Legacy Fund Restoration Evaluations, Fiscal Year 2013

Report to the Minnesota Legislature

Senate Finance Committee, Subcommittee on Legacy
House Environment, Energy and Natural Resources Policy and Finance Committee
House Legacy Finance Division

Lessard-Sams Outdoor Heritage Council
Clean Water Council

Submitted by
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

Date of Report: December 08, 2014

Legislative Charge

The statutory requirements for this report, as amended in M.L 2011, First Special Session, Ch 6:

Parks and Trails Fund: ***M.S. 85.53, Subd. 5.*** *Restoration evaluations. The commissioner of natural resources may convene a technical evaluation panel comprised of five members, including one technical representative from the Board of Water and Soil Resources, one technical representative from the Department of Natural Resources, one technical expert from the University of Minnesota or the Minnesota State Colleges and Universities, and two other representatives with expertise related to the project being evaluated. The commissioner may add a technical representative from a unit of federal or local government. The members of the technical evaluation panel may not be associated with the restoration, may vary depending upon the projects being reviewed, and shall avoid any potential conflicts of interest. Each year, the commissioner may assign a coordinator to identify a sample of up to ten habitat restoration projects completed with parks and trails funding. The coordinator shall secure the restoration plans for the projects specified and direct the technical evaluation panel to evaluate the restorations relative to the law, current science, and the stated goals and standards in the restoration plan and, when applicable, to the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. The coordinator shall summarize the findings of the panel and provide a report to the chairs of the respective house of representatives and senate policy and finance committees with jurisdiction over natural resources and spending from the parks and trails fund. The report shall determine if the restorations are meeting planned goals, any problems with the implementation of restorations, and, if necessary, recommendations on improving restorations. The report shall be focused on improving future restorations. Up to one-tenth of one percent of forecasted receipts from the parks and trails fund may be used for restoration evaluations under this section.*

Outdoor Heritage Fund: ***M.S. 97A.056, Subd. 10.*** *Restoration evaluations. The commissioner of natural resources and the Board of Water and Soil Resources may convene a technical evaluation panel comprised of five members, including one technical representative from the Board of Water and Soil Resources, one technical representative from the Department of Natural Resources, one technical expert from the University of Minnesota or the Minnesota State Colleges and Universities, and two representatives with expertise in the project being evaluated. The board and the commissioner may add a technical representative from a unit of federal or local government. The members of the technical evaluation panel may not be associated with the restoration, may vary depending upon the projects being reviewed, and shall avoid any potential conflicts of interest. Each year, the board and the commissioner may assign a coordinator to identify a sample of up to ten habitat restoration projects completed with outdoor heritage funding. The coordinator shall secure the restoration plans for the projects specified and direct the technical evaluation panel to evaluate the restorations relative to the law, current science, and the stated goals and standards in the restoration plan and, when applicable, to the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. The coordinator shall summarize the findings of the panel and provide a report to the chair of the Lessard-Sams Outdoor Heritage Council and the chairs of the respective house of representatives and senate policy and finance committees with jurisdiction over natural resources and spending from the outdoor heritage fund. The report shall determine if the restorations are meeting planned goals, any problems with the implementation of restorations, and, if necessary, recommendations on improving restorations. The report shall be focused on improving future restorations. Up to one-tenth of one percent of forecasted receipts from the outdoor heritage fund may be used for restoration evaluations under this section.*

Clean Water Fund: ***M.S. 114D.50, Subd. 6.*** *Restoration evaluations. The Board of Water and Soil Resources may convene a technical evaluation panel comprised of five members, including one technical representative from the Board of Water and Soil Resources, one technical representative from the Department of Natural Resources, one technical expert from the University of Minnesota or the Minnesota State Colleges and Universities, and two representatives with expertise related to the project being evaluated. The board may add a technical representative from a unit of federal or local government. The members of the technical evaluation panel may not be associated with the restoration, may vary depending upon the projects being reviewed, and shall avoid any potential conflicts of interest. Each year, the board may assign a coordinator to identify a sample of up to ten habitat restoration projects completed with clean water funding. The coordinator shall secure the restoration plans for the projects specified and direct the technical evaluation panel to evaluate the restorations relative to the law, current science, and the stated goals and standards in the restoration plan and, when applicable, to the Board of Water and Soil Resources' native vegetation establishment and enhancement guidelines. The coordinator shall summarize the findings of the panel and provide a report to the chairs of the respective house of representatives and senate policy and finance committees with jurisdiction over natural resources and spending from the clean water fund. The report shall determine if the restorations are meeting planned goals, any problems with the implementation of restorations, and, if necessary, recommendations on improving restorations. The report shall be focused on improving future restorations. Up to one-tenth of one percent of forecasted receipts from the clean water fund may be used for restoration evaluations under this section.*

Contributors

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Executive Summary

This report was produced in response to state law (M.L. 2011, First Special Session, Ch. 6) directing the Department of Natural Resources and Board of Water and Soil Resources to convene an expert panel to evaluate restoration projects completed with Clean Water Land and Legacy Funds: Clean Water Fund (M.S. 114D.50), Outdoor Heritage Fund (M.S. 97A.056), and Parks and Trails Fund (M.S. 85.53). This report describes eight restoration program / grant evaluations, consisting of thirteen individual project sites. Projects sites were evaluated by habitat restoration experts chosen because of their knowledge of local habitat types and restoration practice. As directed in statute, projects are evaluated relative to:

> *the law, current science, and the stated goals and standards in the restoration plan.*

The panel determined that all projects have been implemented in compliance with applicable appropriation laws and reporting requirements for each Fund. Practices implemented were within the scope of current science based restoration practices and are overall on trajectories that have the potential to meet planned project goals.

Statute also directs the panel's report to:

> *determine if the restorations are meeting planned goals, any problems with the implementation of restorations, and if necessary, make recommendations on improving restorations.*

Based on review of all site assessments to date, the Panel identified the following areas for improving future restorations and the restoration evaluation process:

- Improved Documentation
- Improved Restoration Training Statewide
- Evaluation Process Improvement

To provide guidance on how to turn the Panel's recommendations into actions the program coordinator has outlined the basis for these recommendations, specific actions to address them and how their implementation success will be tracked in the Recommendations section. Discussion of additional specific areas for improving restoration practices and processes will be presented in the Fiscal Year 2014 report.

