

Final Project Report

Macatawa Watershed Road/Stream Crossing Inventory
Macatawa Area Coordinating Council

Project goals and objectives

The goal of this project was to develop a volunteer monitoring program to inventory and assess road/stream crossings in the Macatawa Watershed. Road/stream crossings are identified in the Macatawa Watershed Management Plan as a source of sediment and an impairment to hydrology.

The objectives of this inventory project were to:

1. Revisit and inventory the 58 sites that scored moderate and high in the 2008 BEHI assessment
2. Develop a database for the Macatawa Watershed to track follow up visits and work completed at road/stream crossings and share this with the county Road Commissions and Drain and Water Resource Commissioner's offices
3. Develop a procedure to prioritize inventory of additional road/stream crossings in the Macatawa Watershed
4. Establish a volunteer base to assist with this proposed and future road/stream crossing inventories in the Macatawa Watershed

Over the 13-month project span we were able to inventory 57 of the 58 sites. Only one site remains incomplete due to high water levels created by a downstream dam and rain events. We will continue to monitor this site and will take measurements when the conditions have improved. Overall we feel that we have successfully accomplished our inventory objective.

Originally our second objective was to develop our own database to track road/stream crossing information gathered during the inventories. Once we realized that the database provided by the Michigan DNR was offline we no longer felt it necessary to create our own since we would continue to have full access to the data.

For long-term sustainability of this project we developed a strategy to prioritize additional inventories in the watershed. MACC staff solicited input from stakeholders to develop a long-term plan for continuing the road/stream crossing inventories at our January Watershed Advisory Committee meeting. The group looked at multiple strategies on how to prioritize the order in which road/stream crossing sites should be inventoried in the coming years. We determined that if we visited approximately 50 sites each year, it will take around 10 years to complete inventories at every crossing in the watershed. Three scenarios were presented; inventories by stream, by subwatershed or by township. Overall, the group decided that perhaps a combination of by stream within subwatersheds might make the most sense. For our full 10 year plan see *Project sustainability* below.

Our final objective was to establish a volunteer base that included professionals from partner organizations and community volunteers. We accomplished this by recruiting volunteers from our existing lists of watershed stakeholders and previous volunteers that have participated in river clean ups, rain garden maintenance and macroinvertebrate monitoring. We also had volunteers from Grand Valley State

University's Student Chapter of the Soil and Water Conservation Society help with inventories as well as employees from Innotec, a local business that offers paid volunteer time off to its employees.

Challenges and successes

Overall, weather seemed to be the biggest barrier when trying to complete inventories. To overcome this issue we made sure to have multiple days scheduled for inventories with backup rain dates. Often the rain date was needed due to high water levels from larger storms prior to our scheduled events. Because of weather, one site remains incomplete due to high water. We were successful at recruiting enough volunteers for each event. Typically we were able to have enough individuals to make up 3 groups per event. We also made sure to have both weekday and weekend events to accommodate the varying schedules of our volunteers. Another task that helped lead to successful events was our prior scouting of sites and the creation of fact sheets for each location. Fact sheets had valuable information such as the site name, map of the location, where to park, where to enter into the stream, traffic conditions, which direction was north, and which side of the road was upstream versus downstream. Having these sites scouted ahead of time allowed us to create safer working environments by assigning group members to locations that would be appropriate for their level of experience and physical ability.

Summary of training and monitoring events

At the start of the project we held a training event on July 12, 2016 at a local park with our main partners and those that would become team leaders. Everyone was given sample inventory sheets and the program manual. As a group we went through each step of the inventory and answered questions.

The 57 sites were inventoried in 8 events over the course of the 13-month grant project, specifically during the months of August, September, October, and May. Typically 2 or 3 groups were available for the events with 3 to 4 people in each group. Groups were normally able to inventory 3 sites over the 4 hour time period. Overall we had 33 unique volunteers with individual skillsets and levels of ability. All volunteers were required to sign a Release and Liability Waiver. Those that were unable to perform tasks in the stream were happy to participate by filling out the datasheet and directing the steps that needed to be taken by the other team members.

Benefits, tips and lessons learned

The main environmental benefit of this project was the collection of data that can be used by our local drain/water resources commissioners and road commissions. High priority sites can be scheduled for remediation or replacement to reduce erosion and sediment delivery to Lake Macatawa and improve infrastructure. Beyond the ecological impacts, we were able to expand our community engagement by educating new volunteers on the issues in our watershed. This project also created a new opportunity for citizen science and strengthened relationships with our government partners.

