in the water
	PWMG 17	Little River	12/10/05	30	7	19			12:44	10.92	96.3	10	over waders	After big fall rains, incredibly high waters
PWMG 17	Min			11.0	2.0	5.0	-0.9	7.1		8.3	96.3	10.0		
	Max			114.0	16.0	46.0	1.5	7.3		10.92	104.0	27.1		
	Std			38.8	5.4	15.4	1.7	0.1		0.9	4.2	5.6		
	Ave			68.4	8.9	24.4	0.3	7.2		9.4	99.2	21.5		
	Count (n)			7	7	7	2	2		7	3	7		
	PWMG 20	Mill Creek	07/07/05	94	8	22	12.9		13:15	9.28		18.3	0.26	Sunny, rained yesterday
	PWMG 20	Mill Creek	20/07/05	280	55	219		6	13:45	9.23		19.6	0.43	Light Rain. Rained on weekend
	PWMG 20	Mill Creek	09/08/05						10:05	7.6		20.7	0.28	Sunny, No rain in last 3 days
	PWMG 20	Mill Creek	16/08/05					6	10:15	6.8		17	0.21	Sunny, no rain

	PWMG 20	Mill Creek	28/08/05	39	2	5			13:06	7.81	89.8	22.1	2 Inch above B boot	Rain, Cloud and Sun
	PWMG 20	Mill Creek	16/09/05	79	10	28			12:51	5.53	58.9	18.3	ankles	Sunny, rain last night, lots of bugs, very orangy water, lots of brown algae
PWMG 20	Min			39.0	2.0	5.0	12.9	6.0		5.5	58.9	17.0		
	Max			280.0	55.0	219.0	12.9	6.0		9.3	89.8	22.1		
	Std			107.2	24.4	100.8		0.0		1.4	21.8	1.9		
	Ave			123.0	18.8	68.5	12.9	6.0		7.7	74.4	19.3		
	Count (n)			4	4	4	1	2		6	2	6		
	PWMG 24	Rabbit Brook-Lower	06/07/05	362	71	362	22.3		13:30	7.91		15.9	0.26	16 C, light rain for 4-6 hours
	PWMG 24	Rabbit Brook-Lower	18/07/05	2424	92	1174	-0.5	6.8	16:00	10.22		23.9	0.42	Sunny, hot, no rain in last 48 hrs
	PWMG 24	Rabbit Brook-Lower	04/08/05	2424	95	2424			11:45	8.57		16.1	0.29	Overcast, rained all day yesterday
	PWMG 24	Rabbit Brook-Lower	16/08/05	1696	44	156		8	15:45	10.1		19.6	0.28	Sunny, no rain
	PWMG 24	Rabbit Brook-Lower	28/08/05	2424	40	136			15:30	9.55	105	19.2	0.28	Rain, Cloud and Sun
	PWMG 24	Rabbit Brook-Lower	16/09/05	200	37	123			15:29	7.45	79	18.2	inch above boot pattern	Sunny, rain last night, turbid as usual
	PWMG 24	Rabbit Brook-Lower	12/10/05	94	28	87			14:40	9.34	88.6	12.9	middle of knee pad	after heavy fall rains, high water
PWMG 24	Min			94.0	28.0	87.0	-0.5	6.8		7.5	79.0	12.9		
	Max			2424.0	95.0	2424.0	22.3	8.0		10.2	105.0	23.9		
	Std			1114.5	27.6	876.2	16.1	0.8		1.1	13.1	3.5		
	Ave			1374.9	58.1	637.4	10.9	7.4		9.0	90.9	18.0		

	Count (n)			7	7	7	2	2		7	3	7		
	PWMG 27	W. Branch Hall Creek	11/07/05	289	38	127	13.3		14:30	9.82		15.4	0.48	Overcast, Rained heavily in the morning
	PWMG 27	W. Branch Hall Creek	18/07/05	2424	93	1370	0.8	7.5	15:15	9.61		17.7	0.09	Sunny, hot, no rain in last 48 hrs
	PWMG 27	W. Branch Hall Creek	04/08/05	1370	90	938			10:40	9.67		15.7	0.27	Overcast, Rained all day yesterday
	PWMG 27	W. Branch Hall Creek	16/08/05	938	90	938		7.8	15:15	8.97		17.4	0.27	Sunny, no rain
	PWMG 27	W. Branch Hall Creek	29/08/05	177	47	171			15:03	8.63	90.3	17	0.47	Rain, Cloud and Sun, not raining
	PWMG 27	W. Branch Hall Creek	16/09/05	127	35	114			14:30	8.8	91.3	17	2 Inch above B boot	Beautiful all day long, rain last night, fish
	PWMG 27	W. Branch Hall Creek	30/09/05						13:55	10.34	95.7	11.4	top of knee pads	after big fall rains, very high water levels
PWMG 27	Min			127.0	35.0	114.0	0.8	7.5		8.6	90.3	11.4		
	Max			2424.0	93.0	1370.0	13.3	7.8		10.3	95.7	17.7		
	Std			898.6	28.2	541.3	8.8	0.2		0.6	2.9	2.2		
	Ave			887.5	65.5	609.7	7.1	7.7		9.4	92.4	15.9		
	Count (n)			6	6	6	2	2		7	3	7		
	PWMG 28	N.Branch Halls Cr	06/07/05	119	35	114	0.4		16:00	8.13		16.4	0.48	16 C, light rain for 4-6 hours
	PWMG 28	N.Branch Halls Cr	18/07/05	136	20	59	0.2	7.8	15:10	8.38		24	0.46	Sunny, hot, no rain in last 48 hrs
	PWMG 28	N.Branch Halls Cr	04/08/05	298	25	76			10:16	9.36		17.3	0.57	Overcast, Rained all day yesterday
	PWMG 28	N.Branch Halls Cr	16/08/05	226	54	213		7.9	14:30	10.31		20.2	0.45	Sunny, no rain
	PWMG 28	N.Branch Halls Cr	29/08/05	87	11	30			14:30	9.4	101.4	19.3	1 1/2 inch above B	Rain, Cloud and Sun, raining