Introduction

State law (M.L. 2011, First Special Session, Ch. 6) directs the Department of Natural Resources (DNR) and Board of Water and Soil Resources (BWSR) to conduct evaluations of habitat restoration projects funded by the Clean Water Fund (M.S. 114D.50), Outdoor Heritage Fund (M.S. 97A.056), and Parks and Trails Fund (M.S. 85.53). BWSR is the responsible agency for Clean Water Fund restoration evaluations, DNR is the responsible agency for Parks and Trails Fund evaluations and DNR and BWSR are jointly responsible for Outdoor Heritage Fund restoration evaluations. DNR and BWSR (Agencies) have elected to combine the administration and reporting for the three statutory requirements in a single Legacy Fund Restoration Evaluation program. The law directs BWSR and DNR to convene for each of the three funds a restoration evaluation panel (Panel) containing at least five technical experts who will evaluate a sample of up to 10 restoration projects annually. Statute also directs DNR and BWSR to assign a coordinator for the Panel. The coordinator is responsible for coordinating site assessments, selecting projects to be evaluated, and providing reports to the Legislature and governing councils. Evaluation reports are directed to determine whether restorations are meeting planned goals, identify problems with implementation and, if necessary, provide recommendations for improving future restorations.

The Agencies plan to improve conservation outcomes across the State through the evaluation process. Working collaboratively with project managers to identify gaps and capture lessons learned from restoration implementation, the Agencies will utilize this valuable information to support future practice through restoration training and technical assistance.

Evaluation Process

Roles and Responsibilities

Evaluation Panel

By law, the evaluation Panel is responsible to:

- Evaluate restorations relative to the law, current science, and the stated goals and standards in the restoration plans; and
- Provide findings on the evaluations, determining whether restorations are meeting planned goals, identify problems with implementation of restorations and, if necessary, provide recommendations on improving restorations.

Statute requires that the Panel includes:

a. *one technical representative from the Board of Water and Soil Resources,*
b. *one technical representative from the Department of Natural Resources,*
c. *one technical expert from the University of Minnesota or the MN State Colleges and Universities,*
d. *two representatives with expertise related to the project being evaluated*
e. *may add a technical representative from a unit of federal or local government*

Members of the Restoration Evaluation Panel are unpaid technical experts. The Panel was chosen to fulfill the statutory requirements for agency representation and to provide a balance of needed expertise. To the extent practicable, Panel members have specific expertise in prairie/grassland, forest, wetland, or aquatic ecosystems and habitat restoration techniques, so that at least one panel member will have proficiency related to any project being evaluated. The panel may seek advice and assistance from others including Site Assessors with additional expertise to help the panel in its work.

Members were selected from a pool of recommendations submitted by agency staff and other partner organizations. Appointed Panel members are asked to serve terms spanning at least two fiscal years. As statute permits, a sixth member from a federal agency was chosen to provide additional expertise and perspective to the evaluation process. Panel members serving during Fiscal Years 2012 and 2013 are shown below.

Statutorily required member (as listed above)	Panel member:	Affiliation:
a.	Greg Larson / Carol Strojny	MN Board of Water and Soil Resources
b.	Chris Weir-Koetter	MN DNR Parks and Trails
c.	Sue Galatowitsch	University of Minnesota
d.	Greg Berg	Stearns Co. Soil and Water Conservation District
d.	Greg Hoch	MN DNR Fish and Wildlife
e.	Mark Oja	USDA Natural Resource Conservation Service MN

Program Coordinator

The program coordinator is responsible for coordinating site assessments, program administration and managing the work of the Panel for the three Funds. By law, the coordinator is responsible for:

- Identifying a sample of up to ten habitat restoration projects completed with funding from the Parks and Trails Fund, Outdoor Heritage Fund, and Clean Water Fund;
- Securing the restoration plans for the projects selected;
- Summarizing the findings of the Panel; and
- Providing reports to the legislature on Panel findings.

The Coordinator also leads efforts to facilitate and document continuous improvement in restoration practice. To facilitate these efforts, the Coordinator delivers Panel recommendations to the Agencies, project managers and partner organizations, then works with the Panel and Agencies to identify actions and provide guidance for implementing improved methods. The coordinator tracks, evaluates and reports on the progress and effectiveness of improvement actions. The Agencies have assigned a single coordinator to ensure consistency in program implementation. A proportionate amount of the three Legacy Funds is used to support the coordinator position and a memorandum of understanding (MOU) between the Agencies guides cooperative support for this position. The coordinator position is currently housed in DNR's Ecological and Water Resources Division.

Site Assessors

The site assessors are responsible for conducting the site evaluations and providing the results of the assessments, in collaboration with the Program Coordinator, to the Panel for evaluation. Site assessors are selected based on knowledge of restoration applications in the given project habitat type and project location. Site assessors work closely with the coordinator in assessing project plan materials, conducting site evaluations, and participate in discussion with the Panel to ensure queries are adequately addressed. Site assessors may be State agency staff, LGU or Federal agency staff or a private contractor. Services provided by the site assessors are negotiated through the use of contracts, State Interagency Agreements, or work assignments.

Project Managers

Project managers responsible for implementation are expected to actively participate in the restoration evaluation process. Project managers work with the program coordinator to provide the necessary project background information. Project managers are also expected to attend the site evaluations when possible to not only identify project work sites for the site assessors, but to provide important project context, and answer any questions that may arise.

Project manager affiliations vary between Funds and projects. It is necessary to acknowledge the diversity of managing organizations and the scope and focus of their practice when evaluating project implementation. Project managers for the three Legacy Fund restoration projects may include, but are not limited to:

- Clean Water Fund project managers
    - Soil and Water Conservation District (SWCD) manager or technician,
    - Watershed District staff,
    - Watershed Management Organization (WMO) staff,
    - County Water Resource or Environmental Services staff
    - City Water Resource staff
- Outdoor Heritage Fund Project Managers
    - State agency staff (DNR, BWSR)
    - Federal agency staff (USFWS)
    - County conservation and land management staff
    - Watershed District staff
    - Non-governmental wildlife organizations
- Parks and Trails Fund Project Managers
    - MN DNR Parks and Trails resource management staff
    - Three Rivers Park District (via Met Council appropriation)
    - Other outstate Park managers, when/if restoration projects are implemented

Assessment Process

DNR, BWSR and the Panel developed a process that provides for meaningful evaluation of project effectiveness while keeping the process as simple and consistent as possible. A standardized Site Evaluation Form was developed by the Agencies and the Panel to provide essential project information and answer the key evaluation requirements as directed by law. The effectiveness of this form will be assessed and improved in future years based on feedback from the Panel, site assessors and project managers.