For groups that may be starting their own program, we have found it helpful to carry everything in a small backpack. We also purchased mesh laundry bags to hold the hard hats and cones. In the backpacks, we

have a folder that contains the list of hazardous plants as well as letters to landowners in case they want to know more about the program. In terms of equipment needs we found that we did not use as many survey pins as we purchased; two per group would have been sufficient. We also found that a measuring wheel was often more useful than a tape measure. We would also strongly advise groups to scout crossings and create site fact sheets for their volunteers as it helped us tremendously. Also if groups have many of the same volunteers, we would recommend that teams be changed from time to time in order to make sure everyone is following the same protocol. A tip we learned from our partnership with the road commissions that helped in judging road width and approaches is that most travel lanes are 11 feet wide and the distance between each yellow dashed skip line is 50 feet. Lastly make sure to have everyone's cell phone numbers and that each group has a contact method to reach the main coordinator in case they have questions while in the field or for emergencies.

For lessons learned, we found that more thorough volunteer training may be necessary regarding a few topics. First we found that we should have put more emphasis on how to properly take the photos that are required. In particular, we noticed that some inlet and outlet photos were taken inside the culvert itself and not further back to show the conditions around the inlet or outlet. There was also some confusion on where to take riffle measurements when a riffle, or people's idea of what a riffle is, could not easily be located. In our future trainings we will make sure to discuss this measurement in more detail. Midway through our inventory season, we noticed a discrepancy between the datasheet and the Access database for Upstream Pond. In both the database and the datasheet, Scour Pool prompts the recorder to insert measurements for length, width and depth. On the paper datasheet for Upstream Pond, however, depth is missing. For the remainder of the inventories we inserted a space for depth on the datasheets. One other issue we faced with the datasheet was the section on Structure Water Velocity. Because we used the float test method and therefore only had one measurement, volunteers tended to only write the value in for one and left the other blank. If a value is not present for both in the Access database, an error occurs. We will also address this with our future volunteers and let them know to enter the same value for both Inlet and Outlet Structure Water Velocity when the float method is used.

Public education and input

Adjacent landowners were informed prior to the assessments that staff and volunteers would be in their area working at road/stream crossing locations. Mailed notices included background on the project, approximate dates that inventories would occur, a map, why the information was being collected, and an invitation to contact us for more information or to volunteer. The public was also made aware of the program via our newsletters, social media and at community events in which we participated.

Project evaluation

As a way to evaluate the project we sent out surveys to our volunteers and crew leaders for feedback on how to make the program better. We asked questions about how they found out about the events, how many they participated in, if they felt they had enough information prior to the event and during, if they felt they were able to actively participate during the inventory, if they felt safe, and if they would like to

participate again in the future. See *Quarterly and Financial Statute Reports, October-December 2016* for the survey results.

Partner contributions

Our key partners in this project were the Ottawa County Road Commission (OCRC), Ottawa County Water Resources Commissioner’s Office (OCWRC), Allegan County Road Commission (ACRC), Allegan County Drain Commissioner’s Office (ACDC), and Outdoor Discovery Center Macatawa Greenway (ODCMG). Local sources of match were provided by the MACC, the OCRC, the OCWRC, the ACRC. Match from OCRC, OCWRC and ACRC were in the form of professional staff time spent conducting inventories and assisting in the development of a long-term inventory plan.

Jerry Olman, the Environmental Coordinator for OCRC, helped by becoming a trained crew leader for events in Ottawa County. Mr. Olman also helped the MACC develop our long-term plan. Joe Bush, the OCWRC, also committed staff time to assist with the inventories within Ottawa County. To the south in Allegan County, Jason Edwards, Project Engineer for ACRC, attended training and served as a crew leader. He also helped to prioritize sites for our long-term inventory plan. Additional staff from ACDC also participated in events within Allegan County. ODCMG was very helpful in providing the waders and boots for the volunteers who did not already have their own.