													boot	
	PWMG 28	N.Branch Halls Cr	16/09/05	62	12	33			14:20	9.88	104.6	17.9	Knee B	walked a bit upstream, running clear unlike extra silty humphrey's brook. Abandoned beaver dam with fish passage around. Saw a very large brook trout
	PWMG 28	N.Branch Halls Cr	12/10/05	114	19	55			13:30	9.99	92.8	12.2	top of waders	after big fall rains, incredibly high waters, beaver dam almost entirely covered with water, very fast moving water
	PWMG 28	N.Branch Halls Cr	12/10/05		5									
PWMG 28	Min			62.0	5.0	30.0	0.2	7.8		8.1	92.8	12.2		
	Max			298.0	54.0	213.0	0.4	7.9		10.3	104.6	24.0		
	Std			15.7	64.0	0.1	0.1	0.1		6.1	3.6	0.1		
	Ave			148.9	22.6	82.9	0.3	7.9		9.4	99.6	18.2		
	Count (n)			7	8	7	2	2		7	3	7		
	PWMG 29	Humphreys Br at Mill rd.	06/07/05	156	24	72	5.9		17:00	8.74		18.2	0.97	16 C, light rain for 4-6 hours
	PWMG 29	Humphreys Br at Mill rd.	21/07/05	127	26	79	3.1	7.4	14:05	7.83		24.4	0.25	Sunny, some morning rain
	PWMG 29	Humphreys Br at Mill rd.	04/08/05	194	46	166			12:10	10.06		16.8	0.25	Overcast, Rained all day yesterday
	PWMG 29	Humphreys Br at Mill rd.	16/08/05	328	26	79	7.7		16:15	8.03		20		Sunny, no rain
	PWMG 29	Humphreys Br at Mill rd.	29/08/05	94	19	55			15:45	7.37	85.9	19.6	0.28	Rain, Cloud and Sun
	PWMG 29	Humphreys Br at Mill rd.	16/09/05	534	52	200			16:00	8.25	88.5	18.4	ankles	Sunny, rain last night, brown-grey water, smelly
	PWMG 29	Humphreys Br at Mill rd.	12/10/05	65	11	30			14:58	10.95	99.2	10.8	not taken	white foam, after heavy fall rains, took video

PWMG 29	Min			65.0	11.0	30.0	3.1	7.4		7.4	85.9	10.8		
	Max			534.0	52.0	200.0	5.9	7.7		11.0	99.2	24.4		
	Std			165.0	14.6	61.8	2.0	0.2		1.3	7.0	4.1		
	Ave			214.0	29.1	97.3	4.5	7.6		8.7	91.2	18.3		
	Count (n)			7	7	7	2	2		7	3	7		
	PWMG 30	Humphreys Brook	06/07/05	263	51	194	56.2		16:00		9.23		16.3	0.216 C, light rain for 4-6 hours
	PWMG 30	Humphreys Brook	18/07/05	146	4	11	20.6	7.6	13:20		9.71		22.9	0.09 Sunny, hot, no rain in last 48 hrs
	PWMG 30	Humphreys Brook	04/08/05	123	18	52			9:45		10.77		16.3	0.83 Overcast, Rained all day yesterday
	PWMG 30	Humphreys Brook	16/08/05	2424	5	13		7.6	14:00		9.58		19	0.19 Sunny, no rain
	PWMG 30	Humphreys Brook	29/08/05	62	5	13			14:13		10	107.29	18.5	Below top of B boot Rain, Cloud and Sun
	PWMG 30	Humphreys Brook	16/09/05						14:05		10.15	105.7	17.3	bottom of pattern on boot Sunny, rain last night, most silty I have ever see this stream, running pale brown/tan colour
PWMG 30	Min			62.0	4.0	11.0	20.6	7.6			9.2	105.7	16.3	
	Max			2424.0	51.0	194.0	56.2	7.6			10.8	107.3	22.9	
	Std			1020.2	20.1	78.7	25.2	0.0			0.5	1.1	2.5	
	Ave			603.6	16.6	56.6	38.4	7.6			9.9	106.5	18.4	
	Count (n)			5	5	5	2	2			6	2	6	
	PWMG 31	Fox Creek	07/07/05	938	90	938	24.4		14:30		7.92		18.3	1.1 Sunny, rained yesterday
	PWMG 31	Fox Creek	18/07/05	308	49	182	9.1	7	13:00		5.6		21.5	0.82 Sunny, hot, no rain in last 48 hrs
	PWMG 31	Fox Creek	03/08/05	2424	88	794		6.9	12:45		8.49		16.8	0.97 Rain all day Aug 1
	PWMG 31	Fox Creek	16/08/05	151	28	87		7.3	13:45		6.63		18.3	Sunny, no rain
	PWMG 31	Fox Creek	29/08/05	65	18	52			13:38		7.48	79	18.9	0.69 Rain, Cloud and Sun

