

# SECTION 4 - WATER QUALITY INDICATORS

## RIVERINE HABITAT STUDIES

### *Fisheries Studies*

The original fish communities of the Great Lakes region are of recent origin. Melt water from the Wisconsinan glacier created aquatic environments for fish. Original fish gained access through migration from connecting waterways. A description of the fish community in the Shiawassee River Watershed at the time of European settlement (early 1800's) is not available. However, anecdotal accounts of the time mention several species. In 1858, the commercial basin fish trade was based on sturgeon, trout, muskellunge, pickerel (walleye), mullet (Sucker sp.), whitefish, perch, roach (sunfish), black bass, bill fish (gar), and catfish. (MDNR, Fishery Division). The Original fish habitat of the Shiawassee River watershed has been greatly altered by human settlement. The 1900's gave rise to the industrial era and the urbanization of the Shiawassee River watershed. Cities and towns located near the river became more developed as their population increased. The discharge of human wastes and synthetic pollutants into the river degraded water quality to the extent that only the most tolerant fish species could survive. Dams were built for flood control, flow augmentation, and water supply to municipalities and industry. The biologic communities in the Shiawassee River and Lakes have improved significantly since the 1970's with water quality improvements. Continued efforts to improve water quality will most probably result in greater biological integrity.

Present day biological communities must adapt to human alteration of the watershed. The geological and hydrological characteristics of the watershed and the development of an extensive drainage system result in an unstable flow and reduce habitat and only biological communities that can adapt will persist. Management options are available to minimize stream degradation and preserve biological integrity.

Fish communities have been altered through intentional and inadvertent introduction of exotic species. Fish stockings by the Michigan Department of Natural Resources (MDNR), Fisheries Division has focused on improving recreational fishing opportunities, specifically with stocking walleye in Lake Fenton, Lake Ponemah and Lobdell Lake.

Advisories to limit the consumption of certain fish species and sizes (fish contaminant advisories [FCAs]) have been published by MDEQ and the Michigan Department of Community Health for portions of the Shiawassee River and the South Branch of Shiawassee River for PCB's, (downstream of the Superfund site). All inland lakes, reservoirs, and impoundments within the State of Michigan are also under a fish advisory for mercury contamination. The latter is a general advisory applied to all inland lakes in Michigan since not all inland lakes, reservoirs, and impoundments have been tested or monitored. Table 4-1 lists the FCAs published for the whole Shiawassee Watershed.

**Table 4-1 Fish Advisory Information**

<b>Water Body</b>	<b>Location</b>	<b>Fish Species</b>	<b>Restricted Population</b>	<b>Restriction</b>
Shiawassee River	Below Owosso	Carp	Women and children	<22 inches - One meal per week
			Women and children	22+ inches - One meal per month
	Below Owosso	Rock Bass	Women and children	6-18 inches - One meal per week
	Below Owosso	Smallmouth Bass	Women and children	14-30 inches - One meal per week
Shiawassee River	Byron to Owosso	Carp	General population	Do not eat these fish
	Byron to Owosso	Northern Pike	Women and children	22-30 inches – One meal per month
			Women and children	30+ inches – 6 meals per year
	Byron to Owosso	Smallmouth Bass	Women and children	14-30 inches – One meal per month
Shiawassee River, South Br	M-59 to Byron	All species	General Population	Do not eat these fish
All inland lakes, reservoirs, and impoundments	Entire watershed	Crappie	General population	8-22inches - One meal per week
			Women and children	8-22 inches - One meal per month
	Entire watershed	Largemouth and Smallmouth Bass	General population	14-30+ inches - One meal per week
			Women and children	14-30+ inches - One meal per month
	Entire watershed	Muskellunge	General population	30+ inches - One meal per week
			Women and children	30+ inches - One meal per month
	Entire watershed	Northern Pike	General population	22-30+inches - One meal per month
			Women and children	22-30+ inches - One meal per month
	Entire watershed	Rock Bass	General population	8-18 inches - One meal per week
			Women and children	8-18 inches - One meal per month
	Entire watershed	Walleye	General population	14-30+ inches - One meal per week
			Women and children	14-30+ inches - One meal per month
	Entire watershed	Yellow Perch	General population	8-18 inches - One meal per week
			Women and children	8-18 inches - One meal per month

\* Michigan Department of Community Health, 2001. Michigan 2001 Fish Advisory., Michigan 2001 Flint River Assessment

### ***Macroinvertebrate Studies***

Benthic monitoring assesses the quality of a water body, specifically the Shiawassee River. The volunteer monitoring program uses trained volunteers to gather information about the relative health of the area's streams and rivers. The major element of the program is the collection and analyzing of benthic macroinvertebrates. Invertebrates are valuable subjects for water quality studies because they stay put. They are not very mobile and unlike fish they cannot move to avoid pollution. Using these creatures to identify water quality conditions is based on the fact that every species has a certain range of physical and chemical conditions in which it can survive. The kinds of benthic invertebrates living in a stream indicate conditions within the stream because they cannot migrate to a different location if conditions are not conducive to survival. Some organisms can survive in a wide range of conditions and are more tolerant of pollution, and so are labeled "**tolerant**". Other species are very sensitive to changes in conditions and are "**intolerant**" of pollution. These are labeled "**sensitive**". The presence of tolerant organisms and few or no sensitive organisms indicates the presence of pollution, because pollution tends to reduce the number of species in a community by eliminating the organisms that are sensitive to changes in water quality.

