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Muskegon River Transition / Implementation Final Report

Muskegon River Watershed Assembly at Ferris State University

Annis Water Resources Institute

MUSKEGON RIVER TRANSITION / IMPLEMENTATION 1

FINAL REPORT

TC: #2003-0032

Submitted by:

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Introduction

The Muskegon River Watershed is located in north central Michigan and its river main stem is the 2nd longest in the State, flowing over 219 miles from its start at Higgins and Houghton Lakes, down to its mouth at Muskegon Lake and eventually Lake Michigan. The Muskegon River Watershed is one of the largest in Michigan, spanning over 2,700 square miles, making it larger than the state of Delaware. Wetlands, groundwater springs, lakes, agricultural drains, and warm, cool, and cold-water tributaries feed the Muskegon River. The cool and cold-water tributaries help to sustain trout and other cool-cold water aquatic species in the Muskegon River.

A Muskegon River Watershed Management Plan was developed (completed in 2002) to address nonpoint source water quality concerns in the watershed. To identify known pollutants in the watershed, three critical areas and one high quality area were inventoried prior to this project. This implementation grant allowed for the: 1) installation of best management practices in two critical area subwatersheds (Tamarack Creek and West Branch Clam River), 2) continuation of information and education efforts, 3) development of a hydrologic study for Upper Tamarack Creek and 4) updating the Muskegon River Watershed Management Plan to meet new EPA requirements.

Project Goals & Environmental Benefits

The Muskegon River Watershed Assembly (MRWA) in partnership with the Annis Water Resources Institute of Grand Valley State University (AWRI) was awarded funds for the Muskegon River Transition/Implementation 1 project (# 2003-0032). The grant period began on September 27, 2004 and was extended nine months until June 30th, 2007. The goals of this project were to update the Muskegon River Watershed Management Plan to meet the EPA's newest requirements and reduce the negative impact that thermal pollution, excessive nutrients, and sediment have on the cold and warm water fisheries, as well as for other indigenous aquatic organisms of the Muskegon River and its tributaries. These project goals were met by incorporating six of nine EPA criteria (three were already included), by conducting a hydrologic study in the headwaters of the Tamarack Creek Subwatershed, establishing permanent conservation easements on vegetative filter strips in the Tamarack Creek Subwatershed, and constructing a rain garden at the Village of McBain K-12 School. All of these management practices targeted thermal pollution and the input of nutrients and sediment in the watershed. By addressing the pollutants that threaten the water quality of the Muskegon River Watershed, all designated uses will be maintained. The environmental benefits of the project were to help maintain a healthy aquatic system for aquatic organisms, fisheries, water supply, agriculture, and recreation.

Project Objectives

The following objectives were completed during the Muskegon River Transition/Implementation 1 project:

Task 1 – Project Administration
Task 2 – Updating MRW Management Plan to meet the EPA Nine Requirements
Task 3 – Information & Education Efforts

Task 4 – Hydrologic Study in Headwaters of Tamarack Creek Subwatershed
Task 5 – Installation of BMPs
A- Tamarack Creek Subwatershed
B- Village of McBain Schools (West Branch of the Clam River Subwatershed)
Task 6 – Project Evaluation

Task One – Project Administration
The first objective was to facilitate the implementation of all project objectives through project oversight, coordination of project partners, and report preparation. Activities under task one included development of quarterly status reports, development of a final report, submission of a project fact sheet and release of claims form, and producing project products and deliverables. Listed below are successes and challenges in implementing task one.

Successes –
Oversight for this project was shared by the MRWA and the AWRI. Both of these institutions are familiar with project management and have brought these abilities together to administer this project. Having two entities with considerable project management experience sharing responsibilities provides increased opportunities for creative problem solving. All quarterly status reports were submitted in a timely manner as required and approved by MDEQ. The MRWA and AWRI also successfully collaborated on and submitted a project fact sheet and release of claims form following MDEQ guidelines as well as produced project products and deliverables.

Challenges –
Dependence on project partners and volunteers can often present challenges. Keeping to a reasonable timeline was difficult. A revision to the original timetable was necessary to adjust to unexpected delays in implementation. Even after the revision, keeping to the timetable was a challenge. The MRWA and AWRI realized that the timeframe for completion of project tasks needs to be flexible to accommodate problems that may arise. It is important to remember that our partners have other obligations and commitments not related to the project. Due to unexpected delays in completing certain project tasks (beyond our control), it was difficult to prepare / submit a draft Final Report 30 days in advance of the end of the grant period. The draft Final Report was submitted toward the end of the grant period.