	PWMG 31	Fox Creek	16/09/05	>2424	12	33			13:26	6.3	63	17.1	did not wade in	Sunny, rain last night, very brown water, pylons still present
PWMG 31	Min			65.0	12.0	33.0	9.1	6.9		5.6	63.0	16.8		
	Max			2424.0	90.0	938.0	24.4	7.3		8.5	79.0	21.5		
	Std			982.0	34.5	407.3	10.8	0.2		1.1	11.3	1.7		
	Ave			777.2	47.5	347.7	16.8	7.1		7.1	71.0	18.5		
	Count (n)			5	6	6	2	3		6	2	6		
	PWMG 35	Memramcook R. at Calhoun	09/08/05						11:45	9.5		22.8	0.15	Sunny, no rain in last 3 days
	PWMG 35	Memramcook R. at Calhoun	15/08/05	65	7	19		6.6	11:45	9.86		20.5	0.08	Cloudy, rained slightly the previous night
	PWMG 35	Memramcook R. at Calhoun	31/08/05	308	56	226			14:45	8.08	93	21.6	0.28	Raining, hard
	PWMG 35	Memramcook R. at Calhoun	30/09/05						11:05	11.01	102	11.9		in riffle, top of boot Rain last night, cold/brisk day
	PWMG 35	Memramcook R. at Calhoun	26/10/05	87	21	62			10:55	10.23	86.5	8	scrtch	Lots of rain, high water levels.
PWMG 35	Min			65.0	7.0	19.0		6.6		8.1	86.5	8.0		
	Max			308.0	56.0	226.0		6.6		11.0	102.0	22.8		
	Std			134.4	25.2	109.2				1.1	7.8	6.6		
	Ave			153.3	28.0	102.3		6.6		9.7	93.8	17.0		
	Count (n)			3	3	3	0	1		5	3	5		
	PWMG 5	North River	04/07/05	141	3	8	3.7		12:20	11.8		22.1		Sunny, 32 C, no rain for 2 days
	PWMG 5	North River	18/07/05	166	37	123	0.3	7.9	10:30	9.65		22.2	0.42	Sunny, hot, no rain in last 48 hrs
	PWMG 5	North River	03/08/05	98	24	72			13:12:00 AM	10.73		19.1	0.47	Rained all afternoon
	PWMG 5	North River	16/08/05	62	12	33		7.5	11:20	10.41		19	0.27	Sunny, no rain
	PWMG 5	North River	28/08/05	79	16	46			10:53	8.5		21.2		Bronwyn top of Rain, Cloud and Sun

													boot	
	PWMG 5	North River	16/09/05	33	3	27			11:00	9.63	103.9	19	Bronwyn top of boot	Sunny, Rain last night, Bits of brown alga Homeowner: Myrtle
	PWMG 5	North River	12/10/05	76	12	33			11:40	9.34	83.3	10.3	over waders	After big fall rains, incredibly high waters
PWMG 5	Min			33.0	3.0	8.0	0.3	7.5		8.5	83.3	10.3		
	Max			166.0	37.0	123.0	3.7	7.9		11.8	103.9	22.2		
	Std			46.0	12.1	38.1	2.4	0.3		1.1	14.6	4.1		
	Ave			93.6	15.3	48.9	2.0	7.7		10.0	93.6	19.0		
	Count (n)			7	7	7	2	2		7	2	7		
	PWMG 52	Breau Creek	13/07/05	102	12	33	1.1	7	13:45	10.9		15.2	0.17	Overcast, 18C Rained in the morning
	PWMG 52	Breau Creek	21/07/05	65	13	36	0.4	7.5	12:15	7.63		22.3	0.28	Sunny, some morning rain
	PWMG 52	Breau Creek	03/08/05	219	37	123		6.7	11:20	9.8		14.9	0.44	Rain all day Aug 1
	PWMG 52	Breau Creek	15/08/05	182	39	132		7.2	13:35	8.2		17.8	0.47	Cloudy, rained slightly the previous night
	PWMG 52	Breau Creek	31/08/05						12:00	6.91	72.4	18.2	1.09	Rainy/cloudy
	PWMG 52	Breau Creek	30/09/05						14:11	8.21	76.6	12.3	too deep	rain last night, cold/brisk day, very turbid
	PWMG 52	Breau Creek	26/10/05	83	14	39			13:02	8.9	93	8.7	over waders	high water, brown, opaque, lots of rain recently
PWMG 52	Min			65.0	12.0	33.0	0.4	6.7		6.9	72.4	8.7		
	Max			219.0	39.0	132.0	1.1	7.5		10.9	93.0	22.3		
	Std			66.8	13.7	50.3	0.5	0.3		1.3	10.9	4.4		
	Ave			130.2	23.0	72.6	0.8	7.1		8.7	80.7	15.6		
	Count (n)			5	5	5	2	4		7	3	7		
	PWMG 58	Meadow Cr.at Calhoun	13/07/05	132	28	87	1.6	6.7	11:00	8.89		15.5	0.73	Overcast, 18C Rained in the morning

