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## Adopt-A-Stream Volunteer River Monitoring Program Final Project Report

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## **Section 1.0**

### **Introduction**

Forty percent of Michigan's population lives in the three-county metropolitan Detroit area (Macomb, Oakland, and Wayne counties) located in the southeast portion of the state. More than 1.5 million people in over 60 municipalities inhabit the Clinton River Watershed. The Main Branch of the Clinton River is divided into three "subwatersheds" - the Upper Clinton, Clinton Main and the Clinton River East. The river's four largest tributaries have their own subwatersheds - Paint Creek, Stony Creek, North Branch and Red Run. Water within each of these subwatersheds flows into the Clinton River and eventually into Lake St. Clair. Precipitation that falls within the Lake St. Clair subwatershed drains directly into Lake St. Clair via a primarily closed storm drain system.

Land use within the watershed is varied: the southern portion is urban, the middle section is made up of rapidly-developing suburban areas, and the northern region, while still largely rural, is gradually following the development trend. The condition of the river and its tributaries varies dramatically, from runoff and pollution problems in urban areas, to healthier waters with thriving trout fisheries in suburban and rural areas. Stormwater volume, sediment and bacteria continue to be the most prominent pollutants challenging water quality and habitat.

Water quality in the Clinton River has improved dramatically over the past thirty years. Industrial discharges are now regulated under the Clean Water Act. While live fish couldn't be found from Pontiac to the mouth of the Clinton in the 1960s, a large, varied fishery exists today. Many people enjoy canoeing, fishing, boating and riverfront parks throughout the watershed.

The Clinton is typical of an urban river. When it rains, urban and suburban development in the watershed result in higher river flows than we would see in natural watersheds. The water running off of our yards and off of impervious surfaces (i.e. roads, sidewalks, rooftops and parking lots) discharges into our waterways, carrying with it dirt, fertilizers, pesticides, oils, metals and other pollutants. The sheer volume of water entering the river during storm events results in significant erosion and sedimentation which in turn results in the destruction of habitat.

Currently more than 40 local and county governments and numerous other public entities across the watershed that are subject to Phase II of the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act have formed 7 subwatershed planning groups—Upper Clinton, Clinton Main, Stony/Paint, North Branch, Red Run, Clinton River East, and Lake St. Clair Direct Drainage. Each group has charted a course to fulfill the requirements of their stormwater permits by working together on a subwatershed basis, sharing data and information and creating joint planning documents.

As a part of this planning and permit effort, each of these 40+ communities had to complete Public Education Plan (PEP) for educating the public on how to reduce stormwater pollution and protect our local water resources. A key component of these

communities' PEPS was the inclusion of a volunteer water quality monitoring program, the Clinton River Watershed Council's Adopt-A-Stream program.

The CRWC will use this data to help establish a baseline for water quality at specific sites in the Clinton River and its tributaries. Our hope is that this information will be used to educate the public, making it easier to actively improve the water quality of this region. Therefore, we will submit this data to necessary State and local authorities.

## Section 2.0

### Project Goals and Objectives

The goals and objectives the Clinton River Watershed Council sought to accomplish through the Adopt-a-Stream Volunteer Water Quality Monitoring program were:

1. Educate citizens of the Clinton River watershed as well as citizens of neighboring watersheds about water quality concepts and issues. The Clinton River Watershed Council strives to continue to help communities within the watershed achieve objectives of the MDEQ Phase II PEP Categories emphasizing particularly on issues relating to:
  - a. their responsibility and stewardship as a member of the watershed community,
  - b. the location of residential storm water drainage system catch basins, the waters of the state where the system discharges, and potential impacts from pollutants from the separate storm water drainage system,
  - c. how to identify and report possible illicit discharges,
  - d. the management of riparian lands to protect water quality
2. Develop a long-term record of benthic macroinvertebrate communities and habitat quality that can aid municipalities in developing and implementing their subwatershed management plans.
3. Analyze collected data and establish trend models to track and monitor any water quality changes.
4. Utilize the program as a tool for increasing public participation and involvement in watershed restoration and protection projects.
5. Increase community awareness of the Clinton River Watershed Council and its mission and vision for the river.