An added benefit to this kind of program is there is a built in education component. Because volunteers do the testing they must be trained. The volunteers have also helped to build awareness of pollution problems.

**Currently the Shiawassee River does not have an existing benthic monitoring program.** After discussions with the Flint River Watershed Coalition (FRWC), it is the intent of the Monitoring and Mapping Committee to partner with the FRWC program to expand their program in the future to include at least 2 sites in the Shiawassee Watershed. One Located near the headwaters and another near where the Shiawassee leaves Genesee County.

### ***Lake Studies***

Within the Shiawassee Watershed there are at least 10 lake associations. These private associations are made up of concerned lake property owners that have come together to protect and preserve their lakes. The threats to a lake are going to be unique to that lake, but the threats can be grouped into the following categories:

- Man made pollutants: oil, chemicals, litter, heavy metals such as mercury ...
- Natural pollutants: High nutrients such as phosphorus or naturally occurring elements such as arsenic
- Sediment or water clarity
- Temperature and dissolved Oxygen
- Nuisance plants and animals
- Biodiversity (Lack of)
- Restricted recreation

Each association has volunteers that donate time or money so water testing can be done. There are several types of testing that can be done. The most common is to test the water's chemistry. Volunteers will take samples of water at different locations and have it tested. Some of the tests that can be done are:

- Transparency
- Phosphorus
- Nitrogen
- Chlorophyll
- Dissolved Oxygen
- Temperature

Some of these tests must be done on site; others have to be sent to a lab. For example volunteers for the Lake Fenton Property Owners Association collect water samples and have them sent to a lab for chemical testing through a program called Cooperative Lakes Monitoring Program (CLMP). This is a program run by Michigan Lakes & Stream Association. This is a non-profit corporation comprised of individuals and associations who desire to conserve and improve Michigan's lakes, rivers and streams, and their watersheds.

In a different approach, Lobdell-Bennett Lake Association has contracted the services of Dr. Pullman to perform a biodiversity assessment. This is where a trained professional will identify plant species in the lake then maps the location and quantity to get a picture of the lake's biodiversity. This assessment is similar to benthic monitoring because certain plant species are more sensitive to changes in the water conditions and are "**intolerant**" of pollution. By mapping the types of plants present and their quantity it can be inferred that the water quality is **poor** or **good**. Other information gathered by this method is the absence or presence of invasive species such as Millfoil or Curly Leaf Pond Weed, to name a couple. By reducing invasive species, this allows good or desired plants habitat. The more diverse the plant biology the more divers the animals that are supported by them can be.

Regardless of the testing methods used, the information gathered becomes valuable in identifying problems, and over time shows the changes in water quality. This change or trend becomes valuable because every lake has what is referred to as a turnover rate. This is the time it would take for a lake to replace all of its water. If the lake is small or has a large inlet and outlet allowing more water to pass through it, the turnover rate could be measured in months. More often in the larger lakes where the water is regulated by relatively small outlets the turnover rate is measured in years. For example, Fenton Lake has a turnover rate of about ten years. If a lake is polluted the time it takes to dilute or eliminate that pollution can also take years.

Once the problems have been identified the association can then implement management techniques to reduce or manage threats. Many lakes associations have programs to reduce invasive plant species either through harvesting or targeted herbicide treatment. Plants are not the only invasive species identified. Certain fish, invertebrates or algae can be considered invasive or detrimental. One example is: approximately 3 years ago zebra muscles were identified in Lobdell Lake.

## **WATER TESTING WITH PROJECT GREEN**

Global Rivers Environmental Education Network (GREEN) is a curriculum based, mentored program designed to propose solutions to local environmental problems using water quality testing. This project has been in existence for fourteen years in Genesee County under the direction of the Genesee County Intermediate School District (GISD). In late 2003 the Flint River Watershed Coalition was approached by Earth Force Green and General Motors to be the coordinator of the GREEN in the Flint River Watershed. FRWC was identified as the primary organization that could help improve program participation and effectiveness because of its focus on water quality monitoring and environmental education. The FRWC Board of Directors has endorsed this vision and has agreed to take full administrative control over the next two years. In 2004 the Genesee County Drain Office on behalf of the Phase II program partnered with the FRWC with funding and mentors. In the spring of 2005 and 2006, Hundreds of students had a combination of class time and field experience on the local rivers. The students learned about water quality and testing procedures and went to various sites on the Flint River and tributaries to take water samples for the following indicators.

- Dissolved Oxygen
- Nitrates
- PH
- Fecal Coliform
- Temperature
- Total Solids
- Turbidity
- Total Phosphorus

By testing for the above indicators the students can compare the results to the “norm” and draw conclusions on the health of the water. Chemical testing is a snapshot of water health, and the results should not be taken alone. By using chemical testing and other water quality indicators such as benthic monitoring or photo/ physical observations, changes to the water can be shown.