	PWMG 58	Meadow Cr.at Calhoun	21/07/05	69	20	59	4.1	7.6	10:50	7.12	21.2	0.44	Sunny, some morning rain
	PWMG 58	Meadow Cr.at Calhoun	03/08/05	339	41	141		6.4	10:15	9.67	15.6	0.43	Rain all day on Aug 1
	PWMG 58	Meadow Cr.at Calhoun	15/08/05	76	5	13		6.8	11:00	7.82	18.1	0.29	Cloudy, rained slightly the previous night
	PWMG 58	Meadow Cr.at Calhoun	31/08/05						10:25	5.82	63	18.1	2 Inch above B boot Rainy/cloudy
	PWMG 58	Meadow Cr.at Calhoun	30/09/05	28	1	3			10:35	9.5	87.4	11.7	just above knee rained last night, cold/brisk day, wearing a hat
	PWMG 58	Meadow Cr.at Calhoun	26/10/05	119	32	102			10:20	10.33	87.1	7.8	crotch Water levels are very high, water was more turbid than its usual tea colour. Recently had lots of rain.
PWMG 58	Min			28.0	1.0	3.0	1.6	6.4		5.8	63.0	7.8	
	Max			339.0	41.0	141.0	4.1	7.6		10.3	87.4	21.2	
	Std			110.3	15.7	53.2	1.8	0.5		1.6	14.0	4.5	
	Ave			127.2	21.2	67.5	2.9	6.9		8.5	79.2	15.4	
	Count (n)			6	6	6	2	4		7	3	7	
	PWMG 59(1)	Memramcook R. at Aboujagane rd.	13/07/05	79	4	11	0	5.7	13:15	9.56	15.6	0.73	Overcast, 18C, Rained in the morning
	PWMG 59(1)	Memramcook R. at Aboujagane rd.	21/07/05	49	14	39	0.4	6.8	11:20	7.2	22.3	0.9	Sunny, some morning rain
	PWMG 59(1)	Memramcook R. at Aboujagane rd.	03/08/05	119	11	30		6.1	10:45	9.74	14.9		Rain all day Aug 1

	PWMG 59(1)	Memramcook R. at Aboujagane rd.	15/08/05	123	29	90	5.9	13:48	8.36	19	0.78	Cloudy, rained slightly the previous night
	PWMG 59(1)	Memramcook R. at Aboujagane rd.	31/08/05					11:20	6.21	67.5	19	Knee B Rainy/cloudy
	PWMG 59(1)	Memramcook R. at Aboujagane rd.	30/09/05					14:32	9.16	84.5	11.9	3" above knee rain last night, cold/brisk day, nice and clear, tea coloured
	PWMG 59(1)	Memramcook R. at Aboujagane rd.	26/10/05	79	14	39		13:30	9.36	79.6	8.3	over waders lots of rain, high water levels, clear water
PWMG 59(1)	Min			49.0	4.0	11.0	0.0	5.7	6.2	67.5	8.3	
	Max			123.0	29.0	90.0	0.4	6.8	9.7	84.5	22.3	
	Std			31.0	9.1	29.3	0.3	0.5	1.3	8.8	4.7	
	Ave			89.8	14.4	41.8	0.2	6.1	8.5	77.2	15.9	
	Count (n)			5	5	5	2	4	7	3	7	
	PWMG 59(2)	Memramcook River, South Branch	13/07/05	171	19	55	1.8	5.8	13:00	8.53	15.1	0.9 Overcast, 18C, Rained in the morning
	PWMG 59(2)	Memramcook River, South Branch	21/07/05	52	10	28	1.8	6.5	11:45	4.73	19.8	0.55 Sunny, some morning rain
	PWMG 59(2)	Memramcook River, South Branch	03/08/05	263	14	39	6.2	11:08	8	15.3		Rain all day Aug 1
	PWMG 59(2)	Memramcook River, South Branch	15/08/05	132	35	114	6.6	14:06	4.92	17.2	0.55	Cloudy, rained slightly the previous night