Monitoring volunteers were recruited from subwatersheds of the Clinton River. Training sessions were held throughout the subwatersheds for the convenience of volunteers. Recruitment trainings were called '*Introduction to the Watershed*'. Recruits then went through a detailed two step training process: *field training* and *benthic certification*. Volunteer recruitment, training and retraining was conducted annually from January through March and in August and September (see Adopt-a-Stream task time table Fig. 1). Specific emphasis was geared to training volunteers on quality assurance so that the data collected can be used by municipalities and state agencies in making resource management decisions. Protocols and analysis strategies were selected to ensure the greatest reliability and accuracy possible for the program.

**Recertification and Refresher Sessions:** Volunteers were invited to attend training sessions for review and any program updates on a yearly basis. Team Coordinators

were required to attend refresher field training every three years. Certified Bug Identifiers were required to attend benthic certification classes if the data analysis found more than two mistakes in one monitoring season.

Sites for this program were primarily selected to characterize the Clinton River, its tributaries, and drains. A consultant was hired to map the subbasins of each watershed. Sites that were established by specific subwatersheds for watershed planning will be selected first, with additional sites added based on land use, confluence of tributaries, and recommendations by consulting firms assisting with watershed planning in the Clinton River Watershed.

Designated sites were stream reaches primarily upstream of key road crossings due to their easy access, prior collection of data at these sites and the limited amount of sizable buffered streams/river areas within the watershed.

Monitoring sites were selected based on the following criteria:

- a) site conducive to adopted protocols
- b) safe access
- c) site has been selected by the CRWC as a location for baseline data collection
- d) site is upstream or directly downstream of confluence of two water bodies
- e) site location within subwatershed sub-basins has been considered (land use, location of other sites)
- f) data from site is helpful to subwatershed planning or BMP implementation
- g) site is within similar data has been collected from site in recent years
- h) sites were in reasonable proximity to volunteers homes

Consideration was also given to the size of the subwatershed, with more sites, ideally occurring in larger watersheds. Additional sites will be added as more volunteers are recruited and trained.

Task Timetable												
Task	J	F	M	A	M	J	J	A	S	O	N	D
Conduct New Volunteer Trainings	X	X	X				X	X	X			
Conduct Refresher Volunteer Trainings	X	X	X					X	X			
Inventory Monitoring Equipment Kits/Calibrate Equipment				X					X			
Purchase and Re-stock Monitoring Equipment Kits as Needed				X					X			
Confirm Team Coordinators Status, Re-assign Team Coordinators as Needed, Confirm volunteer participation/Re-assign as needed, Assign New Volunteers to Monitoring Sites				X					X			
Conduct Adopt-a-Stream Monitoring					X					X		
QA-Conduct side-by-side Monitoring (20% sites); Observe team at site and correct protocols as needed- QA Level II					X					X		

QA-Verify Macroinvertebrate Identification; Note Problems; Take Corrective Actions as Needed					X	X				X	X	
Analyze Data and Complete Annual Report	X					X	X				X	X

**Fig.1** Yearly task time table for CRWC's Adopt-a-Stream program.

## Section 2.1

### Success Analysis

All of the associated tasks and goals for the Adopt-a-Stream have been completed and seasonal continuous tasks are being fulfilled as the program progresses. Volunteer coordinating, training and workshops are delivered with quality and consistency each season and the CRWC staff works to make sure all program objectives of the project are seen through. CRWC's Adopt-a-Stream program has helped in raising awareness about water quality issues that our region in Michigan faces. The program has proved to be a reliable and easily attainable avenue communities can take to fulfill their obligations to the Phase II demands for the National Clean Water Act. Throughout the duration of the grant the Watershed Council has developed reliable data resulting in what can be a precursor to a long term data set geared toward benthic sampling and habitat assessment. CRWC has established and will keep adding to reliable trend models for each individual site to track any noticeable changes in sampling scores for recommendations for further investigation. One example would be a noticeable score change at a specific site in the Paint Creek sub-watershed. The sites scores have dropped and continues to since the fall 2006 and possible causes would be from a disturbance event from a controlled dam upstream.