Products completed

1. Site Fact Sheets

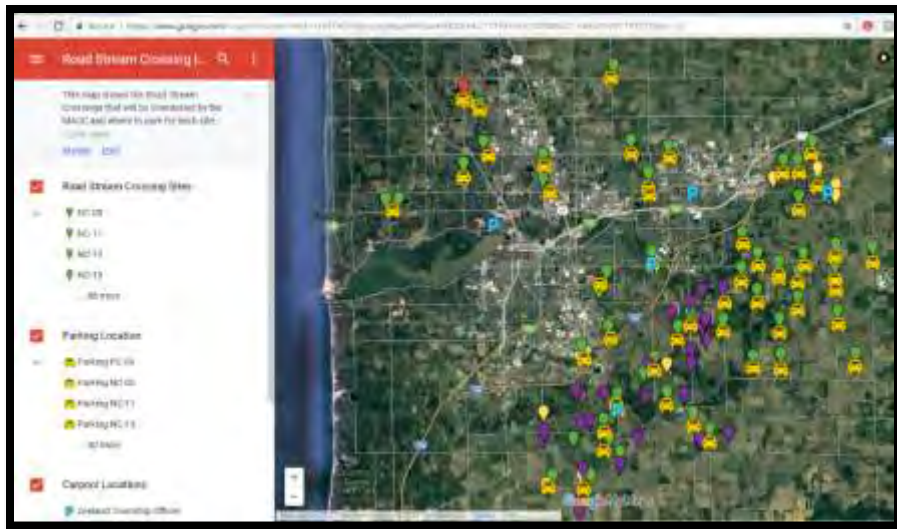
Fact sheets contain valuable information such as the site name, map of the location, where to park, where to enter into the stream, traffic conditions, which direction was north, and which side of the road was upstream versus downstream. A full page example can be found in *Quarterly and Financial Statute Reports, May-June 2016*.



2. Google Map

To help identify stream locations in the field, where to park, and track progress, we created a Google Map of our sites. We color-coded the sites blue to indicate that the site had not yet been inventoried and changed it to green once it was completed. Red indicates that a site needs to be revisited or calls attention to another issue. The map can be viewed at:

<https://www.google.com/maps/d/viewer?mid=1s55T8QKAgnsPg3BgcMNRparHK8>



3. Lanyard datasheet

We created a small data sheet along with inches to feet conversions, laminated them both and put them on a lanyard. This allowed the person in the stream to follow along or see what was next on the data sheet. This was very helpful!



4. Invasive or harmful plants

We also produced a noxious plant guide for each group that included information on identification and treatment of Poison Ivy, Poison Hemlock, Stinging Nettle, and Jewelweed. See *Electronic Copies of Materials* for the complete guide.

Project sustainability

To have long term sustainability of this project we developed a strategy to prioritize additional inventories in the watershed. We determined that it will take around 10 years to complete every crossing in the watershed if we visit approximately 50 sites each year. After looking at multiple scenarios we decided on a subwatershed approach that prioritizes locations with high amounts of modeled streambank erosion. After each inventory season, we will evaluate our sustainability strategy and prioritize if necessary. We foresee that minimal cost will be needed to sustain this project. After yearly training, MACC interns will lead and help organize inventory events with community volunteers. Equipment replacements will be made if necessary but it is likely that this too will be minimal as our current supplies are in good condition. Any anticipated necessary expenses will be included in the MACC’s annual budget process.

MACC’s Ten-Year Road/Stream Crossing Inventory Plan

Priority Level	Subwatershed	Total Crossings	Crossings Completed in 2016	Crossings Remaining	Year Scheduled
1	South Branch	47	16	31	1
2	North Branch	83	5	78	1 & 2
3	Direct Lake Drainage	61	2	59	2 & 3
4	Noordeloos Creek	99	5	94	4 & 5
5	Upper Macatawa	120	15	105	6 & 7
6	Peters Creek	51	8	43	8
7	Lower Macatawa	95	2	93	8 & 9
8	Pine Creek	67	4	63	10
Totals		623	57	566	

Photos of activities



South Branch Macatawa River: Peter Klooster (Allegan County Drain Commission) Allison Veldheer (MACC Intern)



Peters Creek: Volunteers Nick Pierson and Keith Moore



South Branch Macatawa River: Measuring the culvert



South Branch Macatawa River: Jason Edwards (Alleghen County Road Commission) and volunteer Tyler Thoms



South Branch Macatawa River: Measuring culverts and water depth



Noordeloos Creek: Brian White (City of Holland) and volunteer Colleen Nagel take water depth measurements



South Branch Macatawa River: volunteer Tyler Thoms records road measurements on the datasheet