	PWMG 59(2)	Memramcook River, South Branch	31/08/05						11:44	2.46	24.2	16.7	0.43	Rainy/cloudy
	PWMG 59(2)	Memramcook River, South Branch	30/09/05						14:40	6.54	60.5	11.8	past boots	more murky than 59(1), higher water - new beaverdam?
	PMWG 59(2)	Memramcook River, South Branch	26/10/05	87	10	28			13:40	9.7	83	8.6	over waders	lots of rain, high water levels, clear water
PMWG 59(2)	Min			52.0	10.0	28.0	1.8	5.8		2.5	24.2	8.6		
	Max			263.0	35.0	114.0	1.8	6.6		9.7	83.0	19.8		
	Std			81.7	10.4	36.0	0.0	0.4		2.5	29.7	3.7		
	Ave			141.0	17.6	52.8	1.8	6.3		6.4	55.9	14.9		
	Count (n)			5	5	5	2	4		7	3	7		
	PWMG 61	Meadow Cr. Near mouth, Irving Site	01/09/05	141	31	98			14:12	7.92	86.1	19.6	0.08	Rainy/cloudy
	PWMG 61	Meadow Cr. Near mouth, Irving Site	30/09/05	28	2	5			14:55	10.39	96.6	12.1	mid boot	rained last night, cold/brisk day, high flow
	PWMG 61	Meadow Cr. Near mouth, Irving Site	26/10/05						14:30	10.04	85.4	8.3	over waders	Amazing amounts of water, hunters out, unable to get to exact site
PMWG 61	Min			28.0	2.0	5.0				7.9	85.4	8.3		
	Max			141.0	31.0	98.0				10.4	96.6	19.6		
	Std			79.9	20.5	65.8				1.3	6.3	5.8		
	Ave			84.5	16.5	51.5				9.5	89.4	13.3		
	Count (n)			2	2	2	0	0		3	3	3		
	PWMG 73	Stony Creek	13/07/05	106	14	39	0.6	6.9	15:45	10.04		16.5	0.66	Overcast, 18C Rained in the morning

	PWMG 73	Stony Creek	21/07/05	25	5	13	0.1	7.6	10:15	7.47	20.9	0.63	Sunny, some morning rain	
	PWMG 73	Stony Creek	03/08/05	255	51	194		6.8	10:35	10.5	14.7	0.7	Rain all day Aug 1	
	PWMG 73	Stony Creek	15/08/05	72	7	19		6.9	12:00	8.66	18.2	0.49	Cloudy, rained slightly the previous night	
	PWMG 73	Stony Creek	31/08/05						15:20	6.07	65.3	18.8	0.43	Rainy/cloudy
	PWMG 73	Stony Creek	30/09/05	8	1	3			11:46	9.3	85.1	11.6	top of hip waders	rain last night, cold/brisk day, water is turbid, brown/grey colour, salt water intrusion?
	PWMG 73	Stony Creek	26/10/05	79	18	52			11:35	10.8	91.7	8.2	over waders	High water levels, rushing, lots of rain recently.
PWMG 73	Min			8.0	1.0	3.0	0.1	6.8		6.1	65.3	8.2		
	Max			255.0	51.0	194.0	0.6	7.6		10.8	91.7	20.9		
	Std			88.2	18.2	71.2	0.4	0.4		1.7	13.7	4.4		
	Ave			90.8	16.0	53.3	0.4	7.1		9.0	80.7	15.6		
	Count (n)			6	6	6	2	4		7	3	7		
	PWMG 74	Memramcook R. at railroad	15/07/05	79	10	28		6.8	12:20	8.52	21.1			Cloudy, rained slightly the previous night
	PWMG 74	Memramcook R. at railroad	08/08/05						19:10	7.91	25.1			Eric and Bronwyn (?)
	PWMG 74	Memramcook R. at railroad	31/08/05						10:46	7.63	84.7	20.5	Half way up B boot	Rainy/cloudy
	PWMG 74	Memramcook R. at railroad	30/09/05	13	1	3			13:45	10.57	100	13.1	0.3	rain last night, cold/brisk day, deer tracks, bird, directly downstream of quarries
	PWMG 74		26/10/05	102	23	69			12:00	10.08	85.3	8.1	over waders	Lots of rain, high water levels.
PWMG 74	Min			13.0	1.0	3.0	0.0	6.8		7.6	84.7	8.1		
	Max			102.0	23.0	69.0	0.0	6.8		10.6	100.0	25.1		
	Std			46.2	11.1	33.3				1.3	8.7	6.8		
	Ave			64.7	11.3	33.3		6.8		8.9	90.0	17.6		
	Count (n)			3	3	3	0	1		5	3	5		

