Michigan Department of Environmental Quality
Surface Water Quality Division
January 2002

Total Maximum Daily Load for *Escherichia coli* for Crapaud Creek, Macomb and St. Clair Counties

INTRODUCTION

Section 303(d) of the federal Clean Water Act and the United States Environmental Protection Agency's (USEPA's) Water Quality Planning and Management Regulations (Title 40 of the Code of Federal Regulations (CFR), Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for waterbodies that are not meeting Water Quality Standards (WQS). The TMDL process establishes the allowable loadings of pollutants for a waterbody based on the relationship between pollution sources and in-stream water quality conditions. TMDLs provide states a basis for determining the pollutant reductions necessary from both point and nonpoint sources to restore and maintain the quality of their water resources. The purpose of this TMDL is to identify the allowable levels of *Escherichia coli* (*E. coli*) that will result in the attainment of the applicable WQS in Crapaud Creek, a small waterbody in Macomb and St. Clair Counties.

PROBLEM STATEMENT

Crapaud Creek was placed on the Section 303(d) list in 1998. This TMDL addresses approximately two miles of Crapaud Creek in the city of New Baltimore. The TMDL reach is on the Section 303(d) list as:

Waterbody: **Crapaud Creek** WBID#: **061409E**
County: Macomb RF3RchID: 4090002 303 Size: 2 M
Location: Downtown New Baltimore at Hamer Street.
Status: **2** Problem: **Pathogens (Rule 100).**
TMDL YEAR(s): 2000

Crapaud Creek (Figures 1 and 2) was placed on the Section 303(d) list due to impairment of recreational uses by the presence of elevated levels of *E. coli*. Data collected in the vicinity of New Baltimore by the Macomb County Health Department began documenting elevated *E. coli* levels in 1996. A review of the available data indicated elevated levels of *E. coli* in at least 50% of the samples collected since 1996, with particularly high results in 1999. Data for 1999 indicated elevated levels for *E. coli* in over 90% of the samples collected (Macomb County Health Department, 2001). Monitoring data (Appendix 1) collected by the Michigan Department of Environmental Quality (MDEQ) in 2001 documented continued exceedances of the WQS at all five stations sampled (Table 1). Geometric means for the 2001 sampling period exhibited elevated levels (Figure 3), especially at the upstream stations. Monthly geometric mean *E. coli* concentrations in 2001 ranged from 66 *E. coli* per 100 milliliters (ml) in July at Green Road to 2,417 *E. coli* per 100 ml in June at Ashley Street, as summarized in Table 1 and Figure 4. The highest value found (80,000) was in the downstream area at Athea Street, but consistently high values were found in the upstream area at Ashley and Perrin Streets.

Table 1. MDEQ *E. coli* data for Crapaud Creek, New Baltimore, Michigan, in 2001.

		E. coli concentration (#/100 ml)			
Sample Location	**Month**	**Minimum**	**Geometric mean**	**Maximum**	**# of results**
*Ashley St.	June	2,100	2,417	2,800	3
	July	610	1,101	2,000	12
	August	230	955	7,000	12
Private Dr./Perrin St.	May	2,100	2,186	2,260	3
	June	480	714	1,400	12
	July	370	1,183	4,800	12
	August	400	649	1,400	12
Green Rd.	May	130	172	230	3
	June	10	159	6,900	12
	July	10	66	860	12
	August	10	137	2,100	12
Athea Br./Main St.	May	90	260	810	3
	June	380	770	1,300	12
	July	130	945	80,000	12
	August	10	119	1,900	12
**Bal Clair	May	90	109	120	3
	June	50	158	320	9

*modified sample location - partial data
**sample location changed during monitoring period - partial data

NUMERIC TARGET

The impaired designated use for Crapaud Creek at this location is total body contact recreation. Rule 100 of the Michigan WQS requires that this waterbody be protected for total body contact recreation from May 1 to October 31. The target levels for this designated use are the ambient *E. coli* standards established in Rule 62 of the WQS as follows:

> R 323.1062 Microorganisms.
> Rule 62. (1) All waters of the state protected for total body contact recreation shall not contain more than 130 *Escherichia coli (E. coli)* per 100 milliliters, as a 30-day geometric mean. Compliance shall be based on the geometric mean of all individual samples taken during 5 or more sampling events representatively spread over a 30-day period. Each sampling event shall consist of 3 or more samples taken at representative locations within a defined sampling area. At no time shall the waters of the state protected for total body contact recreation contain more than a maximum of 300 *E. coli* per 100 milliliters. Compliance shall be based on the geometric mean of 3 or more samples taken during the same sampling event at representative locations within a defined sampling area.

In addition, there are two permitted wastewater treatment plant (WWTP) discharges to Crapaud Creek, which have an additional target:

> Rule 62. (3) Discharges containing treated or untreated human sewage shall not contain more than 200 fecal coliform bacteria per 100 milliliters, based on the geometric mean of all of 5 or more samples taken over a 30-day period, nor more than 400 fecal coliform bacteria per 100 milliliters, based on the on the geometric mean of all of 3 or more samples taken during any period of discharge not to exceed 7 days. Other indicators of adequate disinfection may be utilized where approved by the department.

The WWTP discharges will be considered in compliance with the WQS of 130 *E. coli* per 100 ml if their National Pollutant Discharge Elimination System (NPDES) permit limit of 200 fecal coliform per 100 ml as a monthly average is met. This is assumed because *E. coli* are a subset of fecal coliform (American Public Health Association, 1995). When the wastewater of concern is sewage, fecal coliform is substantially higher than *E. coli* (Whitman, 2001). When the point source dischargers are disinfecting their effluent and meeting their limit of 200 fecal coliform per 100 ml, it can reasonably be assumed that there are less than 130 *E. coli* per 100 ml in the effluent.