Several environmental sectors of the surrounding communities have requested data from the CRWC to aid in their monitoring agenda as well as the MDEQ. The CRWC Adopt-a-Stream program initiated as a pilot program in 1999 with a small number of sites and volunteers. Since its initiation the program has grown considerably in the amount of active volunteers (165), site locations (36) and community awareness. The program has received a very positive response from all of its volunteer participants and in return the CRWC continues to show and appreciate their dedication. The volunteers have expressed (through evaluation and simple observation) further awareness and concern for water quality issues. They have become increasingly involved with the other opportunities the watershed council offers (i.e. volunteering at the office, organizing river cleanups and other activities at our stewardship events etc.). Sampling events have drawn positive media attention (i.e. articles in the local press) and general public awareness and as a result, seasonal recruitment grows. No major barriers to success have occurred throughout the term of the grant; however, minor complications have arisen and corrections were made accordingly. A notable challenge/obstacle for the CRWC and the Adopt-a-Stream program would be staff turnover. It had no effect on the integrity of the program, but added minor extra challenges to logistical protocols. With the nature of a volunteer program and its validity of useful data the CRWC has recognized that training sessions need to be held on a consistent basis and emphasis on protocols needs to be expressed to all participants. The Watershed Council has learned such valuable lessons throughout the development of the program. Communication is a very important aspect as well. All volunteers need to be informed and updated on any program changes and events. Lack of upkeep of any of these parameters in a volunteer

monitoring program can result in unsuccessful monitoring and can ultimately result in invalid and unreliable data.

As the program continues, awareness of the Watershed Council grows and the number of participants follows the same trend. People becoming involved in this type of work will and has inevitably spread the word for the mission and vision of CRWC, and the importance of water as a valuable and precious resource. The Adopt-a-Stream program gives the public an opportunity to contribute to the conservation and preservation of their local waterways and the CRWC recognizes this and in return the council makes sure to express it's gratitude to its devoted volunteers through several appreciation events.

### **Section 3.0**

#### **Project Benefits**

The Clinton River Watershed Council's Adopt-a-Stream program develops a long term monitoring record of water quality based on the efforts of individual volunteers throughout the communities of the watershed. This benefits not only the local environment through the consistent assessment and monitoring of stream health, but also enhances public awareness on environmental issues and increases participation in community events.

The Adopt-a-Stream program is a favorite among the CRWC volunteers. Each season the number of volunteers and stream sites increase. This increase only adds to the integrity and longevity of the program. With each passing monitoring season the volunteers gain experience and familiarity with the technical protocols and skills the project asks for. This gain in experience of volunteers returns reliable baseline data and in turn benefits the local environment by providing local municipalities, state agencies and other community based organizations (CBO's) a creditable stream assessment record for management planning.

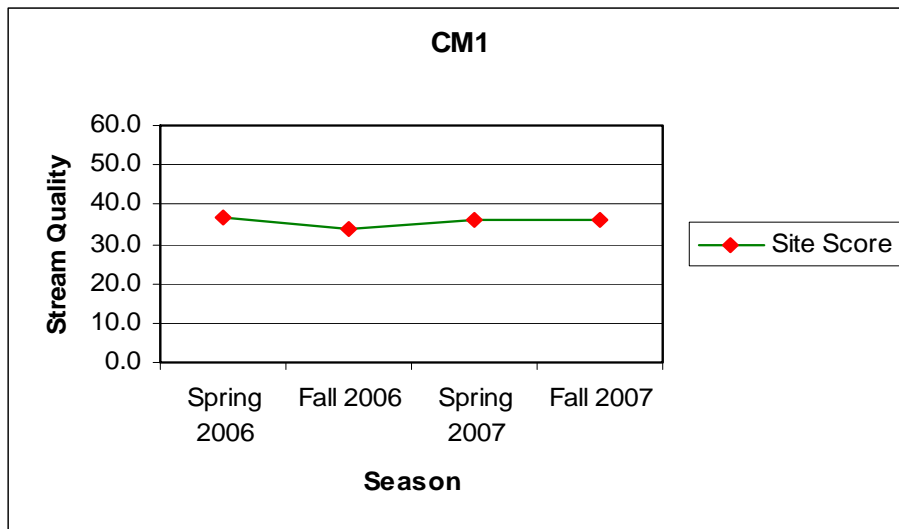
Taking part in a volunteer river monitoring program empowers each citizen to know they are participating in a program that helps the long standing of the community. The program also introduces community activism to younger generations. Adult volunteers will often times bring their children to monitoring events to take part in and/or observe the kind of work people in their community are involved in. The Adopt-a-Stream program has also given the CRWC the opportunity to develop a stronger relationship and a greater reciprocal affinity for the individual members of the communities within watershed.