Task Two - Updating MRW Management Plan to meet the EPA Nine Requirements
The second objective was to update the existing Muskegon River Watershed Management Plan to meet the EPA nine requirements. This task involved reviewing existing causes and sources of nonpoint source pollutants and quantifying their presence in the watershed, estimating load reductions for management measures, reviewing existing management measures, estimating technical/financial assistance to carrying out management recommendations, creating an implementation schedule, describing interim measures to be implemented, identifying criteria to be used to identify progress, creating a monitoring component for plan progress, and coordinating steering/technical committee meetings to review nine criteria components. Listed below are successes and challenges in completing task two.

Successes –
The AWRI Project Manager successfully incorporated the EPA nine requirements into the Muskegon River Watershed Management Plan. The additional chapter that addresses these requirements provides focus and direction to future implementation efforts in the watershed. This update has guidance to efficiently and effectively address nonpoint sources of water quality impairments in the Muskegon River Watershed.

Challenges –
In 2003, the EPA required that all plans incorporate these nine criteria. These requirements are not only new to watershed managers, but also to MDEQ Project Administrators and other MDEQ staff. The completion of this task took much longer than originally anticipated. After the initial review and comment by MDEQ of the nine requirement chapter, the AWRI Project Manager worked closely with MDEQ staff to address each requirement that wasn't originally met. Once the Project Manager took advantage of the technical resources that MDEQ had to offer, the update process was well understood and the management plan was successfully updated.

Task Three – Information and Education Efforts
The third objective was to inform the public/stakeholders about the efforts of the project. Specific tasks included presentations at MRWA meetings, updating the existing Muskegon River Watershed project website, producing articles in the MRWA's River View newsletter, submitting these articles to the local newspapers, newsletters and other media, and holding two meetings/tours at implementation sites. Listed below are successes and challenges in implementing task three.

Successes –
All information and education products during the project period were reviewed and approved by the MDEQ Project Administrator and submitted in a timely manner. The education materials have focused on an array of target audiences. Information and education products were developed for the following targeted audiences: general public (stewardship opportunities), agricultural producers (vegetative buffers and easements), K-12 Educators, Students, and Community Education (rain garden), and local decision-makers (hydrologic study - environmental options for local ordinances).

Local newspapers ran some articles throughout the project period based on media releases generated from this project and area TV media covered the completion of the McBain rain garden BMP.

Challenges –
A challenge was fulfilling the two meetings/tours requirement for BMPs in the watershed. The original idea with the meetings/tours was to involve the public, students, and watershed media. This effort takes preparation and requires advance notice. Due to unexpected delays in BMP implementation (see Task 5) organization of these meetings/tours was difficult. However, the MRWA and AWRI worked together to develop other options to inform the public on implementation efforts. The MRWA held a public tour of the conservation easement areas in the Tamarack Creek watershed before a regularly scheduled MRWA At-Large meeting held at the

Winfield Township Hall (near the easement areas). At the meeting a presentation was given which detailed the importance of conservation easement areas and the work completed in the watershed. For the McBain rain garden tour, we initially arranged for McBain School science / ecology students to help volunteer with the planting and we were going to give a short presentation on the importance of rain gardens and their function. We had also arranged for local media coverage (newspaper / TV) of this planting event with students. It turned out that we had to reschedule the planting event until after school was out for the summer (to repair damage to the rain garden from a severe rainfall event on June 4). The planting event was rescheduled to June 22. A local paper, the Cadillac News, was present for the planting and reported information on the garden and its importance in stormwater remediation. This article was printed in their June 27 edition and reached a broad audience and served to inform the public on stormwater issues and what they can do in their own backyard. Further, a Cadillac area TV station interviewed the MRWA Project Director and visited the McBain rain garden to include video shots of this BMP in its local broadcast aired on June 27. Although students were not involved in the initial planting of the garden, the science/ecology teacher at the school has committed to having his classes be stewards of the garden. The teacher will use this garden as an outdoor classroom teaching students about the importance of water quality, native plants, and habitat. Further, the MRWA is planning its next public "at large meeting" at the McBain School building during the week of September 10, 2007 (after the project period ends) to showcase the McBain raingarden BMP by conducting a pre-meeting public tour of the rain garden site and giving a presentation on it during the public meeting.