	PWMG 75	Smith Creek	13/07/05	119	6	16	7.6	6.6	15:00	7.65	17.1	0.44	Overcast, 18C Rained in the morning
	PWMG 75	Smith Creek	21/07/05	8	1	3	4.2	6.8	13:15	5.37	23.2	0.25	Sunny, some morning rain
	PWMG 75	Smith Creek	03/08/05	177	2	5		6	12:20	7.44	17.8		Rain all day Aug 1
	PWMG 75	Smith Creek	15/08/05	52	1	3		6.6	14:45	7.37	23.6		Cloudy, rained slightly the previous night
	PWMG 75	Smith Creek	31/08/05						13:14	4.21	20.5	Top of boot B	Rainy/cloudy
	PWMG 75	Smith Creek	30/09/05						13:17	7.74	70	14.5 past waders	Rain last night, cold/brisk day, Fish presnet, orange muck in water, overcast
	PWMG 75	Smith Creek	26/10/05	83	6	16			12:25	10.54	90.3	8.5 over waders	lots of rain recently, high water levels, water running over beaver dam, it has been washed out, lots of overflow
PWMG 75	Min			8.0	1.0	3.0	4.2	6.0		4.2	70.0	8.5	
	Max			177.0	6.0	16.0	7.6	6.8		10.5	90.3	23.6	
	Std			64.4	2.6	6.8	2.4	0.3		2.0	14.4	5.3	
	Ave			87.8	3.2	8.6	5.9	6.5		7.2	80.2	17.9	
	Count (n)			5	5	5	2	4		7	2	7	
	PWMG 80	Rabbit Brook at culvert	11/07/05	1696	91	1038	76.5		15:20	9	14.3	0.26	Overcast, Rained havily in the morning
	PWMG 80	Rabbit Brook at culvert	18/07/05	1370	93	1370	2.2	7.4	15:45	10.15	14.2	0.15	Sunny, hot, no rain in last 48 hrs
	PWMG 80	Rabbit Brook at culvert	28/07/05	2424	96	2424			10:30	9.63	16.1	0.28	Sunny. Rained heavily last night.
	PWMG 80	Rabbit Brook at culvert	04/08/05	2424	96	2424			11:12	9.53	14.8	0.25	Overcast, Rained all day yesterday
	PWMG 80	Rabbit Brook at culvert	16/08/05	938	80	510		7.8	15:30	8.93	15.1		Sunny, no rain
	PWMG 80	Rabbit Brook at culvert	26/08/05	240	32	102							

	PWMG 80	Rabbit Brook at culvert	29/08/05	2424	86	694			15:15	8.4	83.4	14.8	3 inch below B boot	Rain, Cloud and Sun
	PWMG 80	Rabbit Brook at culvert	16/09/05	206	33	106			15:20	7.93	80.5	16.1	ankles	Sunny, rain last night, water grey brown, grate cleaned?
	PWMG 80	Rabbit Brook at culvert	12/10/05	213	20	59			14:15	9.63	91.3	12.9	middle of knee pad	grate clogged again, high water, after heavy fall rains
PWMG 80	Min			206.0	20.0	59.0	2.2	7.4		7.9	80.5	12.9		
	Max			2424.0	96.0	2424.0	76.5	7.8		10.2	91.3	16.1		
	Std			973.3	31.6	936.1	52.5	0.3		0.7	5.6	1.0		
	Ave			1326.1	69.7	969.7	39.4	7.6		9.2	85.1	14.8		
	Count (n)			9	9	9	2	2		8	3	8		
	PWMG 81	Gorge Brook, branch	28/07/05	166	17	49		6						
	PWMG 81	Gorge Brook, branch	12/10/05	43	5	13			13:40	10.26	93.7	11.1	0.3	after big fall rains
PWMG 81	Min			43.0	5.0	13.0		6.0		10.3	93.7	11.1		
	Max			166.0	17.0	49.0		6.0		10.3	93.7	11.1		
	Std			87.0	8.5	25.5								
	Ave			104.5	11.0	31.0		6.0		10.3	93.7	11.1		
	Count (n)			2	2	2		1		1	1	1		

APPENDIX 3: PWMG ACTIVITIES 2005-2006

Petitcodiac river watershed action plan implementation project (In-house water quality monitoring project and web-based geographical information system implementation)

First Quarter

PWMG-GSBP has had a very busy first quarter. In addition to our regular bi-weekly sampling schedule, we have been involved in working with Atlantic Coop regarding the Mapleton Park Development, reporting on problems within the watershed (silt fences, illegal dumping, street erosion near Jonathan Creek), mapping projects and a new education program set to begin in the fall.

Recent sampling of Rabbit Brook has produced very high *E.Coli* and Total Coliform results. We met with the Moncton Engineering Department to discuss possible sewage cross-connections with end pipes emptying directly into the stream. This afternoon, a member of the Engineering team will come on-site to further investigate the problem. We have secured a strong partnership with this city department.