Evaluations are conducted (via paper or electronic surveys) and volunteer input is encouraged and welcomed during each event that occurs in the Adopt-a-Stream program. These evaluations help to maintain and progress the overall project and integrates public suggestions into this community program. Participants are surveyed throughout the duration of all courses and workshops and usually a final evaluation is administered at the end of an extended event. Suggestions of format, instruction and class/workshop content are acknowledged and are always taken into consideration in the next sessions.

## Section 4.0

### Results Summary

Reliable and measurable data has been collected throughout the duration of the project. During each monitoring season stream quality scores were calculated based on Macroinvertebrate collection results in compliance with the MiCorps rating system. Data was then submitted to the shared MiCorps database as well as the CRWC's database. Initial trend graphs have been established (fig.1) and with the addition of incoming future monitoring data a long-term record can be developed. The collected data will serve as a baseline for other agencies or organizations who wish to further investigation of any specific area within the watershed. Conclusions are limited for the overall condition of the watershed. Certain areas experience high runoff rates and issues concerning sewer overflows, which compromise the condition of the waterways (i.e. Red Run subwatershed). Other parts of the watershed are prized areas that support healthy populations of trout species and other sensitive organisms (i.e. Paint Creek subwatershed). These noticeably important and impacted sites remain under constant watch for the Watershed Council and are recommended to other organizations and agencies for further investigation. Through the Watershed Council's monitoring efforts along with other agencies, reliable data and observation has suggested the Clinton River Watershed has improved tremendously since its historic condition in the early 70's and before.



**Fig. 1.** Stream Quality Scores for one site in the Upper Clinton Subwatershed from spring 2006 to Fall 2007 based on Macro-invertebrate collection.

## **Section 5.0**

### **Project Partners**

Project partners that have aided the Clinton River Watershed Council with the Adopt-a-Stream Program include:

- The Michigan Clean Water Corps: provided aid in funding, guidance and technical assistance.
- Oakland University, Macomb Community College, Macomb County Health Department and other various institutes and agencies have lent their efforts by providing stream monitoring sites or donating room space for the many events/workshops of the AAS program.
- Several different municipalities throughout the watershed have provided room space in their libraries, nature centers, community centers etc. for our trainings.

## **Section 6.0**

### **Completed Products**

Final products as of this date include:

- A reliable and accurate collection of data on stream health based on physical assessment and macroinvertebrate collection throughout the watershed. This data is submitted seasonally into the MiCorps database and is electronically stored into the CRWC's database for record and hard copies are kept in file at the CRWC office.
- The council has created and successfully administered several training workshops relating to watershed basics, monitoring techniques, frequent refresher courses and macroinvertebrate identification courses.
- Water quality monitoring kits have been completed and are distributed to each stream monitoring team. The kits include all the necessary monitoring equipment as well as safety equipment and safety manuals.
- To ensure the reliability of the data collected from the volunteers the CRWC has designed and frequently revises data collection forms in accordance with the set standards of the MiCorps field data sheets. Standard operating procedures (SOP's) have also been developed and distributed to volunteers to ensure consistency in collection technique. Shortly after a seasonal monitoring event a qualified staff member of the CRWC confirms macroinvertebrate identification of the submitted samples for verification.

## **Section 7.0**

## **Project Sustainability**

The Adopt-a-Stream program is an integral part of the Clinton River Watershed Council's mission and vision. The CRWC plans to continue the program and constantly promote the opportunities and benefits the project offers. Each year the program grows in the number of volunteers and monitoring sites across the watershed. The CRWC will continue to thank and appreciate the efforts of the volunteers, local municipalities and other contributors for their participation and generosity. Future funding will continue to come from local communities in the watershed that are subject to phase II of the federal stormwater regulations and the CRWC will continue to apply for similar volunteer stream monitoring grants to help aid the program.