For this TMDL, the WQS of 130 per 100 ml as a 30-day geometric mean is the target level for the TMDL reach from May 1 to October 31. As previously stated, data collected by the MDEQ in 2001 documented *E. coli* exceedances at all five stations sampled (Table 1). This is consistent with elevated levels found by the Macomb County Health Department in 1996 and 1999.

SOURCE ASSESSMENT

The Crapaud Creek watershed is located in both Macomb and St. Clair Counties. The listed TMDL reach is upstream from Hamer Street in the city of New Baltimore, Macomb County, extending into St. Clair County (Figure 1). There are two permitted point source discharges to Crapaud Creek, the city of New Baltimore WWTP and Millstone Pond Mobile Home Park WWTP. Municipalities in Macomb County include the city of New Baltimore, Lenox Township, and Chesterfield Township. The remaining municipalities, Casco Township and Ira Township, are located in St. Clair County. Table 2 shows the distribution of land in the Crapaud Creek watershed for each municipality.

Table 2. Distribution of land for each municipality in the Crapaud Creek watershed.

Municipality	County	Watershed Area (sq. mi)	Percent Land Area in Watershed
Lenox Township	Macomb	0.8	11
Casco Township	St. Clair	1.1	15
Chesterfield Township	Macomb	0.9	13
Ira Township	St. Clair	1.6	22
City of New Baltimore	Macomb	2.8	39
TOTAL		**7.2**	**100**

Potential pathogen sources for this waterbody include sources typically associated with urban and agricultural land uses. The 2001 monitoring data was collected during typical stream flow conditions and is indicative of both continuous and storm event inputs. Potential inputs of *E. coli*

include the two permitted point sources, as well as illicit sewer connections and urban runoff, since a majority of the watershed lies within New Baltimore. Other possible sources include agricultural runoff and pet and wildlife feces.

LINKAGE ANALYSIS

The link between the *E. coli* concentration in Crapaud Creek and the potential sources is the basis for the development of the TMDL. The linkage is defined as the cause and effect relationship between the selected indicators and the sources. This provides the basis for estimating the total assimilative capacity of the creek and any needed load reductions. For this TMDL, the primary loading of pathogens likely enters Crapaud Creek by both continuous and storm water related nonpoint sources.

Due to insufficient flow upstream, sampling in 2001 began where there was an obvious stream channel and adequate water. The guiding water quality management principle used to develop the TMDL was that compliance with the numeric pathogen target in Crapaud Creek depends on the control of point source *E. coli*, and the control of *E. coli* in storm water and illicit connections. If the *E. coli* inputs can be controlled, then total body contact recreation in Crapaud Creek will be protected.

TMDL DEVELOPMENT

The TMDL represents the maximum loading that can be assimilated by the waterbody while still achieving WQS. As indicated in the Numeric Target section, the target for this pathogen TMDL is the WQS of 130 *E. coli* per 100 ml. Concurrent with the selection of a numeric concentration endpoint, TMDL development also defines the environmental conditions that will be used when defining allowable levels. Many TMDLs are designed around the concept of a "critical condition." The "critical condition" is defined as the set of environmental conditions that, if controls are designed to protect, will ensure attainment of objectives for all other conditions. For example, the critical conditions for the control of point sources in Michigan are given in R 323.1090. In general, the lowest monthly 95% exceedance flow for streams is used as a design condition for point source discharges. However, for pathogens in point source discharges of treated or untreated human sewage, levels are restricted to a monthly average limit of 200 per 100 ml for fecal coliforms regardless of stream flow. Therefore, the design stream flow is not a critical condition for determining the allowable loadings of pathogens for WWTPs. In addition, other *E. coli* sources to Crapaud Creek arise from a mixture of wet and dry weather-driven nonpoint sources, and there is no single critical condition that is protective for all other conditions. For these sources, there are a number of different allowable loads that will ensure compliance, as long as they are distributed properly throughout space.

For most pollutants, TMDLs are expressed on a mass loading basis (e.g., pounds per day). For *E. coli*, however, mass is not an appropriate measure, and the USEPA allows pathogen TMDLs to be expressed in terms of organism counts (or resulting concentration). Therefore, this pathogen TMDL is concentration-based consistent with R 323.1062, and the TMDL is equal to the target concentration of 130 *E. coli* per 100 ml.

For this TMDL, an allocation strategy for nonpoint sources has been selected that assumes equal bacteria loads per unit area for all lands within the watershed. The point sources are handled consistent with Rule 62(3). The allocation process for each month of the recreational season (May through October) is outlined below.

1. This TMDL is concentration-based so the TMDL is equal to the pathogen WQS of 130 *E. coli* per 100 ml.

2. The WWTP discharges for Crapaud Creek will be considered in compliance with the WQS of 130 E. coli per 100 ml if their NPDES permit limit of 200 fecal coliform per 100 ml as a monthly average is met. As previously discussed, this is assumed because *E. coli* are a subset of fecal coliform (American Public Health Association, 1995). When the wastewater of concern is sewage, fecal coliform is substantially higher than *E. coli* (Whitman, 2001). When the point source dischargers are disinfecting their effluent and meeting their limit of 200 fecal coliform per 100 ml, it can reasonably be assumed that there are less than 130 *E. coli* per 100 ml in the effluent.