*Although the data has not compiled at this time within Genesee County there was 16 school (24 teachers) and hundreds of students that had the opportunity to participate.*

### ***E. Coli Water Sampling (Health Department or Local Agencies)***

The following language from the Michigan Water Quality Standards regulates the allowable limits of *E. coli* bacteria in surface waters of the State:

*“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.*

*(2) All waters of the state protected for partial body contact recreation shall not contain more than a maximum of 1,000 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.”*

The Genesee County Health Department performs Weekly e. coli test from May through September on the following water bodies within the Shiawassee River Watershed:

- Barnum
- Byram Lake
- Copneconic
- Dollar
- Fenton Lake (4)
- Linden Mill Pond
- Lobdell
- Loon
- Marl Lake
- McCaslin Lake
- McKane Lake
- Myers Lake
- Pine Lake
- Ponemah Lake
- Silver Lake
- Squaw Lake

## Genesee County Health Department Surface Water Sampling Locations

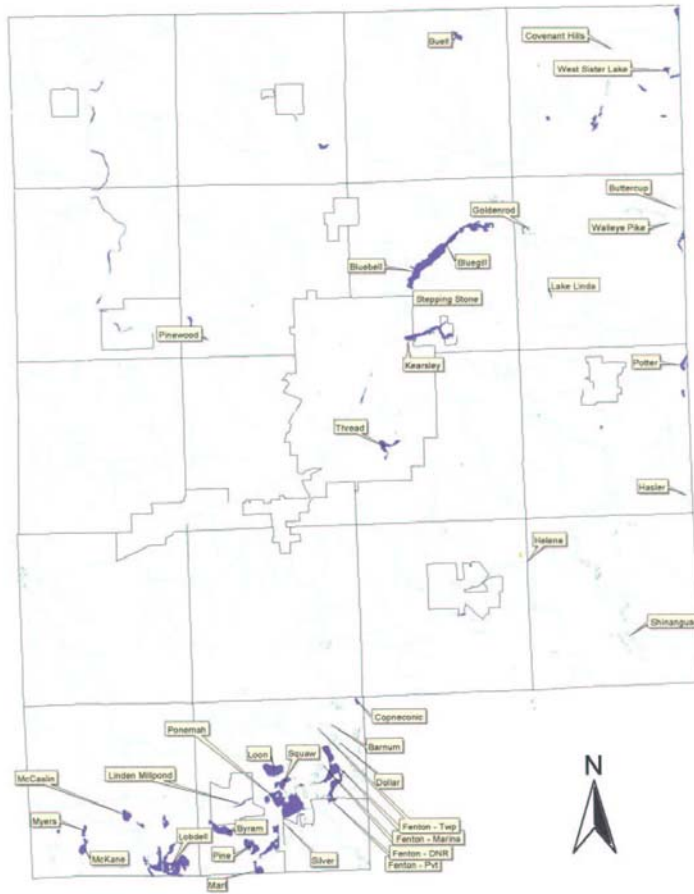


Figure 4-1 E. Coli Test Sites Within Genesee County **WATER CHEMISTRY AND HYDROLOGY STUDIES**