Task Four – Hydrologic Study in Headwaters of Tamarack Creek Subwatershed

The goal of this task was to develop a hydrologic model which determined the effect of land use changes on Tamarack's flow regime. This information can be used with other determinants to decide future locations for upland BMPs, in-stream BMPs, stormwater retention, or wetland restoration. This information can also be used to help develop localized stormwater ordinances for local governments in the subwatershed. Listed below are successes and challenges in implementing task four.

Successes –

A hydrologic study was completed in the headwaters of the Tamarack Creek Subwatershed along with a report which summarized the data collected and management recommendations. The information contained in the report described runoff volumes from the 2-year, 10-year, and 100-year storm event. The information contained in this report is useful to determine proper stormwater runoff techniques to be implemented in this area for stream management stability decisions and fish habitat.

An unexpected success was the use of the hydrological study as an educational tool. Property owners familiar with the investigation inquired about the findings and in the process learned more about the project and their watershed.

Challenges –

A challenge with this task was completing the report within the original time frame. This was due to comments received by MDEQ about another hydrologic report produced by AWRI in the Mona Lake Watershed. In order to address MDEQ's concerns, AWRI decided to hold off on

summarizing the Tamarack Creek data until recommendations from MDEQ could be incorporated into the Mona Lake report. Although the Tamarack Creek hydrologic report was not completed according to the original time line, the report incorporated important details that would not have been originally added which are important for implementation efforts in the watershed.

Task 5 – Installation of BMPs

Task five involved the installation of BMPs in the Tamarack Creek and West Branch of the Clam River subwatersheds. The targeted BMPs in the Tamarack Creek subwatershed were permanent conservation easements on vegetative filter strips established along waterways as part of the (Continuous) Conservation Reserve Program (CCRP), administered by the USDA/NRCS. In the West Branch Clam River subwatershed, the focus was the installation of a rain garden on McBain School property to handle stormwater runoff and the associated pollutants from the school's main parking lot. Listed below are successes and challenges in implementing task five.

Tamarack Creek Subwatershed

Successes –

Nearly sixteen and one-half acres of vegetative filter strips were converted to permanent conservation easements on agricultural land working with four different property owners located between Howard City and Lakeview in Montcalm County. The permanent conservation easements are spread over twelve property parcels and include nineteen separate easement areas. All of the easement areas are adjacent to county drains that feed Tamarack Creek. Six acres of vegetative filter strips were newly installed as a result of the extra incentive this project grant provided for the landowner. While the balance of ten (plus) acres of vegetative filter strips existed prior to this project grant opportunity, these landowners were pleased to convert their temporary USDA/NRCS conservation easements into permanent conservation easements under this grant program before their temporary agreements expired.

Working with USDA/NRCS proved to be very beneficial in recruiting agricultural landowners and establishing vegetative filter strips and conservation easements. Dovetailing on the existing CCRP program was an attractive incentive for the landowners we worked with.

The MRWA and GVSU-AWRI developed a new and very good working relationship with the Chippewa Watershed Conservancy who holds other conservation easements in Montcalm County. Project partners also established very good relations with the agricultural landowners involved with this project. Project partners are well positioned to continue similar efforts with other landowners in the future using this project experience as a local reference.

Challenges –

Recruitment of agricultural landowners to convert temporary conservation easements into permanent conservation easements took longer than expected. Also, one landowner changed his mind twice during the process requiring follow up consultation and re-recruitment by the MRWA and USDA/NRCS.

After the initial recruitment of landowners, we thought we were working with two landowners. As it turned out, one landowner was really representing three different legal owners all in the same family. This resulted in having to conduct additional title searches, create separate easement agreements for each landowner and this situation created a more complex picture in obtaining legal opinions on all documentation. This situation also caused some confusion with our survey contractor who had to visit the easement sites on multiple occasions.

Not related to the multiple landowners situation noted above, the survey contractor made an error in their initial delineation of the easement area size for the Rader property. While the surveyor staked the site properly, their initial survey drawing reflected a 25 foot wide easement area instead of 50 foot wide. This error was detected relatively late in the process and the MRWA had to revise final documents and re-calculate acreage / payment amounts and provide corrected information to all partners in preparation for closing. This unexpected error also required that one drain agreement be re-recorded to include the correct survey drawing information.