We will continue to collect water quality data until the end of November at which time it will be analyzed and put into report format. We have added several monitoring sites for a better overall picture of the Petitcodiac and Memramcook watersheds. We currently monitor 34 sites.

We are receiving an in-kind contribution from the Department of Fisheries and Oceans, Gulf Region to run a one-day GIS training workshop to thus be better equipped to use these resources. Once the training is complete, a plan will be developed to combine our sampling data and GIS information into a web-based application to better communicate the state of our watershed.

Intensive sampling of the suspended sediment concentrations in Jonathan Creek has been ongoing. We met with Darren Hiltz, DFO- Maritime Region to examine the fish habitat structures within the creek and to determine where improvements and maintenance is required. A stream alteration application was approved and we will do the physical work in Summer 2006.

The summer students hired through Young Canada Works and the HRDC Summer Career Placement program have been excellent and PWMG was able to accomplish a great deal with their help and insight.

Second Quarter

PWMG-GSBP has continued to be very busy during its second quarter. Our regular bi-weekly sampling schedule ended on October 21st, 2005. PWMG-GSBP Inc. continues to be involved with Mapleton Park and AVIDE (Atlantic Coop). The habitat assessment was completed and submitted to all stakeholders involved on September 8th, 2005. Recently, I spent two hours touring the watershed with Ken McPhee, Manager of Land Development with AVIDE. We discussed future participation of PWMG with the development in Mapleton

Park but also with respect to the Lands north of Wheeler Blvd. Mr. McPhee also provided some development history in Moncton and information on future development projects.

Personnel from the City of Moncton Engineering Department joined PWMG on the field in early September to investigate high *E. Coli* levels reported by PWMG. In a cooperative partnership, the City of Moncton remunerated PWMG for conducting end-pipe sampling and submitting a report on the results. The report will be submitted today.

The PWMG website still requires considerable overhaul and a Université de Moncton student has been contracted to make these changes. He will be available in early January. In addition, we also received an in-kind contribution from the Department of Fisheries and Oceans, Gulf Region for GIS training. Brad Firth, DFO employee, has spent several hours at PWMG instructing myself on how to access all the information available in MapINFO. We have yet to combine our sampling data and GIS information into a web-based application to better communicate the state of our watershed.

Intensive sampling of the suspended sediment concentrations in Jonathan Creek was completed at the end of October. A report titled "State of Jonathan Creek" will be completed before Christmas. The filters used arrived late and thus sample reliability may have been compromised. Samples were filtered anyway and a general picture of SSC events is available. PWMG would like to use a probe to measure instantaneous turbidity in the future because the grab samples do not seem to be representative.

PWMG will be more focused on public education in their 2006-2007 projects and request the funding to support their efforts. This includes a highly anticipated and strongly supported signage project. Signs indicating the name of each river and stream intersecting a major road will be erected.

A general report of PWMG concerns regarding the Gulf Operators Quarry Proposal in Gayton, NB was sent to several stakeholders. Gulf Operators responded to the questions asked and frequent communication has occurred between our group and the company. PWMG will attend the stakeholders meeting being held January 9, 2006. Equally, PWMG has been invited to visit all sediment removal structures once installed.

Comments from PWMG were also submitted to the Moncton Planning Branch regarding the most recent City Plan review.

I attended numerous conferences and workshops over the last four months. They included:

- i. Caroline Caissie from South Eastern Anglers Association taught myself and Patrick Emond of Cap-Pele Watershed group how to conduct macroinvertebrate sampling. This will become part of our sampling regime next summer. 13 September
- ii. Meeting with Jacques Leblanc, Engineer, Ville de Dieppe to discuss *E. Coli* levels in Fox Creek. Follow-up to happen in New Year. 15 September.
- iii. Meeting between David Holt, Modern Construction and PWMG Board Member and Lindon Miller, DOT Engineer to discuss Jonathan Creek HADD. LID project was proposed by PWMG but requires further refinement in order to be accepted by DOT. Proposal adjustments will be done as soon as possible. 19 September
- iv. NBEN Annual General Meeting. 1 October
- v. Electrofishing Course, Dartmouth, NS. 4-5 October.

- vi. American Water Resources Association AGM, Seattle, WA: presentation of MSc. Data. I also attended a one-day workshop on Low Impact Development and Habitat Restoration in the Seattle Area. 6-10 November
- vii. Southern NB Coastal Issues Clinic. 17 November
- viii. NB Watershed Groups Institute. 22-24 November
Atlantic Learning Network, Capacity Building Workshop. 24-27 November

Third Quarter

In our final quarter of this year, PWMG-GSBP continued on our busy schedule. January and February consisted of making funding applications to numerous agencies and organizations. Table 1 lists the funding requests made for the 2006-2007 season. Table 2 lists the In-Kind donations PWMG is already set to receive.