**Table 4-3 Michigan Section 303d TMDL Water Bodies**

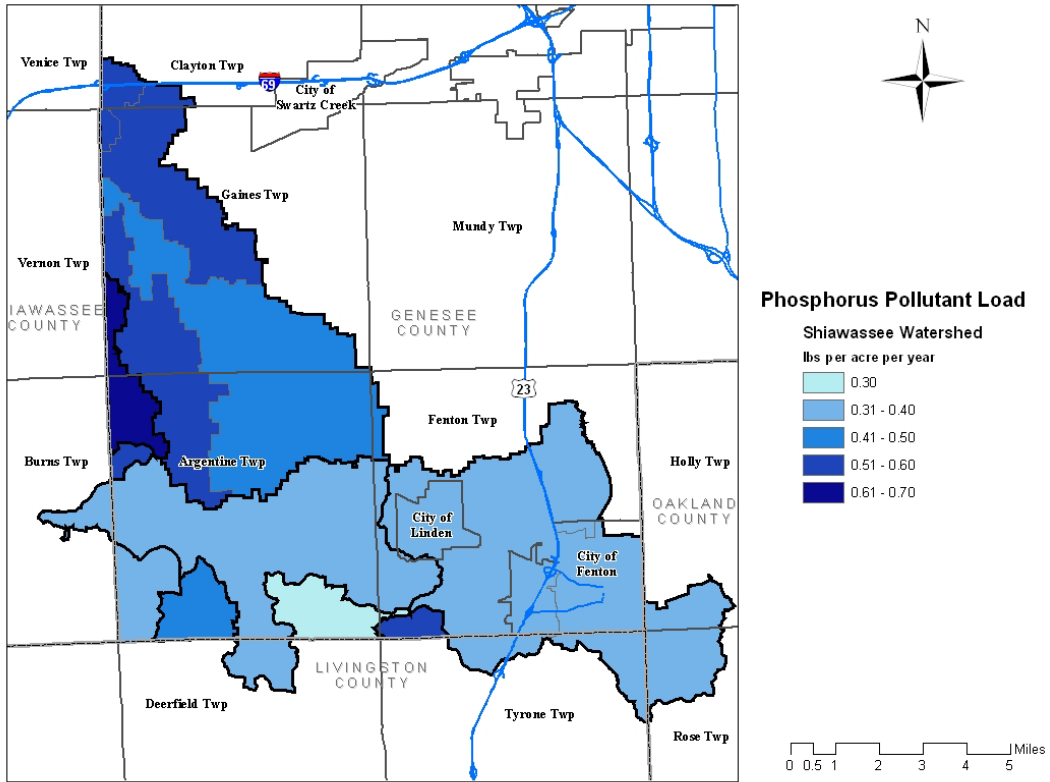
<b>Water Body</b>	<b>Waterbody Description</b>	<b>Pollutants</b>	<b>Expected TMDL Date</b>
FENTON LAKE	Vicinity of Fenton.	Fish Tissue-Mercury.	2011
LOBDELL LAKE	2 miles SW of Linden (Argentine Twp.)	FCA-PCBs; Fish Tissue-Mercury.	2010
LAKE PONEMAH	NW of Fenton.	FCA-PCBs; Fish Tissue-Mercury.	2010
SHIAWASSEE RIVER & S. BR. SHIAWASSEE RIVER	Saginaw River confluence u/s to Byron Millpond Dam; including the S. Br. Shiawassee River from the Shiawassee River confluence at Byron u/s to M-59 (vicinity of Howell)	FCA-PCBs	2010
SHIAWASSEE RIVER WATERSHED	Saginaw River confluence to include all tributaries	WQS exceedances for PCBs	

***USGS Monitoring***

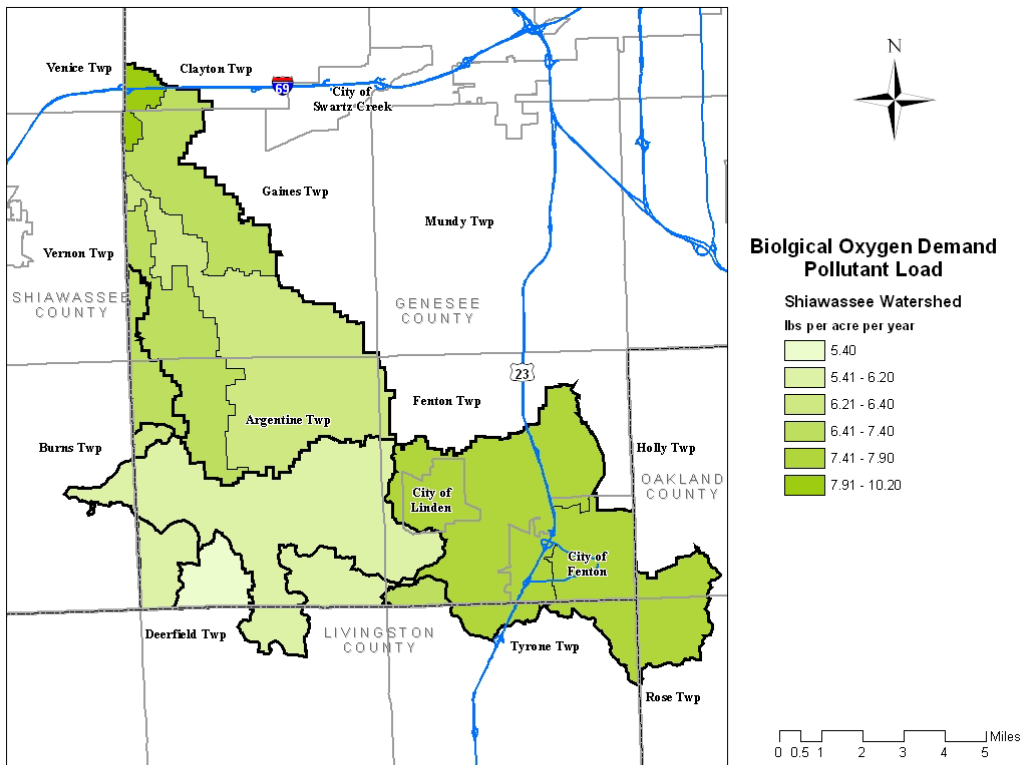
There are no USGS stream gauges within the Shiawassee River Watershed. The closest gauge is located in Owosso MI, approximately 26 river miles downstream of this watershed's outlet.