Title search results required that we obtain drain agreements from the Montcalm County Drain Commissioner affecting all four landowners (Exhibit B in the easement agreements). While the Drain Commissioner was very cooperative in preparing / signing the drain agreements, the MRWA had to follow up repeatedly to ensure proper recording of the agreements in time for closing. Title search results also revealed the need to obtain Mortgage Subordination Agreements from two different lending institutions affecting two of the four landowners. The MRWA had to develop / provide draft agreements for the lending institutions to review / process / approve internally. This process took longer than expected working with the lending institutions. We also discovered during closing that one landowner took out a new mortgage on their home parcel one month before closing without telling anyone. This resulted in the landowner having to obtain an additional mortgage subordination agreement working closely with the title company, which delayed final recording of these documents. One landowner's title search result required that we also obtain an easement agreement from Consumers Energy to restore any disturbed vegetation as a result of locating guy wires and anchors within the conservation easement area. Obtaining the easement agreement from Consumers Energy was a time consuming process. Two of the four landowners were also enrolled under P.A. 116, which required that we obtain two separate P.A. 116 Consent Agreements from the MI Dept. of Agriculture / Farmland Preservation Program Manager. Obtaining these two Consent Agreements was not a problem, but it involved time and effort that we did not anticipate. All four landowners are also affected by existing oil / gas / mineral leases and easement arrangements listed in the title searches. This situation required significant time and effort to investigate further in order to satisfy concerns of the parties involved and ensure that the permanent conservation easements would be repaired / restored in the event any land disturbance occurred (within the conservation easement areas) from oil / gas / mineral activities.

We initially planned to have the Montcalm Conservation District (MCD) be the holder on all the permanent conservation easements. However, the MCD declined to be a partner in this manner and the MRWA had to recruit the Chippewa Watershed Conservancy (CWC), located in Isabella County, to be the holder of the conservation easements in perpetuity. CWC agreed to partner on this project even though we had not budgeted any funds to help offset annual monitoring expenses. The MRWA and GVSU-AWRI agreed to utilize any remaining project funds (if

available) to compensate CWC (in part) for their long-term monitoring efforts. The MRWA will likely need to consider providing additional funds to help compensate CWC in an appropriate way. In order to help simplify CWC's long-term monitoring efforts, the MRWA and GVSU-AWRI decided to purchase and place tall plastic stakes at easement points / curves for improved visibility of conservation easement boundaries to facilitate both CWC and the landowners. This required additional time and expense we did not anticipate.

W. Branch Clam River Subwatershed (McBain School)

Successes –
An estimated 2,000 square foot rain garden with twenty species of native plants was installed on McBain School property. During the project period, the MRWA and AWRI used the installation of this practice to educate the McBain superintendent, maintenance director, school board, teachers, and students about the importance of addressing stormwater issues and the activities that can be implemented to manage it. The science teacher at the school expressed his interest in using this rain garden as an educational tool for his students and also having the students become stewards of the garden. The MRWA and AWRI hope that with the success of this rain garden, the school will want to install these practices at other locations on the school property to control stormwater runoff.

Challenges –
The original site for the rain garden included an area along the creek in front of the school. The school board and superintendent wanted to maintain the manicured look of the lawn in the front of the school and were concerned about taking time out of a student's school day to take care of the BMP. After much discussion with the superintendent, the school agreed to install the BMP in the back of the school where half of the parking lot stormwater runoff is entering the creek. Although the original location of the rain garden was changed, the rain garden was necessary for this school location. During the project period a 100-year storm event occurred the very day we had scheduled the planting of native plants. The Project Director and Project Manager were on site to view the large amount of stormwater running from the school parking lot into the rain garden area and creek. The establishment of the rain garden at this location was beneficial to target nonpoint source pollutants.

The original site plans were developed by a local area engineer who had experience in working with the McBain school district on other projects. The engineer was unfamiliar with working on 319 grants and therefore underestimated the time that it required for MDEQ review and comment. Due to time constraints, the original engineer left the project during the site plan review process. The MRWA brought in and worked with Prein & Newhof to revise the existing site plans to meet MDEQ approval. The site plan review by MDEQ and revisions made were not completed in time, which resulted in part in the extension of the project period. Although the time frame for this task was extended, the MRWA was able to secure a project engineer and address MDEQ's concerns for the rain garden project.

