Michigan Clean Water Corps

Final Project Report

GRANTEE NAME: Calhoun Conservation District (CCD)

PROJECT NAME: Road/Stream Crossing Inventory 2016

PERIOD COVERED: 06/01/16 – 12/31/16 **DATE SUBMITTED:** 01/04/17

Goals:

Gain a comprehensive understanding of the road/stream crossings throughout Calhoun County. As well as, achieve an understanding of the individual connectivity throughout our four sub watersheds. The information obtained from this project will also be useful and is intended to be shared with other entities like the road department, drain commission, and MDOT.

Objectives:

- Assess a total of 81 road stream crossings
- Expand volunteer base
- Share data with relevant entities
- Prioritize which road stream crossings will need remediation

The goals and objectives of this inventory were met to a high degree of satisfaction. We were able to surpass the 81 suggested road stream crossings. Utilizing a systematic approach, we started at the bottom of each sub watershed or as the stream entered Calhoun County and worked our way upstream to the end of the county or headwater system, yielding a thorough assessment of each subwatershed. During the field season we were also able to recruit old and gain new volunteers that proved to be extremely helpful in completing the project on time. We made sure that after each field day we were entering our data sheets into the access program so that other entities would have the ability to view our data as soon as possible. Numerous pictures were taken at sites for future reference. Being able to refer back to these pictures and add them into reports and presentations has helped tremendously with explaining areas of concern to other agencies. Entities like the road department could use these pictures and information to their benefit if certain crossing's pose as a safety concern for vehicles.

Completion of the entire road stream crossings assigned was our intended goal so it was a bonus to be able to go above and beyond that. Originally, we had anticipated that

having so many crossings adjacent to landowners would be an issue but most of them were extremely cooperative. Situations that we encountered with some difficulty were evaluating crossings that were in areas that were dangerous to our safety. For example, some of the crossings were on highways and it's not practical for us to survey a crossing that is likely to be in good condition at the cost of our safety. When this scenario arose, we opted to perform the survey from atop the road instead of risking going into the river. A way to avoid this in the future is to set parameters when using random assortment. Parameters to include that could eliminate certain crossings may be if it's known to be in above average condition or if it's located in a high traffic/dangerous zone.

Training volunteers was fairly easy and incredibly favorable in completing our surveys on time. All of the volunteers for this project had a background working in the environment so they were pretty familiar with streams and their processes. Training would typically include going out with us for a few road stream crossings. During the first few crossings we would let them get an idea of the how the data sheet was laid out. Once they became familiar with the data sheet and saw what parameters we were most interested in observing, we would allow them to help with taking measurements. The most important thing when letting the volunteers help us with taking measurements is to ensure their comfort and safety. One way to do this is explaining extensively what to expect when wading or how to safely maneuver into the stream. As well as giving them tips for once they're in the stream on how to stay safe. Though most of our volunteers had a decent amount of experience maneuvering through streams it's always a good idea to remind them of things that can happen and ways to try and avoid injury. With the help of our 5 volunteers we were able to complete 87 road stream crossings.

An environmental benefit to doing this survey was evaluating where connectivity was being hindered throughout the sub-watersheds due to improper crossings. The only way to really understand what the problems may have been at the crossings was to get into the stream and evaluate each individual crossing. When culverts are undersized, perched or misaligned it can have negative effects on the stream that "destroy habitat, fragment and isolate fish populations, and increase vulnerability to disturbance and extirpation" (Gibson, 2005, p.30). The majority of our culvert crossings were either significantly undersized or improperly aligned. This lead to a significant negative impact on stream processes. Without getting in the stream and measuring certain parameters, the culverts could've easily been overlooked.

Something that can be extremely helpful when taking on this project is deciding if you're able to work with partners that may have similar goals. In our case, the road department would be interested in knowing if certain bridges or roads would need replacement. Working with them potentially lead to more funding for completing projects. Before starting the survey, look at what data has already been collected. This way you're able to see if certain areas have had any historic issues or drainage problems that could be related to the

road/stream crossings. Once all of the surveys have been completed the next step is to prioritize based on what kind of issue the road/stream crossing presents. There could be multiple culverts with issues ranging from fish passage, flow obstructions, or causing problems with drains. Being able to establish a ranking of crossings that pose the most significant impairments aid in sharing priority crossings with partners that can help lead to acquiring grants. Using appropriate equipment is essential to ensuring successful surveys. It's important to have good, reliable equipment because the measurements and data you produce will eventually serve as the backbone for projects. Unfortunately, midway through our field season our flow probe had stopped working so we resorted to using the "float test" as a way to calculate velocity. Though this method is sufficient for obtaining a surface velocity, we were unable to get an accurate measurement throughout the water column at the inlet.

Fortunately, we were able to obtain some partners for this project including the road department, TRIM, and the drain commission.

Since our data had already been entered as surveys were completed, we've already managed to analyze it to a substantial degree. From our analysis, we have begun putting together a report listing what priority crossings we encountered that the road department may be interested in partnering with us on. Aside from road department related crossings, we've also looked into what areas serve as a problem for fish passage. Though, these particular issues are not usually considered by the county or city municipalities, there are grants that we can begin applying for using the data we've collected. Certain areas that were not of high priority but may require future monitoring at different times throughout the year have also been accounted for.

Pictured to the left, is a road/stream crossing located on Rice Creek. This particular crossing is severely undersized. The high velocity shown at the inlet and the restrictive size in relation to bankfull width upstream makes this site a priority for replacement. Pictured to the right, are two of our volunteers. Logan Kreiger (left) and Cullen Hielser (right). Both were being trained on correctly recording data and taking measurements.

Literature Cited:

Gibson, R. J., Haedrich, R. L., & Wernerheim, C. M. (2005). Loss of Fish Habitat as a Consequence of Inappropriately Constructed Stream Crossings. *Fisheries*, *30*(1), 10-17. doi:10.1577/1548-8446(2005)30[10:lofhaa]2.0.co;2