   Consistent with the allocation strategy, Table 3 shows the TMDL or allowable concentrations for *E. coli* by applicable month in the Crapaud Creek watershed.

Table 3. Allowable *E. coli* concentrations by month in the Crapaud Creek watershed.

	May	June	July	August	September	October
Crapaud Creek	130	130	130	130	130	130

ALLOCATIONS

TMDLs are comprised of the sum of individual Waste Load Allocations (WLAs) for point sources and Load Allocation (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include a margin of safety (MOS), either implicitly or explicitly, that accounts for uncertainty in the relation between pollutant loads and the quality of the receiving water body. Conceptually, this definition is denoted by the equation:

$$TMDL = \sum WLAs + \sum LAs + MOS$$

The term TMDL represents the maximum loading that can be assimilated by the receiving water while still achieving WQS. The overall loading capacity is subsequently allocated into the TMDL components of WLAs for point sources, LAs for nonpoint sources, and the MOS. As previously indicated, this pathogen TMDL will not be expressed on a mass loading basis and is concentration-based consistent with USEPA regulations at 40 CFR, Section 130.2(1).

WLAs

The city of New Baltimore (MI0023680) has a permitted WWTP discharge to Crapaud Creek (labeled on Figure 1 and 2). This facility has a design flow of 1.75 million gallons per day (MGD) and has a limit of 200 fecal coliform per 100 ml as a monthly average. The Millstone Pond Mobile Home Park (MI0055816) is permitted to discharge to an unnamed tributary to Crapaud Creek (labeled on Figure 1). This facility has a design flow 0.14 MGD and also has a limit of 200 fecal coliform per 100 ml as a monthly average in their NPDES permit. As previously stated, when the WWTPs are disinfecting their effluent, the WQS is required to be met in the discharge. Therefore, the WLA will be equal to 130 *E. coli* per 100 ml.

LAs

Because this TMDL is concentration-based, the LA is equal to 130 *E. coli* per 100 ml and the determination of individual LAs will be based on the assumption of equal bacteria loads per unit area for all lands within the watershed. Therefore, the relative responsibility for achieving the necessary reductions of bacteria and maintaining acceptable conditions will be determined by the amount of land under the jurisdiction of the various local units of government within the watershed. Table 2 gives the relative LAs for each of the local entities as shown by the percentage of land within the watershed for each of the local units of governments. This gives a clear indication of the relative amount of effort that will be required by each entity to restore and maintain the total body contact designated use to Crapaud Creek.

The government entities with the largest percent land area in the Crapaud Creek watershed are the city of New Baltimore (39%) and Ira Township (22%), making up 61% of the watershed. Lenox Township (11%), Casco Township (15%), and Chesterfield Township (13%) compromise the rest of the watershed.

MOS

This section addresses the incorporation of an MOS in the TMDL analysis. The MOS accounts for any uncertainty or lack of knowledge concerning the relationship between pollutant loading, water quality, and knowledge of continuous point sources of *E. coli*. The MOS can be either implicit (i.e., incorporated into the TMDL analysis thorough conservative assumptions) or explicit (i.e., expressed in the TMDL as a portion of the loadings).

This TMDL uses an implicit MOS for two reasons: no rate of decay for *E. coli* was used, and actual disinfection performance by the point sources is much better than their permitted levels.

It is expected that both WWTP discharges to Crapaud Creek are discharging at well below their permit limit of 200 fecal coliform per 100 ml, which allows a reasonable MOS in Crapaud Creek. This expectation is based on data submitted from the New Baltimore WWTP discharge on their Discharge Monitoring Report. Data submitted from the city of New Baltimore since 1998 average approximately 22 fecal coliform per 100 ml. The maximum concentration was 62 per 100 ml, well below their 200 per 100 ml permit limit. Millstone Pond Mobile Home Park has not commenced discharge but will use ultraviolet disinfection, which is highly effective at killing pathogens.

Monitoring data also indicates that the city of New Baltimore's effluent has a diluting effect on *E. coli* levels in Crapaud Creek. This is shown by a dramatic decrease in *E. coli* at the Green Road station, just downstream of New Baltimore's discharge entering Crapaud Creek. Figure 5 shows the percent composition of Crapaud Creek at the city of New Baltimore WWTP outfall at average stream flow and design flow conditions for the WWTPs. The city of New Baltimore WWTP effluent makes up 85% of the flow of Crapaud Creek. The combined WWTP flow makes up 90% of the stream flow when Millstone Stone Pond Mobile Home Park effluent is included.

Example Loading Assessment

Although this TMDL is concentration-based, an example calculation using counts per day was used to simulate a loading assessment. The TMDL, on a loading basis, can be calculated as a function of stream flow using the following equation:

$$TMDL = Q_{riv,x} \times C_{WQS}$$

Where:

TMDL = Loading capacity in the stream (counts per time).
$Q_{riv,x}$ = Stream flow (volume of water per time).
C_{WQS} = WQS concentration (counts per volume of time).

The loading capacity defined in the above equation applies to all stream flows for which WQS apply. The monthly average flows for Crapaud Creek are given in Table 4 and demonstrate the relative magnitude of allowable loads from the various units of government for one flow scenario. Table 5 represents the monthly average flows for Crapaud Creek, including the WWTP flows and were used to calculate the total allowable load to Crapaud Creek.

Table 4. Crapaud Creek average flows (cfs) just upstream of New Baltimore WWTP discharge.