Two weeks after construction of the rain garden basin was completed, a storm equivalent to a 100-year storm event occurred. During this storm, a portion of the earthen berm surrounding the rain garden gave way (washed out). This delayed planting of the rain garden and required

reassessment of the construction of the rain garden basin. A positive outcome of this was that it allowed for the necessary reassessment of the berm construction and emergency spillway for the rain garden to handle future storm events of this size.

Task 6 – Evaluation

Task six involved using appropriate evaluation tools to assess the success of project objectives. Listed below are successes and challenges in implementing task six.

Successes –

The MRWA and AWRI made many site visits to the BMP locations to provide "before" documentation of the sites and included this information in detailed BMP binders for future implementation projects. The AWRI developed two evaluation reports for the project. The first evaluation report was done at the end of year one which was used as a reference for the second year of the project. The second report was a summary of the successes and challenges of the implementation of the project as a whole. Also included in this second evaluation report were recommendations to be used in implementing future project objectives.

Challenges –

A challenge with this project was the establishment of a new and separate project steering/technical committee. In the beginning of the project an informational meeting was held and stakeholders in the watershed were invited. There was not a large interest by those that attended in serving on this committee due to other commitments. It was also difficult for stakeholders in the watershed to meet because the Muskegon River Watershed is large and there is no "central location" to accommodate everyone. The MRWA and AWRI discussed this challenge during the first year of the project and decided to use the existing MRWA Resource Committee to address project details and decisions. The MRWA Resource Committee provides technical support to the MRWA Board and staff. By incorporating this project into the existing agenda, the MRWA Resource Committee served the purpose originally intended for the steering/technical committee.

Project Partners

The following partners assisted the MRWA and the AWRI with the Muskegon River Transition/Implementation 1 project:

- Natural Resource Conservation Service
- McBain Schools
- Wege Foundation
- Chippewa Watershed Conservancy (easement holder)
- W.F. Pearson Engineering
- Prein & Newhof (engineers)
- Griffelle Development (excavator)
- Mid-State Title Services, Inc.
- The Hubbard Law Firm
- Spicer Group (surveyors)
- Ken & Vicki Rader (easement landowner)
- Charles & Judith Kohler (easement landowner)

- Ora Kohler (easement landowner)
- Marshall & Marcia Rutledge (easement landowner)

Project Products

The following is a list of all of the products and deliverables that were developed as part of the Muskegon River Transition/Implementation 1 project:

- Twelve project status reports.
- A draft final report and final report for the project.
- A project fact sheet.
- A release of claims statement.
- An additional chapter to the existing Muskegon River Watershed Management Plan (Chapter 14) which addresses the EPA nine requirements.
- Eight project updates given at MRWA meetings (6) and to other local groups (2).
- Updated (AWRI) Muskegon River Watershed project website.
- Eight articles produced for the MRWA's *River View* newsletter.
- Eight articles (from above) submitted (as media releases) to local newspapers and newsletters in the watershed (last article submitted after project completion).
- Two meetings/tours held to inform local residents/stakeholders on implementation efforts (2^{nd} meeting/tour conducted after project completion).
- Hydrology report for the headwaters of the Tamarack Creek Subwatershed.
- Permanent Conservation Easements established on 16.47 acres of vegetative filter strips along waterways in the Tamarack Creek Subwatershed.
- Installation of 2,000 square foot rain garden with twenty species of native plants to handle storm water runoff from the Village of McBain School parking lot.
- Before and after photographs of sites where BMPs were installed.
- Two evaluation reports.

Project Sustainability

Project sustainability for the Muskegon River Transition/Implementation 1 project is secure through commitment on the part of the MRWA and AWRI to seek additional funding and support for implementation efforts identified in the Muskegon River Watershed Management Plan. The MRWA is expected to provide long-term protection and enhancement of the Muskegon River and its tributaries. Additionally, sustainability will be ensured through collaboration with various partners and the creation of new partnerships.

The MRWA and AWRI are also connected with the five million plus dollars in research projects in the Muskegon River Watershed. This relationship has enabled new partnerships with Michigan State University and the University of Michigan. Information gathered from these projects and partnerships will result in future research and implementation activities in the Muskegon River Watershed.