Table 1: Funding Requests 2006-2007

Organization	Submitted	Project	\$ Staff	\$ Total
NB Environmental Trust Fund	13-Jan-06	Long-term water quality monitoring, Watershed Identification Project, North Branch Habitat Assessment, Culvert Study,	\$60,192.00	\$72,000.00
Mountain Equipment Coop	1-Mar-06	Watershed Identification Project	\$0.00	\$4,750.00
Environment Canada- Science Horizons (Sheila Eddy)	2-Feb-06	Improving Fish Passage in the Petitcodiac Watershed; A culvert inventory and electrofishing survey, 8 months employment	\$6,330.00	\$12,000.00
Summer Career Placements 2006 (Line Pike) 851.2748	6-Mar-06	Summer Student (Field Technician and Website Technician)- 8 weeks each	\$4,158.34	\$4,158.34
EcoAction (Heather Gordon) 902.426.6937	1-Mar-06	Reconnection Aquatic Species to Historical Habitats: A Culvert inventory and electrofishing survey	\$6,443.00	\$7,579.00
Jeunesse Canada	17-Feb-06	Summer Student (2 Field Technicians)- 12 weeks	\$6,475.84	\$6,475.84
GRAND TOTAL				\$106,963.18

Table 2: In-Kind Funding 2006-2007

Organization	Description	Project	\$ Total
NB Department of Transport	Technical Support	Reconnection Aquatic Species to Historical Habitats	\$1,000.00
Department of Fisheries and Oceans	Technical Support - Electrofishing - Marie Clément	Reconnection Aquatic Species to Historical Habitats	\$12,000.00
Department of Fisheries and Oceans	Equipment - Electrofisher	Reconnection Aquatic Species to Historical Habitats	\$900.00
Department of Fisheries and Oceans	Lab Space - Monica Boudreau	All PWMG projects	\$12,000.00
Department of Fisheries and Oceans	Technical Support - Mapping - John Legault	All PWMG projects	\$500.00
Volunteer Support	Sign Installation	Watershed Identification Project, \$8/h, 160h	\$1,760.00
Home Depot	Equipment - Road Auger, Cordless Drill	Watershed Identification Project	\$1,400.00
Université de Moncton	Lab Space, Technical Support, Equipment	All PWMG projects	\$4,500.00
		GRAND TOTAL	\$34,060.00
		TOTAL BUDGET FORECAST	\$141,023.18

As you can see we are hoping to increase our budget considerably from last year. As we are now in the action phase of our plans, projects require materials and the personnel to put them in place.

This year four reports were completed by PWMG staff.

- (1) Pavey, B. 2006. **State of Jonathan Creek:2005**. Report produced by Petitcodiac Watershed Monitoring Group. Moncton, New Brunswick. 31 pp.

Jonathan Creek has been the subject of several reports. This report aims to update the information currently available. In particular, the report focuses on the suspended sediment concentrations and the point and non-point sources of sediment into the system.

Submitted to: Jonathan Creek Committee, Soon to be posted on the web.

- (2) Pavey, B., W. Kingston and L.Doiron. 2005. **Stream Habitat Assessment: Mapleton Park Brooks**. Report produced by Petitcodiac Watershed Monitoring Group. Moncton, New Brunswick. 19 pp.

This is the first technical report on the habitat of the Mapleton Park Brooks. The objective is to record the primary habitat features as they currently exist. The water quality and habitat of the streams are described within this report.

Submitted to: City of Moncton, AVIDE Developments, Mapleton Park Guardians, Soon to be posted on the web.

(3) Pavey, B. 2005. **Water Quality Assessment 2005: Rabbit Brook**. Report produced by Petitcodiac Watershed Monitoring Group. Moncton, New Brunswick. 37 pp. This is the first technical report focused solely on the water quality of Rabbit Brook. The primary objective is to determine sources of *E.Coli* entering into the watercourse. The water quality of the stream is described within.

Submitted to: City of Moncton, Soon to be posted on the web

(4) Arseneau, E. and B. Pavey. 2006. **PWMG Activity Report : 2005-2006**. Report produced by Petitcodiac Watershed Monitoring Group. Moncton, New Brunswick. 46 pp.

This report summarizes and analyses the status of water quality throughout the Petitcodiac and Memramcook Watershed. It furthers enhances our knowledge of the state of each tributary studied.

Other Activities...

In late December, a HADD plan for construction of sediment retention structures was sent to the NB DOT for comment and approval. We have yet to hear back from them but expect the bridge modification planned with happen this summer.

On April 1st and 2nd, PWMG had a booth at the Dieppe Fly Fishing Forum held at NBCC. It was a great experience and we ended the weekend with 21 new members.

On April 8th, 2006 as part of our on-going evolution as an organization, PWMG held a Board of Directors Planning Day. This day was facilitated by Jamie Gamble of Imprint Inc. and proved to be very useful to the Project Coordinator and Executive. I am currently in the process of putting together a summary of the day.

On June 1st, 2006, PWMG will its Annual General Meeting. We expect a strong attendance and hope to “rally the troops” for more action in our watershed.

Thank-you for the continued support.