May	June	July	August	September	October
1	0.4	0.1	0.1	0.1	0.2

Table 5. Crapaud Creek average flows (cfs), including the New Baltimore WWTP and Millstone Pond Mobile Home Park WWTP flows.

May	June	July	August	September	October
3.9	3.3	3.0	3.0	3.0	3.1

Using the previously stated conditions from the allocation strategy, the allocations based on average flow conditions were determined using the following process:

1. For Crapaud Creek, the allowable concentration was converted to allowable load.

2. LAs were determined for each local entity based on the relative areas of jurisdiction. The results are given in Table 6.

3. WLAs were determined for New Baltimore WWTP and Millstone Pond Mobile Home Park WWTP using a design flow of 1.75 MGD and 0.14 MGD, respectively. Using this flow, a discharge equivalent to 130 *E. coli* per 100 ml and the formula noted in Table 7, New Baltimore WWTP has a WLA of 8.6 relative loading units and Millstone Pond Mobile Home Park WWTP has a WLA of 0.70 relative loading units.

4. The Crapaud Creek flows used in calculations for the LA were taken just upstream of the city of New Baltimore WWTP outfall. The flow data was provided by the Hydrology Unit, Land and Water Management Division, MDEQ.

5. The TMDL total load was calculated using the total flow for Crapaud Creek, which was calculated using the design flow of the WWTPs and the formula noted in Table 7.

The results of the loading assessment for the listed reach of Crapaud Creek under average flow conditions are given in Table 7. The assessment shows that if the WLA and LA are met, the TMDL will not be exceeded in Crapaud Creek for each month of the recreational season.

Table 6. LAs for Crapaud Creek watershed for average flow (relative loading units*).

	Watershed area (sq. mi)	May	June	July	August	September	October
Lenox Twp.	0.8	0.35	0.14	0.04	0.04	0.04	0.07
Casco Twp.	1.1	0.48	0.19	0.05	0.05	0.05	0.1
Chesterfield Twp.	0.9	0.42	0.17	0.04	0.04	0.04	0.08
Ira Twp.	1.6	0.70	0.29	0.07	0.07	0.07	0.14
City of New Baltimore	2.8	1.25	0.51	0.12	0.12	0.12	0.25
TOTAL	**7.2**	**3.2**	**1.3**	**0.32**	**0.32**	**0.32**	**0.64**

*Relative Loading Units = *E. coli* concentration (130 counts/100 ml) x River flow (cfs) x (10 x .646 x 3.785) / 10^3

Table 7. TMDL for Crapaud Creek, May 1 to October 31 (relative loading units).*

	May	June	July	August	September	October
WLA	9.3	9.3	9.3	9.3	9.3	9.3
LA	3.2	1.3	0.32	0.32	0.32	0.64
TOTAL LOAD (TMDL)	12.5	10.6	9.62	9.62	9.62	9.94

*relative loading unit = *E. coli* concentration (130 cts/100 ml) x River flow or effluent flow (cfs) (10 x .646 x3.785)/10^3

SEASONALITY

Seasonality in the TMDL is addressed by expressing the TMDL in terms of a total body contact recreation season that is defined as May 1 through October 31 by R 323.1100 of the WQS. There is no total body contact during the remainder of the year primarily due to cold weather. In addition, because this is a concentration-based TMDL, WQS will be met regardless of flow conditions in the applicable season.

MONITORING

In 2001, water quality was monitored at five stations from May through August (Figure 2). Sampling was dependant upon adequate flow in the creek and data was not collected at all stations on every sampling event. Additional sampling will begin in May 2002 and conclude in

September 2002. If initial sampling in 2002 indicates WQS are exceeded, the remaining sampling will be oriented toward source identification. If these results indicate that the waterbody may be meeting WQS, sampling will be conducted at the appropriate frequency to determine if the 30-day geometric mean value of 130 *E. coli* per 100 ml is being met.

In future years, assuming WQS are not met immediately, sampling frequency will be weekly from May through September at appropriate locations. Sampling will be adjusted as needed to assist in continued source identification and elimination. When these results indicate that the waterbody may be meeting WQS, sampling will be conducted at the appropriate frequency to determine if the 30-day geometric mean value of 130 *E. coli* per 100 ml is being met.

REASONABLE ASSURANCE ACTIVITIES

Under the NPDES permit program, the two WWTP dischargers are responsible for meeting their effluent limits for fecal coliform. Compliance is determined based on review of Discharge Monitoring Report data by the MDEQ. As previously stated, the WWTP dischargers in the watershed are presently disinfecting their effluent well below their permitted limits.

Urban storm water runoff and illicit discharges are likely the dominant sources of *E. coli* to Crapaud Creek. Implementation activities to meet the TMDL require measures to reduce *E. coli* sources and loads. Under the Phase 2 storm water regulations, the need for storm water permits in the other municipalities in the watershed will be evaluated against the applicable criteria on a case-by-case basis. These requirements are likely to apply to the city of New Baltimore, Chesterfield Township and Ira Township. These permits will require activities that reduce pathogen inputs, similar to the existing Phase 1 storm water permits in more populated urban areas.

In addition, Macomb and St. Clair Counties have been awarded a Section 319 Watershed Management Grant that will include activities to reduce and eliminate sources of *E. coli*. This grant is titled the "Anchor Bay Watershed Project" and includes Crapaud Creek. The goal of this grant is to develop a comprehensive nonpoint source watershed management plan. Objectives of the plan include the identification and correction of failing septic systems and the control of urban and agricultural storm water runoff. The grant is funded in the amount of $91,252.00 with a local match of $103,868 for a total of $195,120.00.