**POLLUTANT LOAD ANALYSIS**

The pollutant load analysis was conducted utilizing the Environmental Protection Agency's Spreadsheet Tool for Estimating Pollutant Loads (STEPL). Phosphorus, 5-day Biological Oxygen Demand (BOD), and sediment loadings were all calculated on a subwatershed basis, using this program. The methods used to calculate urban loadings of phosphorus, sediment, and BOD primarily utilized the runoff volume and land use specific pollutant concentrations for each Subwatershed to provide an average annual loading. Agricultural sediment calculations utilized the universal soil loss equation (USLE), widely used to calculate average annual soil losses from sheet and rill erosion (EPA, 2004). Phosphorus and BOD were calculated for agricultural areas by multiplying the soil load by a pollutant concentration for nutrients in the sediment. Graphical results of these calculations are presented in Figure 4-2 through Figure 4-4 and numerically in .



**Figure 4-2 Phosphorus Pollutant Load**



**Figure 4-3 BOD Pollutant Load**



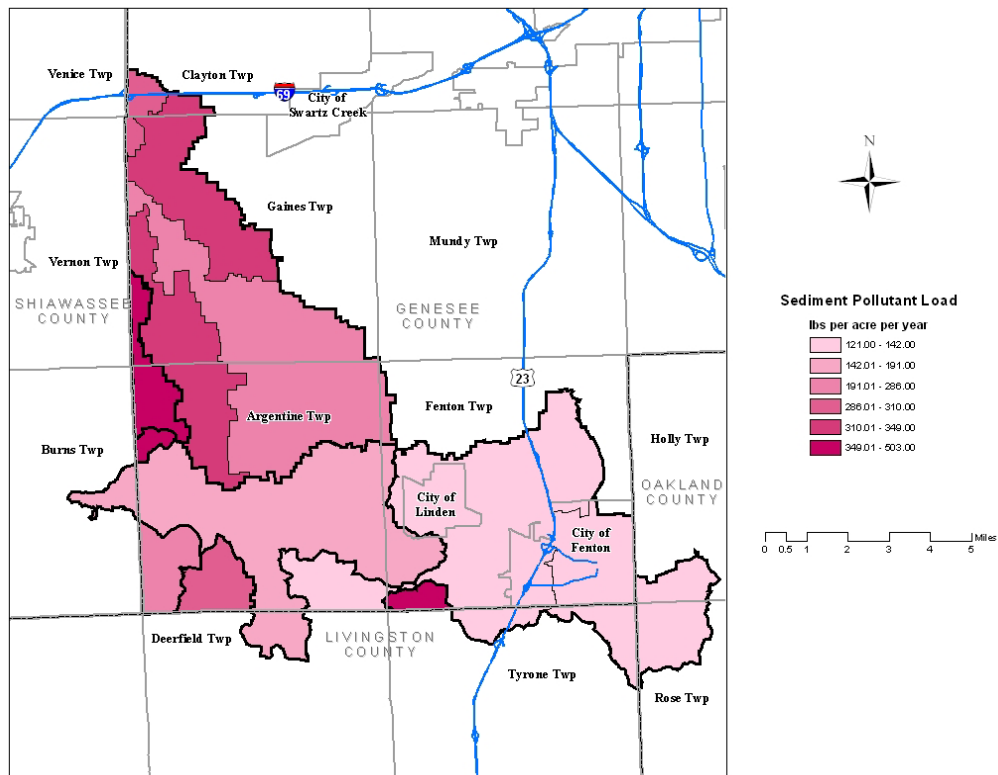


Figure 4-4 Sediment Pollutant Load

Table 4-4 Unit Area Storm Water Loading Data

Watershed	No.	N Load	P Load	BOD Load	Sediment Load
		lb/ac/yr	lb/ac/yr	lb/ac/yr	lb/ac/yr
Corrigan Drain	0077	3.0	0.6	7.0	346
Denton Creek	0546	3.1	0.6	7.4	444
Jones	0984	2.8	0.5	6.4	286
North Ore	8555	1.9	0.3	6.2	121
Shiawassee Outlet 1	0559	3.4	0.6	10.2	303
Shiawassee Outlet 2	8558	3.3	0.7	7.4	495
Shiawassee Outlet 3	8557	2.9	0.6	6.4	503
Shiawassee River 1	8550	2.4	0.4	6.1	191
Shiawassee River 2	8551	2.4	0.4	7.7	142
Shiawassee River 3	8552	2.4	0.4	7.9	132
Shiawassee, S. Branch	8553	2.4	0.4	6.0	275
Webb	0079	3.1	0.6	7.3	349
Yellow River	8554	2.2	0.5	5.4	310

Source: Tetra Tech



# SECTION 5 - COMMUNITY OUTREACH

## PUBLIC PARTICIPATION PROCESS

The Public Participation Plan (PPP) for the Shiawassee River was submitted as part of the Combined PPP in September 2005. The Combined PPP was for the Lower Flint River, the Upper Flint River and the **Shiawassee River**. This Plan outlines the roles of the steering committee, stakeholder groups, and the general public in developing the watershed management plan and how the information would be used during the decision-making process.

The goal of the PPP was to effectively involve stakeholders and the public throughout the watershed management planning process so that they contribute during the process and understand the plan recommendations to gain support for implementation. Key stakeholders in the watershed were identified. Materials for stakeholders to use, to educate their constituents was developed. Lastly, the plan sought to obtain useful, measurable social feedback information throughout the public participation process.