The project evaluation process strives to include project managers to the extent possible in conducting site visits and communicating lessons learned from project implementation. The Agencies and the Panel believe that facilitating an inclusive evaluation process with project managers will increase the transfer of knowledge between field practitioners and the Agencies and ultimately improve restoration outcomes.

Program Reporting

State law directs the Agencies to "*summarize the findings of the panel and provide a report*" for each of the three funds. The Agencies elected to convene the same panel and combine the reporting for each of the three funds into one report. The combined administrative and reporting structure allows for a comprehensive and consistent process, while accommodating for the unique attributes and requirements of each individual Fund.

Site Assessments

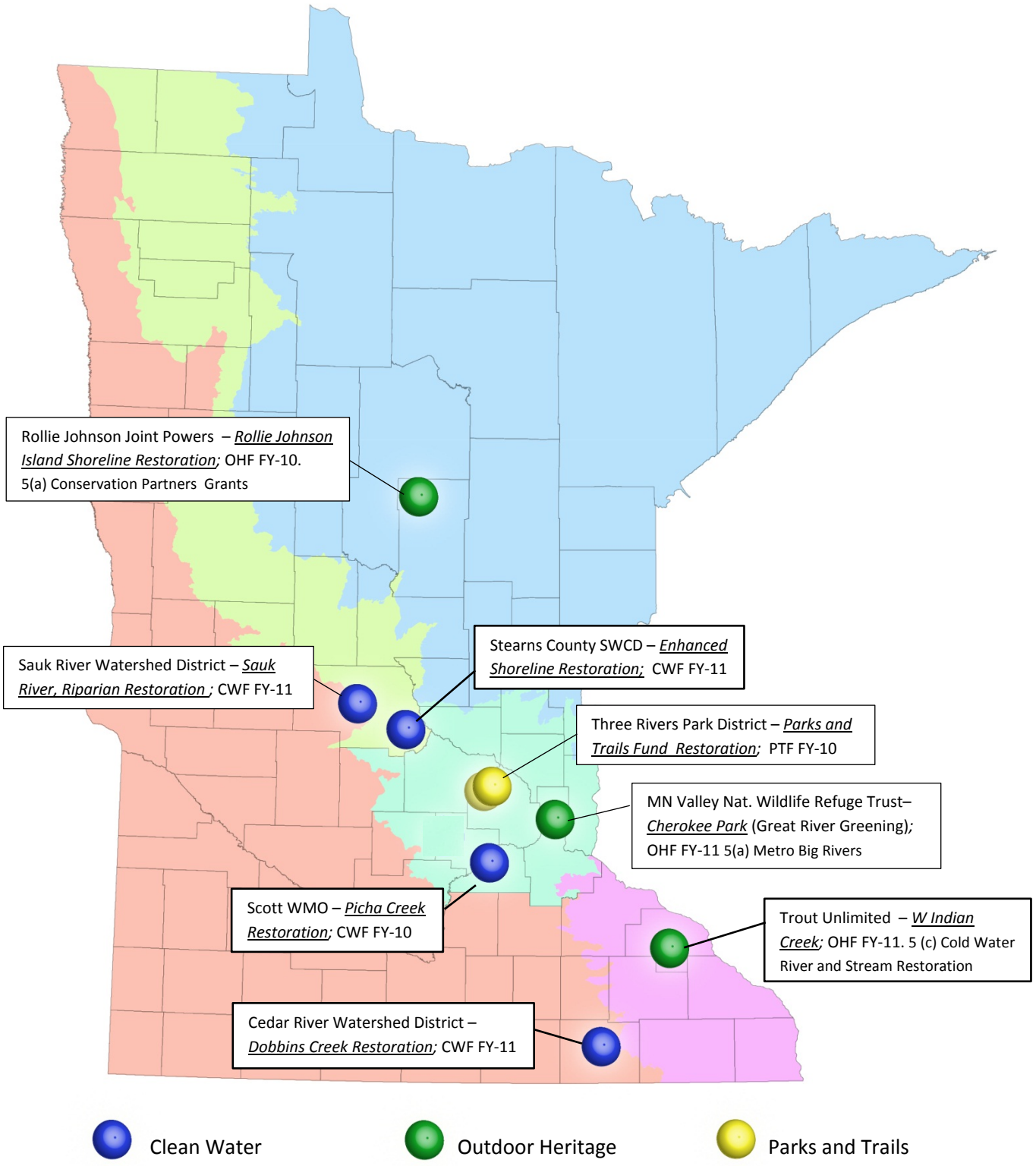
Project Selection

The program coordinator chose projects as a representative sample of habitat types and geographic distribution. Project habitat types featured in this report include six stream, three lakeshore, two forest and one grassland. Projects with the following criteria were considered eligible for selection:

- Statement of "restoration", "reconstruction", "re-establishment" or "re-creation" in the project description.
- Manipulation of a substantially degraded site with the goal of returning the site's natural/historic ecological structure and/or function (e.g. Conversion of an agricultural field to native prairie vegetation; break tile or plug ditch to flood historic wetland).
- For Outdoor Heritage Fund: projects reported as "restore"

The number of projects selected was in relative proportion to each Fund's appropriation to restoration evaluations. The projects described include four Clean Water Fund Grant Programs with eight project sites, three Outdoor Heritage Fund Program Appropriations with four project sites and one Parks and Trails Fund Project. All eight grants and appropriations featured in this report funded restoration activities at multiple dispersed project sites. A smaller subsample of project sites was typically evaluated.

Project Locations



Location of projects featured in FY-2013 report. Background color delineates Outdoor Heritage Fund Planning Sections.

Project Evaluation

Projects were evaluated by site assessors who are not affiliated with the respective projects. Sites were assessed by visual inspection of the project's structural components and plant materials. Project managers participated in all site visits. All projects evaluated are in early establishment or still being implemented due to the recentness of the Legacy Funds. Restored plant communities may take several years or even decades to mature. Evaluations are based on observations of the present and projected conditions of the project site relative to the project goals. Observations by field assessors on project effectiveness, estimated outcomes based on current conditions and application of current science are summarized in individual project evaluations, Appendix I.