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REFERENCES

American Public Health Association. 1995. Standard Methods for the Examination of Water and Wastewater. 19th Edition.

Creal, W. and J. Wuycheck. 2000. Federal Clean Water Act Section 303(d) List – Michigan's Submittal for Year 2000. Michigan Department of Environmental Quality, Surface Water Quality Division, Report Number MI/DEQ/SWQ-00/018.

Macomb County Health Department. 2001. http://health.macombgov.org/Health-Programs-EnvironmentalHealth-WaterQuality-SurfaceWaterTestData.

Personal communication, Richard L. Whitman. United States Geological Survey, October 2001.

USEPA. 2001. Protocol for Developing Pathogen TMDLs. United States Environmental Protection Agency, 841-R-00-002.

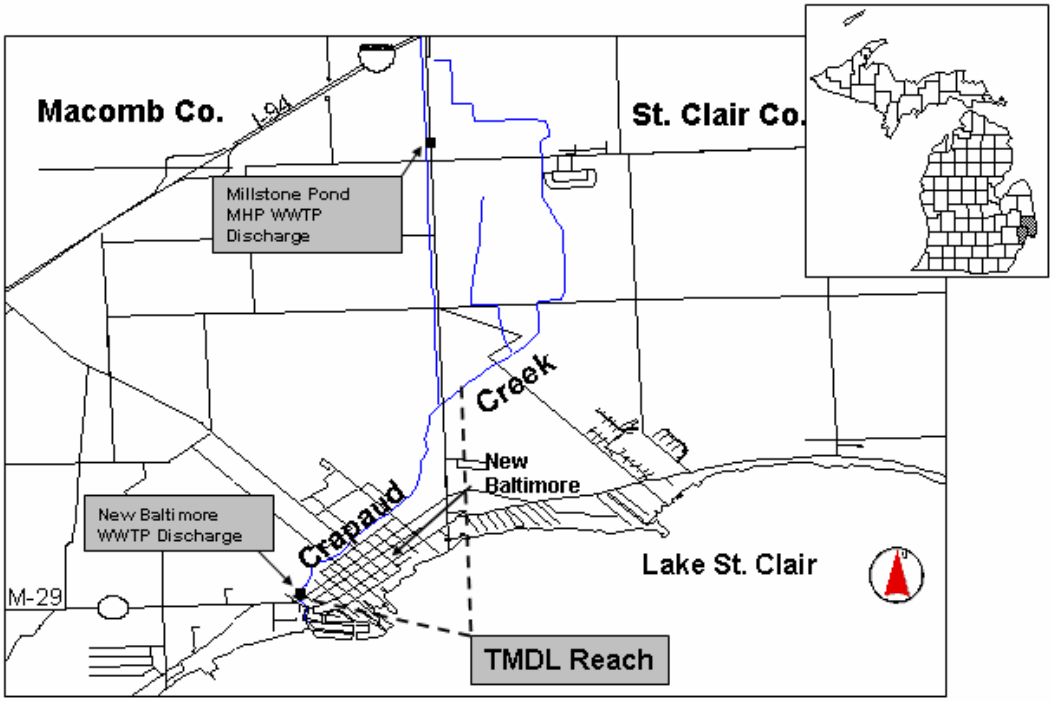


Figure 1. Crapaud Creek Watershed with point source discharge locations.

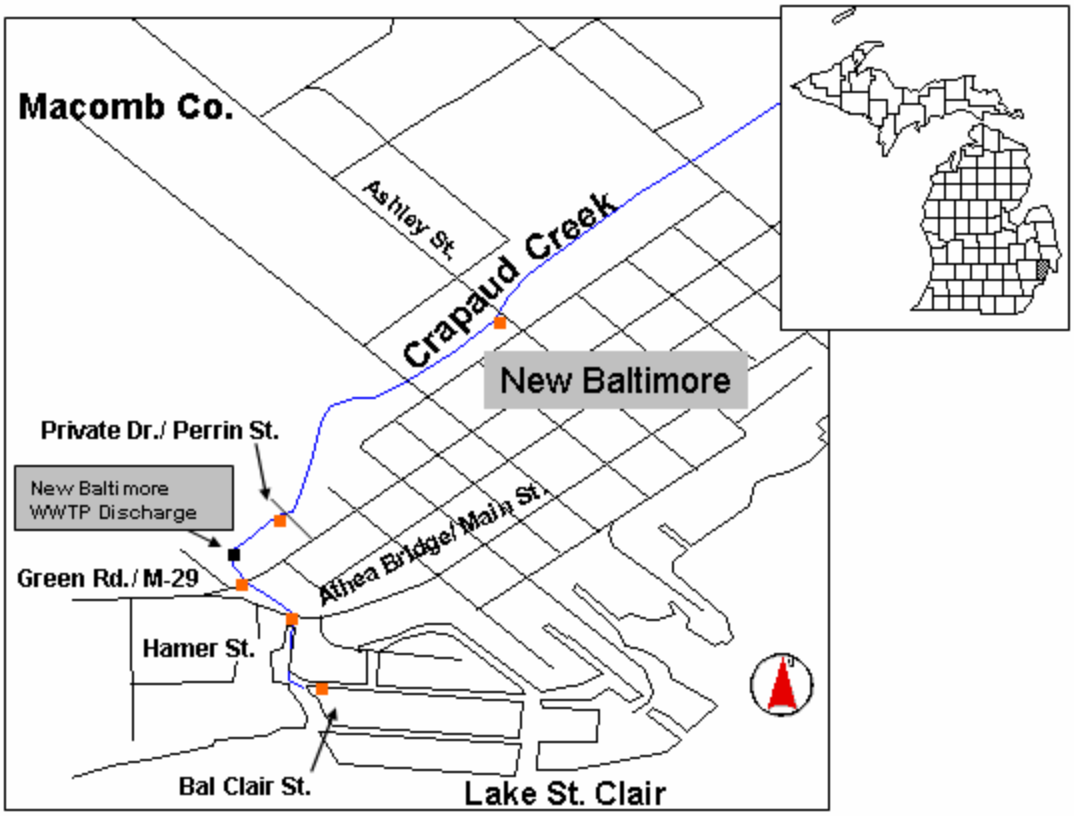


Figure 2. Crapaud Creek sampling locations for 2001 in the City of New Baltimore.

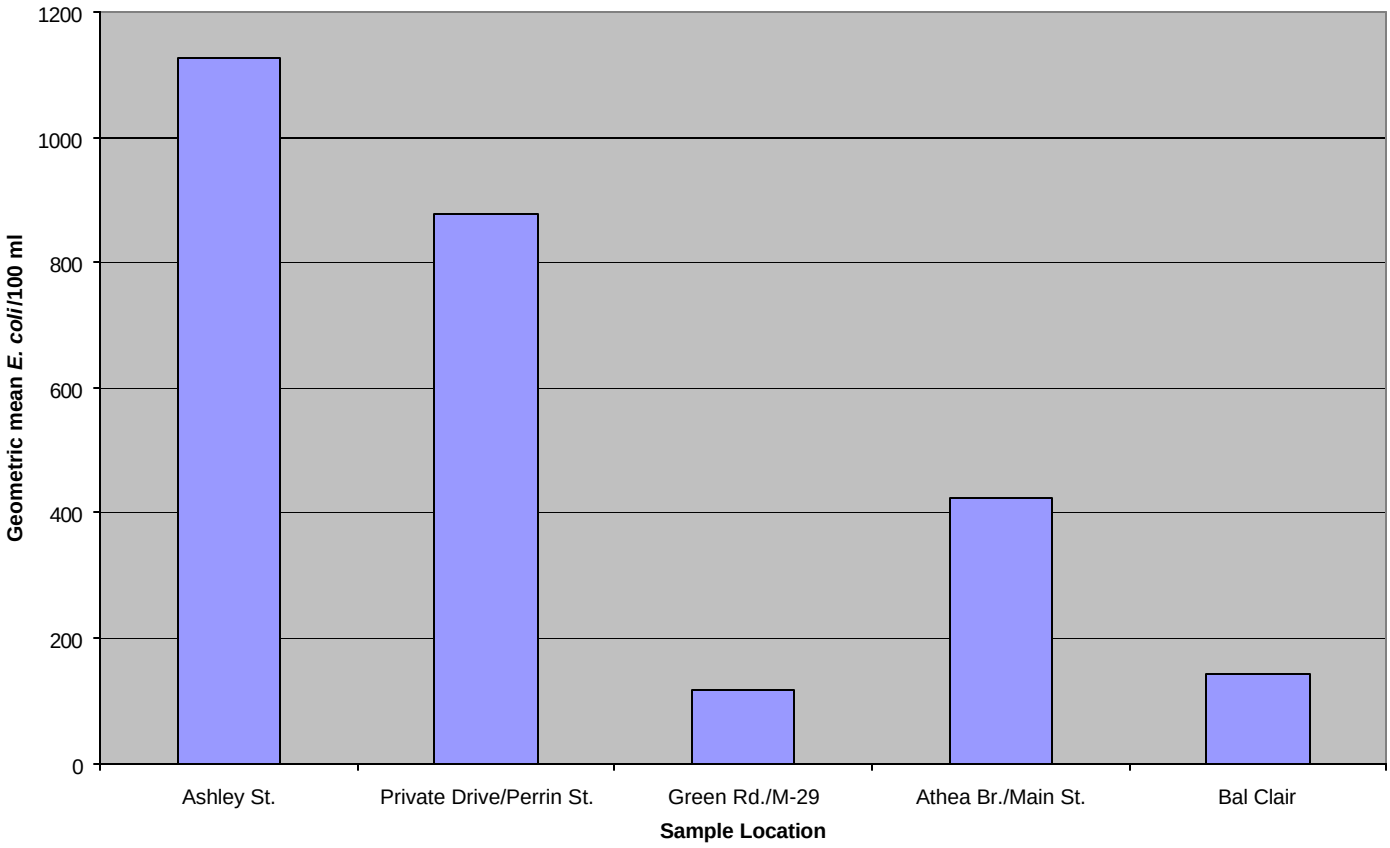
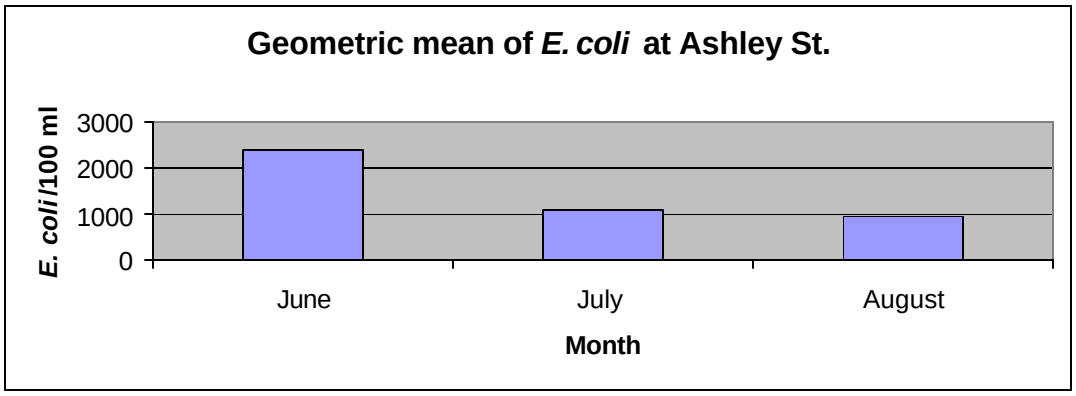
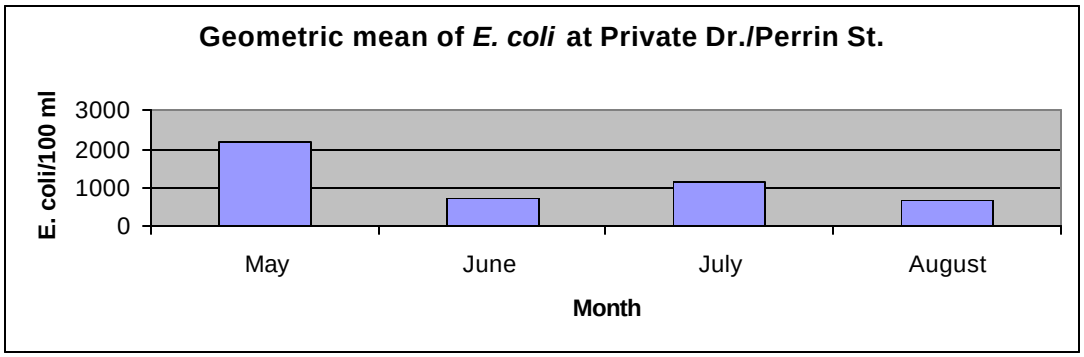
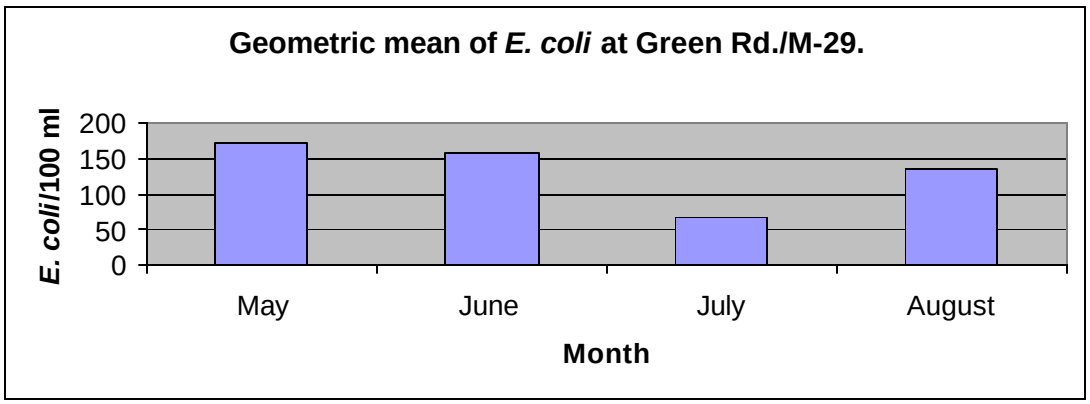