One criteria was that the Public Participation Process needed to be flexible to allow for changes along the way. Obtaining sufficient public input on watershed projects takes creativity, persistence, and commitment. While the PPP for this watershed outlines specific activities that were to be completed, the activities were modified as needed.

The following list summarizes the main venues in which public involvement will be sought.

- Public Briefing
- Stakeholder Workshops
- Focus Groups: as needed
- Report to Municipal Officials

There have been a total of 6 **stakeholder meetings** for the Shiawassee River Watershed. 2 were just for the Shiawassee. Part way through the process it was combined with the Lower Flint and the Upper Flint Watersheds. There were an additional 4 combined **stakeholder/ public** meetings. Attendances had been hit and miss for the combined meetings. Because there was poor public turnout at the combined meetings, it was decided, a survey would be used to solicit public opinion. A citizen survey was developed based on a survey done in the Anchor Bay Watershed. The Survey was mailed to 500 residents, split between 240 riparian landowners, 160 lake property owners, and 100 were random property owners. The survey was limited to residential properties. Sixty-seven residents responded to the survey, (results below). Regular updates on the progress of the program are given to the **Municipal officials** at their regular Advisory meeting. Part of reporting to the Municipal officials was education. The Public Education survey was given to the elected and appointed municipal officials. This was to determine what their educational needs were. The first of an Update Report was sent out to the municipal officials in May of 2005. The purpose of the update is to discuss what all the workgroups and subcommittees are doing. It is the intent that regular updates will follow on a regular basis.

**Shiawassee Watershed Survey Results**  
**Jones Creek** 10+%

Responses to Survey  
 10 out of 100 2 returns

with 1 being most important and 5 being the least important:

	1	2	3	4	5	Did not rank
Rank the following goals with a score of 1 to 5, with 1 being most important and 5 being the least important:						
Remove paper/trash/debris in the river and tributaries to improve its appearance	3	1	3	3	3	
Better control soil erosion and limit sediments entering the water.	4	3	2	1		
Improve habitat conditions for fish and wildlife in the water	5	1	2	2		
Minimize excessive flows that cause flooding, bank erosion and habitat loss	5	2	2	2	1	
Encourage investments in land along water for recreation/wildlife protection	1	1	5	1	2	
Expand public education about the benefits of protecting the SRW	2	5	1	1	1	
Better control sources of fertilizer reaching the Watershed & the Great Lakes	4	2	4			
Remove sources of human waste in the Watershed that threaten public health	7	3				
Protect the quality and accessibility of drinking water (wells)	7	2			1	
Increase community planning to address development & protection of water qual	4	3	1	2		

Are there any other goals that you feel should be included in this list? Please indicate any additional goals you would like to see added. How would you rank them from 1 (most important) to 5 (least important)?

What issues concerning the management of the Shiawassee River Watershed are most important to you?

What is the single most important improvement to the Watershed and its tributaries that you would like to see?

What types of information about the Shiawassee River Watershed interest you most? (Check as many as apply)

Water quality	9	3
Bacteria levels	6	4
Fish and wildlife	8	5
Parks and public recreation areas	5	
How I can volunteer to help restore Watershed		
How businesses can prevent pollution		
How homeowners can help prevent pollution		
Other		

Which of the following is the best approach to keep you informed regarding the progress in developing a plan to restore the Shiawassee River Watershed?

Public meetings/workshops	3	9
Newspaper articles	1	
Cable TV	3	5
Web page		
Direct mailings to your home or business		
Community newsletters		
Other (specify) .EMAIL		

**Shiawassee Watershed Survey Results**  
 11+%

**Responses to Survey**  
 18 out of 160 2 returned

with 1 being most important and 5 being the least important:  
 1 2 3 4 5 Did not rank

Remove paper/trash/debris in the river and tributaries to improve its appearance	7	2	5	4	
Better control soil erosion and limit sediments entering the water.	8	4	2	2	2
Improve habitat conditions for fish and wildlife in the water	7	1	6	2	2
Minimize excessive flows that cause flooding, bank erosion and habitat loss	4	6	4	1	1
Encourage investments in land along water for recreation/wildlife protection	5	5	2	2	3
Expand public education about the benefits of protecting the SRW	6	3	2	2	3
Better control sources of fertilizer reaching the Watershed & the Great Lakes	10	2	2	1	3
Remove sources of human waste in the Watershed that threaten public health	16	1			1
Protect the quality and accessibility of drinking water (wells)	13	3			1
Increase community planning to address development & protection of water qual	5	3	3	3	1

**Are there any other goals that you feel should be included in this list? Please indicate any additional goals you would like to see added. How would you rank them from 1 (most important) to 5 (least important)?**

**What issues concerning the management of the Shiawassee River Watershed are most important to you?**

**What is the single most important improvement to the Watershed and its tributaries that you would like to see?**

**What types of information about the Shiawassee River Watershed interest you most? (Check as many as apply)**

Water quality	14
Bacteria levels	11
Fish and wildlife	12
Parks and public recreation areas	3
How I can volunteer to help restore Watershed	5
How businesses can prevent pollution	5
How homeowners can help prevent pollution	
Other	

**Which of the following is the best approach to keep you informed regarding the progress in developing a plan to restore the Shiawassee River Watershed?**

Public meetings/workshops	2
Newspaper articles	11
Cable TV	4
Web page	4
Direct mailings to your home or business	6
Community newsletters	4
Other (specify) Posters in local businesses, Flood Control	2

**Shiawassee Watershed Survey Results**  
 9%

**Responses to Survey**  
 9 out of 100 0 returned

with 1 being most important and 5 being the least important:

	1	2	3	4	5	Did not rank
<b>Rank the following goals with a score of 1 to 5,</b>	1	2	3	4	5	2
Remove paper/trash/debris in the river and tributaries to improve its appearance	1	2	3	1		2
Better control soil erosion and limit sediments entering the water.	1	2	4			2
Improve habitat conditions for fish and wildlife in the water	1	2	4	1	1	
Minimize excessive flows that cause flooding, bank erosion and habitat loss	2	1	1	1	2	2
Encourage investments in land along water for recreation/wildlife protection	1	2	3	1	2	
Expand public education about the benefits of protecting the SRW	3	3	1	1	1	
Better control sources of fertilizer reaching the Watershed & the Great Lakes	5	2	1			
Remove sources of human waste in the Watershed that threaten public health	7	1			1	
Protect the quality and accessibility of drinking water (wells)	2	1	3	3		
Increase community planning to address development & protection of water qual						

**Are there any other goals that you feel should be included in this list? Please indicate any additional goals you would like to see added. How would you rank them from 1 (most important) to 5 (least important)?**

**What issues concerning the management of the Shiawassee River Watershed are most important to you?**

**What is the single most important improvement to the Watershed and its tributaries that you would like to see?**

What types of information about the Shiawassee Watershed interest you most? (Check as many as apply)	
Water quality	7
Bacteria levels	5
Fish and wildlife	5
Parks and public recreation areas	3
How I can volunteer to help restore Watershed	1
How businesses can prevent pollution	3
How homeowners can help prevent pollution	3
Other	

**Which of the following is the best approach to keep you informed regarding the progress in developing a plan to restore the Shiawassee River Watershed?**

Public meetings/workshops	1
Newspaper articles	6
Cable TV	1
Web page	1
Direct mailings to your home or business	5
Community newsletters	2
Other (specify) local news	

**Shiawassee Watershed Survey Results**  
**Shiawassee River 16+%**

**Responses to Survey**  
 16 out of 100 2 returns

with 1 being most important and 5 being the least important:

	1	2	3	4	5	Did not rank
<b>Rank the following goals with a score of 1 to 5,</b>	5	3	2	2	3	1
Remove paper/trash/debris in the river and tributaries to improve its appearance	5	6	1	2	1	1
Better control soil erosion and limit sediments entering the water.	6	4	2	1	3	
Improve habitat conditions for fish and wildlife in the water	4	7	1	1	2	1
Minimize excessive flows that cause flooding, bank erosion and habitat loss	4	1	1	1	9	1
Encourage investments in land along water for recreation/wildlife protection	3	2	6	3	2	
Expand public education about the benefits of protecting the SRW	7	4	1	1	2	1
Better control sources of fertilizer reaching the Watershed & the Great Lakes	11	1				4
Remove sources of human waste in the Watershed that threaten public health	8	4		1	3	
Protect the quality and accessibility of drinking water (wells)	3	4	4	3	2	
Increase community planning to address development & protection of water qual						

**Are there any other goals that you feel should be included in this list? Please indicate any additional goals you would like to see added. How would you rank them from 1 (most important) to 5 (least important)?**

**What issues concerning the management of the Shiawassee River Watershed are most important to you?**

**What is the single most important improvement to the Watershed and its tributaries that you would like to see?**

**What types of information about the Shiawassee Watershed interest you most? (Check as many as apply)**

Water quality	14	6
Bacteria levels	13	4
Fish and wildlife	10	7
Parks and public recreation areas	5	
How I can volunteer to help restore Watershed		
How businesses can prevent pollution		
How homeowners can help prevent pollution		
Other		

**Which of the following is the best approach to keep you informed regarding the progress in developing a plan to restore the Shiawassee River Watershed?**

Public meetings/workshops	1	
Newspaper articles	6	13
Cable TV	4	4
Web page	2	
Direct mailings to your home or business		
Community newsletters		
Other (specify) _____		

**Shiawassee Watershed Survey Results**  
**Yellow River** 35%

**Responses to Survey**  
 14 out of 40 1 returns

with 1 being most important and 5 being the least important:

	1	2	3	4	5	Did not rank
1	3	5	1	1	4	
6	5	2	1			
11	1	2				
4	4	4	1	1		
2	6	3		3		
6	3	3	1	1		
6	2	4	2			
14						
11	1	1		1		
5	3	4	1	1		

- Rank the following goals with a score of 1 to 5,**  
 Remove paper/trash/debris in the river and tributaries to improve its appearance  
 Better control soil erosion and limit sediments entering the water.  
 Improve habitat conditions for fish and wildlife in the water  
 Minimize excessive flows that cause flooding, bank erosion and habitat loss  
 Encourage investments in land along water for recreation/wildlife protection  
 Expand public education about the benefits of protecting the SRW  
 Better control sources of fertilizer reaching the Watershed & the Great Lakes  
 Remove sources of human waste in the Watershed that threaten public health  
 Protect the quality and accessibility of drinking water (wells)  
 Increase community planning to address development & protection of water qual

**Are there any other goals that you feel should be included in this list? Please indicate any additional goals you would like to see added. How would you rank them from 1 (most important) to 5 (least important)?**

**What issues concerning the management of the Shiawassee River Watershed are most important to you?**

**What is the single most important improvement to the Watershed and its tributaries that you would like to see?**

**What types of information about the Shiawassee River Watershed interest you most? (Check as many as apply)**

Water quality	13	How I can volunteer to help restore Watershed	6
Bacteria levels	13	How businesses can prevent pollution	6
Fish and wildlife	12	How homeowners can help prevent pollution	9
Parks and public recreation areas	4	Other	

**Which of the following is the best approach to keep you informed regarding the progress in developing a plan to restore the Shiawassee River Watershed?**

Public meetings/workshops	2	Direct mailings to your home or business	10
Newspaper articles	2	Community newsletters	5
Cable TV	1	Other (specify) Local News (2), email (1)	3
Web page	3		



Table 5-1 Meeting Dates

	Surface Water Advisory Committee	Monitoring and Mapping	Public Education and Participation	BMP Committee	Work Group	Stakeholders Workshops	Combined Stakeholder/ Public Meetings
September 2004		20 <sup>th</sup>			2 <sup>nd</sup>		
October 2004		5 <sup>th</sup> & 13 <sup>th</sup>	25 <sup>th</sup>				
November 2004	17 <sup>th</sup>		29 <sup>th</sup>				
December 2004	15 <sup>th</sup>						
January 2005			3 <sup>rd</sup> & 19 <sup>th</sup>			31 <sup>st</sup>	
February 2005	16 <sup>th</sup>		7 <sup>th</sup>				
March 2005	23 <sup>rd</sup>		2 <sup>nd</sup> & 21 <sup>st</sup>				
April 2005	20 <sup>th</sup>		18 <sup>th</sup> & 25 <sup>th</sup>				
May 2005	18 <sup>th</sup>		5 <sup>th</sup> & 17 <sup>th</sup>			23 <sup>rd</sup>	
June 2005					29 <sup>th</sup> (2)		
July 2005					27 <sup>th</sup> (2)		
August 2005	17 <sup>th</sup>				31 <sup>st</sup> (2)		29 <sup>th</sup> (2)
September 2005	21 <sup>st</sup>			10 <sup>th</sup> & 24 <sup>th</sup>	28 <sup>th</sup> (2)		
October 2005	19 <sup>th</sup>				26 <sup>th</sup> (2)		
November 2005	16 <sup>th</sup>						30 <sup>th</sup> (2)
December 2005							
January 2006	18 <sup>th</sup>		23 <sup>rd</sup>		4 <sup>th</sup> (2) & 23 <sup>rd</sup>		
February 2006	15 <sup>th</sup>		27 <sup>th</sup>				1 <sup>st</sup> (2)
March 2006	15 <sup>th</sup>		20 <sup>th</sup>				
April 2006	19 <sup>th</sup>						
May 2006	17 <sup>th</sup>		15 <sup>th</sup>		31 <sup>st</sup>		
June 2006	21 <sup>st</sup>		19 <sup>th</sup>				
July 2006			17 <sup>th</sup>				
August 2006						2 <sup>nd</sup>	
September 2006	20 <sup>th</sup>		18 <sup>th</sup>				
October 2006	18 <sup>th</sup>		16 <sup>th</sup>		25 <sup>th</sup>		
November 2006	22 <sup>nd</sup>						
December 2006	20 <sup>th</sup>		18 <sup>th</sup>				
January 2007	17 <sup>th</sup>		22 <sup>nd</sup>				
February 2007	21 <sup>st</sup>		26 <sup>th</sup>		16 <sup>th</sup>		
March 2007	28 <sup>th</sup>		19 <sup>th</sup>				
April 2007	18 <sup>th</sup>	23 <sup>rd</sup>					
May 2007	16 <sup>th</sup>		21 <sup>st</sup>	15 <sup>th</sup>			
June 2007	20 <sup>th</sup>	5 <sup>th</sup>		19 <sup>th</sup>			
July 2007		24 <sup>th</sup>	16 <sup>th</sup>	17 <sup>th</sup>			
August 2007				21 <sup>st</sup>			
September 2007	19 <sup>th</sup>	25 <sup>th</sup>	17 <sup>th</sup>	18 <sup>th</sup>			
October 2007	17 <sup>th</sup>		15 <sup>th</sup>				