As directed in statute, projects are evaluated relative to:

> *the law, current science, and the stated goals and standards in the restoration plan*

The Panel determined that all projects evaluated were completed in compliance with applicable laws and seem likely to meet planned goals. It will take several years of monitoring by project managers to determine if longer term outcomes will be achieved. Restoration science is continually evolving and current state of the art practice is an area of ongoing discussion between practitioners, researchers, government agencies and stakeholders. Practices implemented were within the range of current science based restoration practices for the given project type.

Legacy Funds

Each of the three Legacy Funds has a distinct focus on restoration projects directed by the Fund's purpose. For each of the Funds, projects are evaluated relative to the stated goals of the individual project and with an understanding of the purpose of the particular Legacy Fund. All project assessments are focused on estimated effectiveness, durability and progress towards the stated restoration goals based on conditions at the time of the site visit. Observations from these discrete project sites do not represent an evaluation of the overall clean water, habitat or ecological restoration program.

Clean Water Fund

The constitutionally directed purpose of the Clean Water Fund is:

> ***to protect, enhance, and restore water quality in lakes, rivers, and streams and to protect groundwater from degradation***

The primary goal of Clean Water Fund restoration projects is to restore water quality. Implementation of these water quality restoration projects is typically directed by a local water management plan or TMDL Implementation Plan that guides the types of projects and locations in the watershed where restoration activities will support water quality improvement. Restoration sites may engage several habitat types in the landscape including streams, shorelines and various upland land cover types and

habitats. Projects evaluated are a selected subset of Clean Water restoration projects sites within a larger watershed scale water quality improvement effort.

Clean Water Fund restoration projects featured in this report are funded through the competitive grants programs administered by the Board of Water and Soil Resources. Clean Water Fund Statute 114D.50 Subd. 4. (a) requires:

> *A project receiving funding from the clean water fund shall include measurable outcomes, as defined in section 3.303, subdivision 10, and a plan for measuring and evaluating the results. A project must be consistent with current science and incorporate state-of-the-art technology.*

The Panel determined that all projects reviewed have complied with statutory requirements for presenting planned measurable outcomes and planning to evaluate results. Project managers provide planned measureable outcomes in standard reporting to the Board of Water and Soil Resources. Measureable outcomes are typically presented in the form of a modeled pollutant load reduction. Evaluation of the project results is fulfilled by routine, uniform inspections conducted by local project management staff at regular intervals (typically annual). Inspection forms are kept on file by project managers.

Outdoor Heritage Fund

The Outdoor Heritage Fund is constitutionally directed to:

> ***restore, protect, and enhance wetlands, prairies, forests, and habitat for fish, game, and wildlife****.*

The primary goal of Outdoor Heritage Fund restoration projects is to restore specific wildlife habitat types. Implementation of these habitat restoration projects is typically guided by a statewide or national habitat plan that guides the types of projects and locations in the landscape where habitat restoration activities can best support habitat improvement goals. Restoration sites may engage several habitat types including shorelines, streams, wetlands, grasslands and forests. A selected number of Outdoor Heritage restoration projects within a larger scale habitat restoration and protection program are evaluated.

Outdoor Heritage Fund restoration projects included in this report were implemented with fiscal year 2010 and 2011 appropriations and are subject to M.L 2009, Chapter 172, Article 1, Section 2. Subd. 10. Project Requirements, and M.L 2010, Chapter 361, Article 1, Section 2. Subd. 9. These laws direct all project implementers to plant vegetation and sow seed of ecotypes native to Minnesota to the extent possible and restoration projects to provide an ecological restoration and management plan. All projects reviewed in this report have documented planting plans and seed lists to support fulfillment of these requirements.

Outdoor Heritage Fund restoration projects must also prepare a restoration and management plan, as required by M.L 2009, Chapter 172, Article 1, Section 2. Subd. 10. (3)

for all restorations, prepare an ecological restoration and management plan that, to the degree practicable, is consistent with the highest quality conservation and ecological goals for the restoration site. Consideration should be given to soil, geology, topography, and other relevant factors that would provide the best chance for long-term success of the restoration projects. The plan shall include the proposed timetable for implementing the restoration, including, but not limited to, site preparation, establishment of diverse plant species, maintenance, and additional enhancement to establish the restoration; identify long-term maintenance and management needs of the restoration and how the maintenance, management, and enhancement will be financed; and use the best available science to achieve the best restoration

The program coordinator verified and the Panel concurred that all projects reviewed provided and have on file planning and implementation documentation consistent with Subd. 10(3), as above.

Parks and Trails Fund

The Parks and Trails Fund is constitutionally directed to:

support parks and trails of regional or statewide significance.

The primary goal of Parks and Trails Fund restoration projects is ecological restoration of specific habitat types within natural areas of State and Regional parks. Implementation of these restoration projects is guided by State or Regional Park natural area management plans that guide the types of projects and locations in the landscape where restoration activities can best support specific habitat improvement goals. Restoration sites may engage several habitat types including shorelines, streams, wetlands, grasslands and forests. A selected number of Parks and Trails restoration projects are evaluated in this report.

Parks and Trails Fund Statute *85.53 Subd. 2* requires:

A project or program receiving funding from the parks and trails fund must include measurable outcomes, as defined in section 3.303, subdivision 10, and a plan for measuring and evaluating the results. A project or program must be consistent with current science

The Parks and Trails Fund project featured in this report was funded through the Metropolitan Council's appropriation by a grant to Three Rivers Park District for restoration activities in the Regional Park System. This grant complied with statutory requirements for presenting measurable outcomes as reported in acres of specific upland habitat types restored and linear feet of shoreline restored. The program coordinator verified and the Panel concurred that evaluation of project results is fulfilled through the project manager's documentation of ongoing monitoring and adaptive management activities.

Recommendations for Improving Future Restorations

Statute for restoration evaluations directs the Panel to determine:

> *any problems with the implementation of restorations , and if necessary, recommendations on improving restorations.*

The emphasis of reporting is also directed in statute.

> *The report shall be focused on improving future restorations.*

The Panel recommended investment in the following three areas to improve restoration practice in Minnesota and strengthen the restoration evaluation process.

Improved Documentation

The Panel recommends that basic project data should be consistently documented in a simple format that enables funding organizations and current and future managers to understand the essential components of a restoration project and the funded phases. Project data should be permanently housed in a designated location and be readily accessible. One of the managing project partners should be designated as the responsible party for permanently holding project data.

Well documented projects have these attributes and benefits:

- Clear project goals linked directly to desired outcomes provide managers and stakeholders with consistent assumptions.
- Easily observable, quantifiable measures of success allow for the effective tracking of progress towards desired outcomes and directing future actions.
- Facilitate improved communication of lessons learned to benefit future projects.
- Provide a basis to evaluate outcomes and determine if projects are strategic conservation investments.

While many Legacy Fund restoration projects included thorough documentation, the Panel noted gaps in achieving a consistent level of documentation across all Funds. Project plans, in some instances, were deficient in providing clear goals. Shortcomings observed included:

- Project specific goals were not always clear. In some cases, implemented actions were considered to be goals. While implemented actions were typically adequately documented, the actions taken were often not explicitly linked to the overall goal(s) of the funding.
- Plans lacked easily observable, quantifiable measures for managers to readily gauge project success post installation.

The Panel considers consistent documentation of essential planning and implementation data to be a prerequisite for effective projects. The Panel recommends that the following data should be consistently prepared to benefit management and gauge outcomes:

- Goals and Objectives: [The project should have clearly defined outcome based goals and specific measureable objectives, against which project progress and success can be measured]
  - Goal(s): [Describe the purpose of this project with regards to larger goals]
    - What is the long term desired condition of this site? [This is a description of the desired structure or community composition. e.g. specific native plant communities]
  - Quantifiable Objectives [Measureable indicator or milestone toward desired outcome of this project phase; such as greater than X % cover in 2nd yr. Objectives should be readily observable]
- Project location and setting: [A description of the project location should include, at a minimum, the county, township, range, and section where the project is located. A detailed site map with defined project boundaries or similar information e.g., legal description, aerial photos should also be included]
- Existing site conditions: [Documentation of the existing site conditions is critical to both the development of a restoration plan and assessment of the effectiveness of restoration actions. Documentation of existing site conditions may include some or all of the following]
  - Site characteristics: [Description of topography, soils, hydrology, land cover, wildlife, special elements]
  - Baseline data (quantitative if available): [e.g. plant species present and abundance, stream channel profile, water quality data]
  - Surrounding landscape conditions, land cover / Important adjacencies:
- Restoration work plan: [Provide a description of actions, materials and an implementation schedule]
  - Materials (seed mixes, soil, rocks, etc.)
  - Specific work activities with timeframe, anticipated schedule and actual implementation date(s) when completed
- Long-term management plan: [Description of planned long-term management activities, including strategies for monitoring and maintenance of the restoration site. Anticipated funding source]

A project documentation template that could be adopted by all three Legacy Funds and example project data showing how essential planning and implementation documentation could be displayed is currently in the process of development by the program coordinator. The program coordinator has sought the input the Panel, Agency staff and project managers in the development process. This template guidance will be presented in the Fiscal Year 2014 evaluation report.

Improved Restoration Training Statewide

The Panel recommends that statewide efforts to disseminate restoration best practices be continued and bolstered to meet the needs of restoration practitioners. Compiling and disseminating current science based restoration practices and showcasing exemplar challenges and successes from the field will be critical to improving practice. The types of funded projects and the community of restoration practitioners throughout the State are diverse. Trainings must be appropriate and adaptable to meet the needs of these diverse projects and practitioners. Training must also be able to reach disperse outstate managers through digital means or local technical support. A suite of formal classroom, peer to peer and field based experiential learning environments should be employed as appropriate to meet training needs.

Two examples of effective formal training are given here.

- Restoring Minnesota: Five online training components and associated field training sessions to support dissemination and application of restoration best practices are available through the Ecological Restoration Training Cooperative coordinated by the University of Minnesota in partnership with MN DNR, BWSR and MN Department of Transportation (http://cce.umn.edu/Restoring-Minnesota). This program is designed to support foundational restoration skills and knowledge for a wide array of practitioners including professional staff, technicians and community members by sharing the best available knowledge from research and practice.

- BWSR Academy: State of the art training in technical and operational restoration practices is provided by the annual BWSR Academy training (http://www.bwsr.state.mn.us/academy/). This training provides usable technical skills, to primarily local government staff, for implementing restoration projects and administering programs funded by BWSR grant programs.

Potential gaps and opportunities for expanded trainings will be identified by the Panel and program coordinator by comparing needs identified from restoration project evaluations with the content of these and other available trainings. Targeted areas for restoration training and how lessons learned from restoration evaluations could support these trainings will be identified in future reports.

Evaluation Process Improvement

The Panel recommends that strategic improvements be made in the restoration evaluation process to more effectively accomplish statutory goals and contribute to improvement in restoration outcomes. Actions for improvement include:

- Follow-up site evaluations: Track critical aspects of project effectiveness by selecting a subset of previously evaluated projects for follow up evaluations. Follow up assessments will further inform the accuracy of initial site assessments and can be used to recalibrate field assessment methods. Two sites evaluated in 2012 were revisited in 2013. It is anticipated that two or more sites will be revisited per Fund each year.

- Case studies: Create case studies to inform future restoration practice and policy. Examine the process, decision making and outcomes of selected projects to best learn from challenges and successes in implementation. Case studies will be included as appendices in future restoration evaluation reports. They may also be used to support technical assistance guidance and restoration trainings. It is anticipated that at least two in-depth case studies of projects and/or practices will be produced annually. The program coordinator will work with the Panel and Agencies to determine effective mechanisms and formats for highlighting projects and practices for target audiences.

- Track factors of success: Track environmental, social and operational factors that influence restoration success. Factors such as public and private landownership, environmental extremes, type of implementing organization, high level plan guidance, plan documentation, field monitoring protocols, project manager turn over and shifts in state of the art restoration techniques should be assessed. Within ten years, trends and indicators of project success and areas for improvement should emerge as the sample of evaluated projects becomes larger. Findings should be compiled and disseminated by the evaluation program coordinator to help guide future restoration planning and management. A follow up survey of evaluated project managers will provide essential data on project success and associated organizational and operational factors. An initial survey of factors influencing Legacy restoration projects is anticipated to be presented in 2017, based on findings from the first five years of the evaluation program.

Appendix I: Project Site Evaluations

Clean Water Fund, Fiscal Year 2010
Restoring Upper Porter and Picha Creeks – Picha Creek Restoration

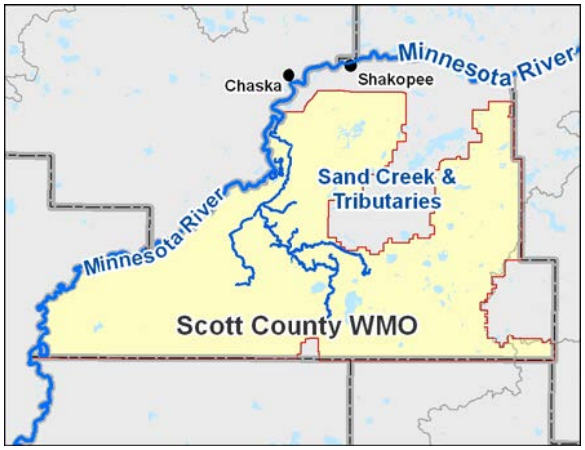
Project Sponsor:	Scott Watershed Management Organization
Partners:	Scott Soil and Water Conservation District
Grant Period:	January 2010 – December 2011
Contact:	Paul Nelson, (952) 496-8475, pnelson@co.scott.mn.us

Project Narrative

Over thirty miles of stream bank erosion have been documented along Sand Creek and its tributaries. These streams are considered as impaired due to sediment in them. Research suggests that 70% of the sediment is coming from channel sources. The Scott WMO has developed a strategy for restoring fluvial geomorphic processes, improving riparian vegetation and buffering, reducing runoff, and the completion of a limited number of capital improvements to stabilize acute stream stability problems. Sand Creek and Picha Creek are also listed as having impaired fish habitat. Probable stressors include sediment and habitat fragmentation (i.e., fish migration barriers). This project includes two improvement projects to stabilize the more unstable stream reaches as well as one fish migration barrier.

The Upper Porter Creek project addresses four bank erosion sites in Section 36 of Cedar Lake Township. Treatment technologies consist of bio-engineering approaches using large woody debris cribs, bank sloping and vegetative planting. There will also be some livestock exclusion and a short section with rock protection. The Picha Creek stabilization involves elevating the incised channel bed in some locations, excavating a floodplain bench, stabilizing the banks with biodegradable materials and native plantings, and the installation of buried grade control and exposed cobble and gravel riffle features. The Picha Creek project will also include habitat improvement and remove a fish migration barrier.

The project will require on-going inspection and maintenance to ensure establishment of the bio-engineered practices. The WMO will complete inspections on a 3 year rotation over the contract period, and pay for necessary maintenance from the WMOs annual funds for targeted projects. The WMO is willing to assume these long term maintenance responsibilities since the public benefits are much more than the property owners.



Board of Water and Soil Resources

Evaluation Summary

The Picha Creek Restoration was assessed for this evaluation. This project stabilized approximately 2600 linear feet and reduced sediment loading to Picha Creek and Sand Creek by an estimated 900 tons per year. Additionally a significant fish migration barrier was removed and habitat was enhanced in the reach. This project applied an innovative and challenging design of raising the streambed for the half

mile reach with cobbles and anchoring the streambank with root wads. Channel design used sound methodology and has proven to be stable during flood events.

Project managers indicated that through this project they learned lessons regarding phased installation and maintenance regimes for seeded perennial vegetation. Upon completion of in channel work in the fall of 2011 the riparian buffer zone was seeded and simultaneously planted with woody shrubs. Suppression of undesirable and invasive plants in the native seeded planting was completed with hand held brush cutting equipment in and around the woody shrubs. This maintenance would likely have been completed more efficiently and cost effectively with large mowing/clipping equipment for the first two years; this was not possible due to the presence of the woody plantings. Phasing of the riparian buffer plantings so the woody plants were installed at least two years after the seeding would have facilitated more efficient management during the seed establishment phase.

Panel Comments / Recommendations:

- Innovative and challenging design to raise streambed for the entire reach of the project
- Stated goals were clear and outcome based; completed successfully
- Riparian re-vegetation may be most ecologically appropriate and cost effective if allowed to re-vegetate as Riparian Cottonwood forest

Clean Water Fund - Scott WMO, Picha Creek Restoration

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: Picha Creek Stream Restoration Date of Review: 8/15/2012

Project Location: County Scott Township/Range/Section 115/23/33-34

Project Manager / Affiliated organization, Contact: Jason Swenson/Scott WMO

Fund: OHF ☐ CWF ☒ PTF ☐ Project Start Date (Fiscal Year): 20 12

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☐ Aquatic ☒

1. Goal(s) of the restoration 1) Stabilize stream channel to reduce sediment loading, 2) Enhance fish habitat, 3) Create fish passage.

Quantifiable objectives of the restoration 900 tons of sediment loss pre-project.

What plans / record of project decisions / prescription worksheets are available? Where are they located?
Initial site evaluation used to identify project need, including pre-project photos. Project plans indicated pre and post-project topography, location and design of structural elements added for habitat.

2. Is habitat restoration a primary or secondary objective of the project? Primary ☒ Secondary ☐

3. What is the status of the project? Treatment / establishment phase ☒ Post-establishment phase ☐

4. Has the plan or project implementation been modified from the original plan? Yes ☐ No ☒
If yes, why and how?

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☒
If yes, how?

PROJECT ASSESSMENT

5. Site description (by reviewer): Picha Creek is a small tributary to Sand Creek. The stream appears to maintain some baseflow throughout the year, but flow is flashy due to upstream agricultural land use. Sediment inputs appear high, suggesting bank erosion and channel degradation may be occurring upstream of the project location. Pre-project the stream was an incised, straight (likely artificial) channel flowing through a narrow riparian corridor of early-successional trees. Channel condition was fairly uniform, with a wide and shallow cross section lacking in instream cover. Substrate was predominantly sand. A road crossing at the upstream end had been armored to serve as grade control to halt the upstream progression of a headcut. This grade control functioned as a fish barrier during most flows.

Soils: Alluvial soils. Loamy sand that is moderately well drained.

1

Clean Water Fund - Scott WMO, Picha Creek Restoration

Topography: Site is located on a relatively flat terrace within the Minnesota River Valley, downstream of a reach of higher gradient where the stream flows down the valley wall from the adjoining uplands. Pre-project the steam was highly incised, likely due to past straightening. Streambanks were near vertical and eroding, with inadequate floodplain area.
Hydrology: Land use in the watershed is predominantly row crop agriculture, with a few wetlands and low-density residential developments. Based on recent deposition in the floodplain of the stream, flows are flashy with a high bedload of sediment. During dry periods, the stream appears to maintain a minimal amount of flow that supports small-bodied fish species.
Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): Floodplain areas adjacent to the stream were seeded with a native prairie mix, and planted with bare root trees. The seeding has not established will, likely due to successive floods that have flowed across newly planted areas. A follow-up seeding was done this past summer, but it too had flooding issues. Vegetation is predominantly weeds at present, such as ragweed, giant ragweed, reed canary grass, smartweed, and volunteer cottonwoods. Bareroot tree seedlings appear to be surviving well. Scott County has expressed a willingness to continue managing vegetation to discourage weed growth and establish native vegetation.
Surrounding conditions (adjacent land use / veg.): Upland areas are in agricultural use, either as tree nursery or row crops.

6. Survey methods used (include deliverable format, # of pgs.): Visual reconnaissance of the project area, focusing on stream channel stability, habitat, and riparian vegetation establishment.

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no. The project design incorporated modeling of flood flows to assess channel competence to transport water and sediment while maintaining channel stability. Pre-project sediment grain sizes within the project reach as well as an upsteam reference reach were used to assess sediment entrainment size. The project addressed channel entrenchment by raising the grade of the stream by 1-2 feet, as well as widening the floodplain. The grade is tied into the bed elevation downstream of the project reach by a series of riffles constructed with immobile-sized cobbles. By raising the grade of the stream, the former fish barrier at the bridge has been buried to where the stream channel seamlessly ties into the upstream elevation, removing any impediment to fish passage. The grade of the channel was raised using a mixture of sediment sizes, some mobile and some immobile, so that the bed will not degrade, but may "flex" if significant scour is applied, such as a large tree falling and partially blocking flow.

8. List indicators of project outcomes at this project stage: The stream channel appears to be functioning as designed. It was withstood multiple flood events in the first year with little to no change in plan form or bed elevation. There appears to be some deposition in the channel occurring that is creating a smaller low-flow channel within the larger bankfull channel. This type of adjustment is common in stream restoration projects, where the stream creates minor adjustments to establish an equilibrium with the new boundary conditions.

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain. The channel appears to be stable, and should significantly reduce the amount of sediment loss from steambanks. Fish habitat is improved, as evidenced by schools of minnows in the project reach that anecdotally were not present pre-project. Fish passage has been addressed at the bridge, which is no longer a barrier to upstream movement.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☒ No ☐
If yes, explain. Continued maintenance and perhaps additional plantings will be needed to properly establish native vegetation in riparian areas. Scott County has expressed a commitment to achieving that goal. Channel design appears sufficient that even modest success at establishing permanent native vegetation will still allow the project to meet goals.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

2

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☒
If no, explain. Scott County is still deciding what will be done to address issues with establishing native vegetation. It is unclear at this point whether future management will be successful.

13. Are follow-up assessments needed? Yes ☒ No ☐ Explain. Follow up on vegetation establishment.

14. Additional comments on the restoration project. This was an innovative project that addressed multiple problems in one project. Raising the stream bed of an incised channel is not easy, and it appears that the project team pulled it off well.

PROJECT EVALUATION

The project will:

a. Likely not meet proposed outcomes
b. Minimally meet proposed outcomes
c. Meet proposed outcomes ☒
d. Likely exceed proposed outcomes
e. Greatly exceed proposed outcomes

Confidence of outcome determination

1. Low ☐
2. Medium ☐
3. High ☒

Provide an explanation of the reason(s) for the determination. Channel design used sound methodology, and produced a project that has proven to be stable even in the face of multiple floods just after project completion, the most vulnerable stage for stream restoration projects because rooted vegetation has yet not taken hold to prevent erosion. As vegetation work by Scott County progresses, project stability should increase. The stream channel's design has already shown that even a moderate establishment of deep-rooted vegetation will allow the channel to be stable, meeting the goal of reduced sediment input. Fish habitat appears improved, with a heterogeneous mix of riffles, pools, fine and large substrate that will provide habitat for a diverse array of species. Fish passage has also been addressed by raising the bed of the stream to eliminate the drop at the bridge crossing.

Site Assessment Lead(s) Conducting Site Review (Signature Required): Brian Nerbonne

Clean Water Fund, Fiscal Year 2011
Dobbins Creek Watershed Restoration

Project Sponsor: Cedar River Watershed District
Partners: Mower County Soil and Water Conservation District, Red Rock Township
Grant Period: January 2011 – December 2012
Contact: Justin Hanson, (507) 434-2603, justin.hanson@mowerswcd.org

Project Narrative:

In the summer of 2011, conservation practices were installed in the upper reaches of Dobbins Creek to stabilize eroding stream banks. We contracted with the non-profit Minnesota Conservation Corps to assist with the labor. The crew worked efficiently, the weather cooperated perfectly, and the project came together exactly as planned. The banks of Dobbins Creek were armored with native cedar trees and anchored to the banks. Once the project was complete, we cut the side slopes back to reduce future erosion in the newly protected banks. The site was seeded and matted to assure that the final project had adequate stability once vegetation was established.

This was a new conservation practice for the staff and the community. Because of this, it generated significant media coverage from the local newspaper and television stations, broadening the public outreach and knowledge of water management in the area.

Board of Water and Soil Resources

Evaluation Summary

Water quality projects in the Dobbins Creek Watershed were informed by an Ag Watershed analysis conducted by Cedar River Watershed District. Projects funded through this grant were completed by Cedar River Watershed District in partnership with the Mower SWCD and Red Rock Township. Two projects on the North Branch of Dobbins Creek were visited in October 2012. A roadside stabilization along a Township Road reduced sediment erosion to the Creek and a Cedar tree revetment stabilized an eroding bank in a riparian corridor through agricultural fields. Both projects applied accepted, durable structural and vegetative stabilization practices to address the goals of reducing erosion and sediment loading.

Panel Comments / Recommendations:

- Cedar revetment: Valuable "soft armor" stabilization in an agricultural riparian zone; potential continued erosion at the downstream end of the project is a concern, should be monitored by managers.
- Township roadside stabilization project: SCS construction specifications for seeding, circa 1989, are antiquated and should not be used in the plan set; more appropriate seed mixes are readily available (e.g. BWSR Native Construction Seed Mix 32-241)

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: North Branch Dobbins Creek, Red Rock TWP 580th Ave Date of Review: 10-1-2012

Project Location: County Mower Township/Range/Section

Project Manager / Affiliated organization, Contact: Justin Hanson

Fund: OHF ☐ CWF ☒ PTF ☐ Project Start Date (Fiscal Year): 20 11

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☐ Aquatic ☒

1. Goal(s) of the restoration Stabilize bank along the North Branch of Dobbins Creek east of 580th Ave.

Quantifiable objectives of the restoration Stabilization of bank and toe

What plans / record of project decisions / prescription worksheets are available? Where are they located?
CWF application, JPA-Engineer construction specifications (SCS, circa 1989), and a JPA-Engineer plan set are held by the Cedar River Watershed District/Mower SWCD

2. Is habitat restoration a primary or secondary objective of the project? Primary ☐ Secondary ☒

3. What is the status of the project? Treatment / establishment phase ☒ Post-establishment phase ☐

4. Has the plan or project implementation been modified from the original plan? Yes ☐ No ☒
If yes, why and how?

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☒
If yes, how?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Shawn Tracy (HDR), Wade Johnson (MnDNR) - Project managers: Justin Hanson - Property owners: Mower County

5. Site description (by reviewer): The Creek runs along TWP 580th Ave, running from the north to the south. At its closest point, an outside bend had previously cut the bank, jeopardizing the road. The Creek is fringed by scrub-shrub wetland running through an open, agricultural landscape.
   Soils: Coland-Spilville loam
   Topography: Fluvial within flat, open land
   Hydrology: Creek channel
   Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): 25% cover of Dogwoods/Willows, 25% cover Reed Canary, 50% seeded, or to be seed, but not yet germinated.
   Surrounding conditions (adjacent land use / veg.): Agricultural

1

6. Survey methods used (include deliverable format, # of pgs.): Visual site inspection

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no.

8. List indicators of project outcomes at this project stage: Grading, rip-rap, erosion control blanket and matting (to be hydro seeded) all installed correctly; soils appear stabilized.

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☐ No ☒
If yes, explain.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☐
If no, explain.

13. Are follow-up assessments needed? Yes ☐ No ☒ Explain.

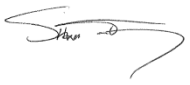
14. Additional comments on the restoration project. The scope of work appears to have been successfully met. Mr. Hanson did point out that a point in the creek bend untreated with rip-rap, which was outside of the scope of work, may erode out in larger flow events causing sedimentation for benthic environments downstream. However, a review of pre-conditions aerial photography suggests the point was present in its current location and likely experienced larger flows in the past. A slight bending of the original course along the road and a re-grading of the bank on the point during this project's work may, in fact, lead to less erosion of the point than in recent, pre- project conditions regardless of the lack of rip-rap toe protection.

PROJECT EVALUATION

The project will:
a. Likely not meet proposed outcomes
b. Minimally meet proposed outcomes
c. Meet proposed outcomes ☒
d. Likely exceed proposed outcomes
e. Greatly exceed proposed outcomes

Confidence of outcome determination
1. Low ☐
2. Medium ☒
3. High ☐

Provide an explanation of the reason(s) for the determination. Although the site was only recently worked on, and hydroseeding of the turf reinforcement matting was not completed before inspection, the work that was done on the site appears to have been designed and installed to current standards. Success of the hydroseeding will depend greatly upon seed/soil contact, seed species composition and maintenance. Similarly, the broadcasted seed under erosion control blanket should be successful provided either 1-germination occurs next spring or, 2-if germination occurs this fall, seedlings are not frost-frozen going into winter.

Site Assessment Lead(s) Conducting Site Review (Signature Required) 

2

Clean Water Fund – Cedar River Watershed - Dobbins Creek Restorations

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: North Branch Dobbins Creek, Tapp Property Date of Review: 10-1-2012

Project Location: County Mower Township/Range/Section

Project Manager / Affiliated organization, Contact: Justin Hanson

Fund: OHF ☐ CWF ☒ PTF ☐ Project Start Date (Fiscal Year): 20 11

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☐ Aquatic ☒

1. Goal(s) of the restoration Stabilize bank along the North Branch of Dobbins Creek on the Gene Tapp property.

Quantifiable objectives of the restoration Stabilization of bank and toe

What plans / record of project decisions / prescription worksheets are available? Where are they located?
CWF application, JPA-Engineer construction specifications (SCS, circa 1989), and a JPA-Engineer plan set are held by the Cedar River Watershed District/Mower SWCD

2. Is habitat restoration a primary or secondary objective of the project? Primary ☐ Secondary ☒

3. What is the status of the project? Treatment / establishment phase ☒ Post-establishment phase ☐

4. Has the plan or project implementation been modified from the original plan? Yes ☐ No ☒
If yes, why and how?

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☐
If yes, how?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Shawn Tracy (HDR), Wade Johnson (MnDNR) - Project managers: Justin Hanson, Mower SWCD - Property owners: Mower County

5. Site description (by reviewer): The Creek runs along the south edge of one agricultural field within the Tapp farmstead. The channel bed appears to be degrading and excessive bank failure was noted downstrem of the project site. The channel is located within a strip of Willow and Cottonwood forest.
   Soils: Loamy
   Topography: Fluvial within flat, open land
   Hydrology: Creek channel
   Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): 75% cover of Willow and Cottonwood overstory, 50% cover Buckthorn and Tatarian Honeysuckle understory and 90% cover of smooth brome and various invasive ground cover with 10% native species occurring occasionally.

1

Surrounding conditions (adjacent land use / veg.): Agricultural

6. Survey methods used (include deliverable format, # of pgs.): Visual site inspection

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no.

8. List indicators of project outcomes at this project stage: Grading, rip-rap, erosion control blanket and matting (to be hydro seeded) all installed correctly; soils appear stabilized.

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☐ No ☒
If yes, explain.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☐
If no, explain.

13. Are follow-up assessments needed? Yes ☐ No ☒ Explain.

14. Additional comments on the restoration project. The scope of work appears to have been successfully met. The cedar tree revetments are stable and expected to last indefinitely given the expected velocities of flow within the channel.

PROJECT EVALUATION

The project will:

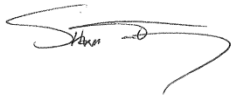
a. Likely not meet proposed outcomes
b. Minimally meet proposed outcomes
c. