Great Lakes Fish and Wildlife Restoration Act

FINAL Project Report Template

*Indicates required content

***Project Title: Pere Marquette Instream Habitat Enrichment Project**

***Project Sponsor: Conservation Resource Alliance**

***FWS Agreement Number: #30181AG017**

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Study Objectives: The Pere Marquette River lacks instream woody debris between M-37 and Rainbow Rapids, two popular recreational access points. There are locations in this stretch where up to a thousand feet of river is void of any significant log jam structure. CRA and partners planned on focusing on a 20 mile stretch of the Pere Marquette mainstem, incorporating 2,000 lineal feet of woody debris in the form of log jam, log revetment, whole tree revetment, and island structures. This would include the installation of up to 50 structures measuring on average 40 feet in length, specifically prescribed for sites taking into consideration stream channel morphology, access, materials availability and landowner permission. CRA and partners considered site selection and prescription with respect to navigation, recreational access, and other current issues. Fish and wildlife species to benefit from the addition of instream habitat include brook, brown and rainbow trout, mottled sculpin, Coho and Chinook salmon, a variety of aquatic insects, and wildlife including otter, mink, turtle and frog species. Forested riparian corridors are important and not uncommon on the Pere Marquette River but the mainstream also needs fallen woody debris for instream habitat; wood can also be strategically placed to provide cover, protect sensitive streambanks, and still allow for navigation.

Instream woody debris creates new microhabitats, making a river system more complex. Large woody debris naturally derived from the forested corridor functions in controlling the routing of water and sediment, shapes pools and riffles, provides cover and substrate for biological activity (From the Forest to the Sea, Figure 2.7). Tree branches, trunks and root wads purposefully incorporated into the Pere Marquette River are used by aquatic and upland organisms in a variety of ways. Large woody debris creates protected areas for fish during high water and extreme seasonal temperatures, and is also used as hiding and resting cover. Algae, moss, fungi and microscopic organisms that grow on wood provide food for a variety of macroinvertebrates such as caddisflies, mayflies, stoneflies and snails which then provide food for fish, frogs, salamanders, turtles, crayfish and other wildlife. Whole trees in a log jam form provide basking areas for turtles, water snakes and frogs. Islands and log revetments simulate undercut banks and provide habitat for mink and otter. Evaluation of installed structures can involve assessment of fish and wildlife use, including stream shocking, and visual assessment of scat and tracks left by wildlife.

Description of Tasks:

1. **Site selection accounting for access, equipment & materials needed**

CRA biologists and project partners visited a total of 32 old log riprap sites inventoried by the US Forest Service. Two float trips were held with partners to visit each site and discuss the river conditions. CRA followed up the float trips with determining land access routes to each site, taking accurate measurements of proposed woody debris work (length and width of woody debris installation), and stream parameters (depth and width of channel, height of streambanks).

2. **Engineered plans, landowner permission, permits**

CRA developed site plans for the 28 selected sites, met with landowners (US Forest Service, a fishing and hunting club, and individual landowners), toured the sites and access routes together with landowners and Kanouse Outdoor Restoration, and obtained landowner written permission. CRA secured permits from the Michigan Department of Environmental Quality and Michigan Department of Natural Resources. The river was over 6' deep at two of the woody debris sites, preventing installation of woody debris by crews. Equipment access to these sites was not possible due to wetland and the forested corridor. Thus, alternative sites were swapped in to obtain lineal feet of woody debris installed.

3. **Sub-contractor selection and implementation of site plans**

CRA worked together with Kanouse Outdoor Restoration (KOR) to implement proposed woody debris work at the 28 sites. Due to some recent storm events, over half a dozen large trees had fallen across the Pere Marquette River and these trees were utilized for proposed work. The fishing and hunting club was completing a logging project for wildlife habitat in adjacent uplands, and the club donated over 80 white pine logs to the underwater platform/revetment structures with the logger cutting the logs to proper dimensions and hauling them to the river with on-site equipment. This proved to be very helpful especially since KOR crews had to float almost all the log materials to the first batch of sites on USFS land since there was limited vehicle access and trees were not able to be harvested off of USFS lands. CRA visited all sites during and after implementation to verify completion.

4. **Follow-up assessment with partners and log jam engineer during and after construction**

The US Forest Service fisheries biologist and fisheries and wildlife paraprofessional, CRA biologist and MDNR fisheries biologist all visited some or all of project sites during and after construction to ensure proper installation and woody debris placement. CRA visited the sites with landowners, including a local fishing and hunting club, and also communicated with the MDEQ regarding construction progress and any revisions to work that were needed. Several large trees had fallen into the river during the project period, which provided valuable instream material. If these trees were left as is, they likely would have been cut out by some local recreationists who perhaps believe that woody debris primarily serves as a navigation hazard.

5. **Project partner meetings and site visits**

As noted under task #4, project partners were actively involved in habitat work. CRA coordinated two float trips that were attended by over a dozen people each, during which sites were evaluated and prioritized for woody debris work. CRA coordinated seven Pere Marquette River Restoration Committee meetings during which this project was highlighted, and attended several Pere Marquette Watershed Council board meetings to provide updates and request match for the project.

6. **Fishery surveys**

Challenges resulted in trying to complete stream shocking at woody debris year 1 locations prior to BMP installation due to significantly reduced staffing and budget within MDNR Fisheries Division. In addition stream depths made backpack shocking by wading difficult.

Major findings and accomplishments:
A total of 15,025 square feet of woody debris was added to an estimated 12 mile stretch of the Pere Marquette River between Gleason's Landing and Rainbow Rapids access points. This included constructing 3,005 lineal feet of woody debris in the form of underwater platform structures, log revetments, and whole tree revetments estimated at 5' wide along streambanks. This accomplishment exceeded the original goal of 2,000 lineal feet of woody debris installed. A total of 32 sites were assessed for work, taking into consideration stream channel morphology, access, materials availability and landowner permission. A total of 28 sites were addressed, ranging in length from 50 to 210 lineal feet, with 17 sites being completed in 2011 and 11 sites completed in 2012. This involved 3,005 lineal feet of 5' to 6' wide structures. Because vehicle access was so limited in the 2011 stretch of the river, over 400 logs cut 15' in length were floated downstream from Gleason's to the sites and were secured with cedar or oak posts under the water's surface. In the 2012 season, vehicle access to sites was better and combined with donated logs from a logging job being completed by a nearby fishing and hunting club, site work went more smoothly. All underwater structures were covered with trees and tops taken from the adjacent woods (also secured to the posts). Whole tree revetment structures provide hiding and resting cover for fish and other aquatic species, similar to undercut streambanks and naturally occurring log jams. Wildlife have been spotted using them as well, including turtles, snakes and mink. Revetments are an important best management practice because natural woody debris recruitment is limited between Gleason's and Rainbow Rapids. This stretch of river is heavily used year round by recreationists, including canoeists, kayakers, anglers, and guide boats. For navigability reasons, naturally fallen trees are often cut by some recreationists into smaller pieces and allowed to float downstream.

A total of $90,000 was spent in 2011 on project work for the 12 sites. Grant and in-kind sources that covered these project expenses include the US Fish and Wildlife Service GLFWRA, Trout Unlimited (Challenge, Kalamazoo, Paul Young, W.B. Mershon Chapters), the Pere Marquette Watershed Council, cash and in-kind donations from members of the Kinne Creek Club, Pere Marquette landowners, and other partners.

Management implications of your work: Incorporating 15,025 square feet of woody debris into the Pere Marquette River mainstem provides instream habitat for a variety of aquatic species. The woody debris was constructed underwater along streambanks with larger pieces secured on top at the water's surface. By placing wood along streambanks, navigability for canoeists, kayakers, and anglers is unaffected. Thus the management implications for both fisheries and recreational managers in state, federal and private organizations are only positive. With the Pere Marquette River being both a state designated Natural River and federally designated Wild and Scenic River, aesthetics with river restoration and riparian landowners comes into play. The completed woody debris work covers existing outdated log riprap structures, and adds to them providing an aesthetic benefit. The old log riprap structures were constructed 30 to 40 years ago, and the posts have been worn down by the river current exposing the large nails and spikes used to secure them together.

Additional restoration work needed and/or areas for future research: The woody debris effort has sparked the interest of a multitude of landowners and interest groups. Members of the Pere Marquette River Restoration Committee are intending to duplicate the effort on some of the main tributaries as well, most notably the Middle Branch. A large area of the Middle Branch's headwaters lies in agricultural use, a number of eroding streambanks exist, and the outdated log riprap structures are common. The Pere Marquette Watershed Council and CRA have identified

reinventorying the eroding streambanks along with the log riprap structures as a next step. The structure inventory will be similar to the USFS inventory of the mainstem downstream of Gleason's Landing.

CRA and Kanouse Outdoor Restoration will revisit the woody debris sites completed through this GLFWRA grant's effort, ensuring viability of the structures through upcoming years. CRA and partners will likely continue the log riprap inventory on the mainstem in the next 1-3 years, extending it down to Landon Road Bridge. Currently, when CRA works with landowners on streambank erosion stabilization projects woody debris is incorporated into the site work. That approach will be continued on the Pere Marquette River, along with other rivers in CRA's service area.

List of presentations delivered and outreach activities: CRA coordinated two float trips of the targeted stretch of river, with both being well-attended by various members of the Pere Marquette River Restoration Committee and including the USFWS at one of the float trips. During the float trips sites were assessed and ranked for woody debris work. There were numerous site visits by CRA, Kanouse Outdoor Restoration, US Forest Service, Pere Marquette Watershed Council, landowners, and a local fishing and hunting club. CRA coordinated a total of 8 Pere Marquette River Restoration Committee meetings during the project period, and during which updates on woody debris work was provided. In the winter of 2012 CRA gave a presentation on all Pere Marquette efforts to the Paul Bunyan Chapter of County Road Commissions. CRA also provided a project update to the Pere Marquette Watershed Council (PMWC) at their annual membership meeting in 2011, and winter PMWC Board meetings. CRA circulated the project fact sheet to partners and is posting it online at www.rivercare.org. The project will also be highlighted in the CRA spring 2013 newsletter.

***Include relevant pictures or images associated with the project:** *Please submit pictures as separate electronic image files. The images will be used to assist in describing the GLFWRA accomplishments and outcomes. If no pictures are available, please let us know why.*

Geographic region project occurred in or effects: The stretch of the Pere Marquette River where the structures were installed had the beginning point of N 43.869373 W 85.920208 and end point of N 43.918406 W 85.973079. With 29 individual sites, site specific points can be found on the site plans.

***List of reports and peer-reviewed papers completed or in-progress:** Conservation Resource Alliance has completed a fact sheet and spreadsheet for the project, acknowledging USFWS GLFWRA support. Both items are attached, and the fact sheet can be found on CRA's website www.rivercare.org.