Figure 3. Mean *E. coli* results from Crapaud Creek, New Baltimore, Michigan, May through October, 2001. Data are presented upstream to downstream.







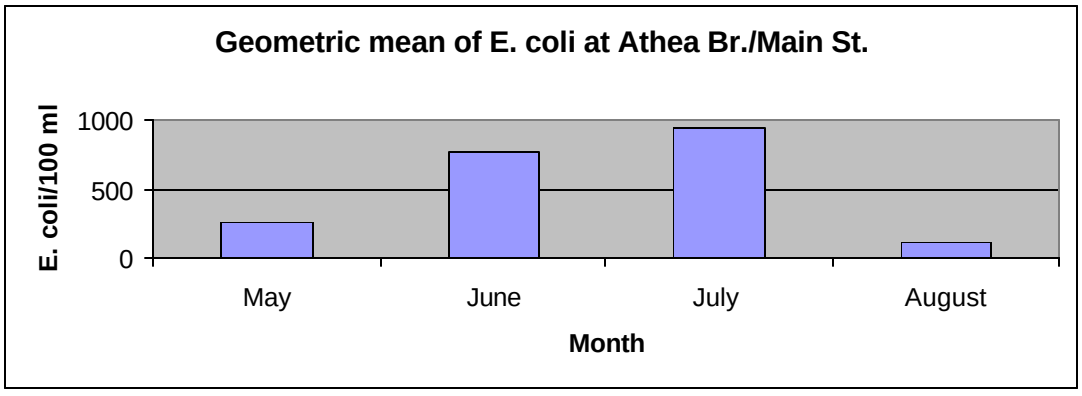


Figure 4. Geometric mean of *E. coli* at Crapaud Creek, New Baltimore, Michigan, 2001.

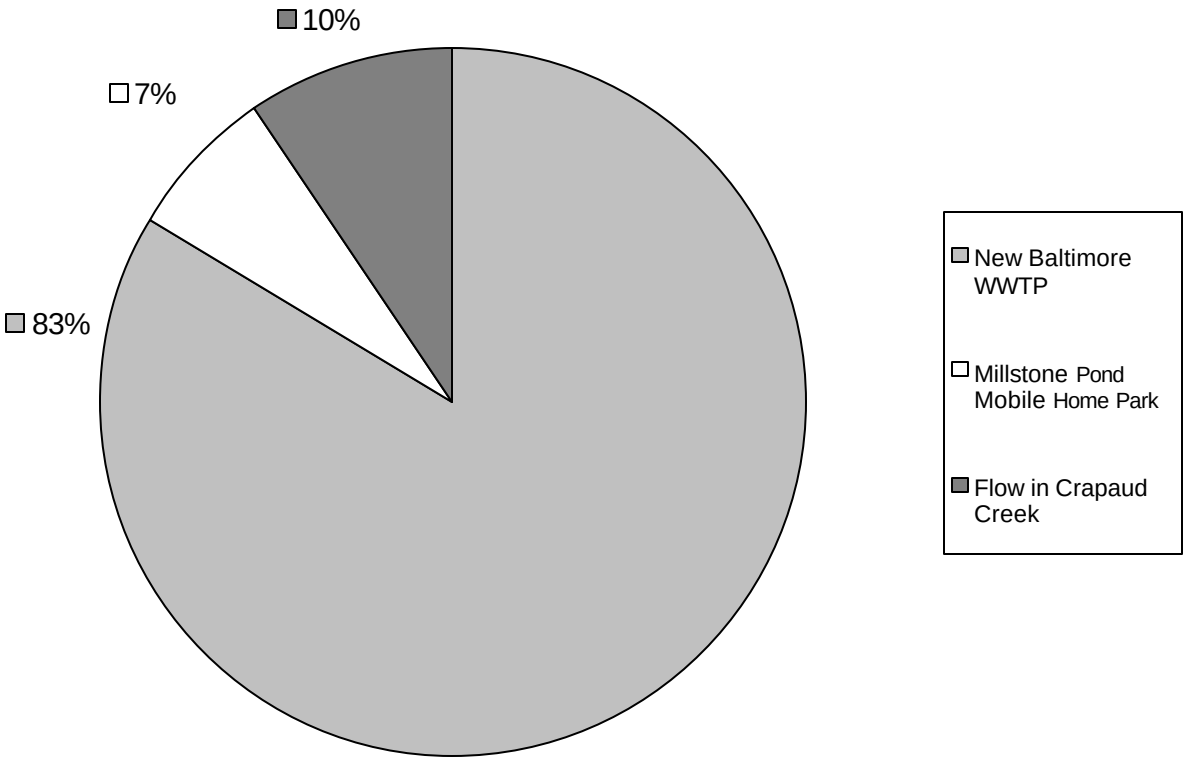


Figure 5. Percent Composition of Crapaud Creek flow at New Baltimore WWTP outfall location.

Appendix 1. MDEQ *E. coli* monitoring data for Crapaud Creek, New Baltimore, Michigan, for 2001.

Crapaud Creek @ Private Dr./Perrin St. CC-1A	Crapaud Creek @ Green Rd./M-29 CC-2A	Crapaud Creek Athea Br./Main St. CC-3A	Crapaud Creek Bal Clair CC-4A	Crapaud Creek @ Ashley St. CC-4B
5/24/2001	**5/24/2001**	**5/24/2001**	**5/24/2001**	**6/26/2001**
2260	230	810	90	2400
2200	170	240	120	2100
2100	130	90	120	2800
6/5/2001	**6/5/2001**	**6/5/2001**	**6/5/2001**	**7/3/2001**
570	170	560	90	1830
550	80	600	100	1830
510	250	530	50	2180
6/12/2001	**6/12/2001**	**6/12/2001**	**6/12/2001**	**7/11/2001**
1200	1000	1200	140	1100
1100	10	1300	150	700
1400	40	900	230	610
6/19/2001	**6/19/2001**	**6/19/2001**	**6/19/2001**	**7/19/2001**
700	1300	1100	280	1380
740	10	660	320	820
660	6900	970	320	2000
6/26/2001	**6/26/2001**	**6/26/2001**		**7/25/2001**
600	80	540		920
480	130	1200		670
600	200	380		660
7/3/2001	**7/3/2001**	**7/3/2001**		**8/1/2001**
1610	280	40000		230
2090	360	80000		350
1660	860	60000		410
7/11/2001	**7/11/2001**	**7/11/2001**		**8/8/2001**
420	30	280		7000
620	30	210		7000
880	10	290		7000
7/19/2001	**7/19/2001**	**7/19/2001**		**8/15/2001**
4700	20	270		620
4800	100	130		590
3400	10	170		640
7/25/2001	**7/25/2001**	**7/25/2001**		**8/22/2001**
370	120	190		600
440	120	570		610
470	30	240		590
8/1/2001	**8/1/2001**	**8/1/2001**		
570	150	70		
1110	130	100		
510	120	20		
8/8/2001	**8/8/2001**	**8/8/2001**		
1400	2100	1900		
1400	2100	1800		
1400	2100	1900		
8/15/2001	**8/15/2001**	**8/15/2001**		
450	10	10		
400	10	10		
430	20	30		
8/22/2001	**8/22/2001**	**8/22/2001**		
450	80	130		
420	90	190		
430	140	110		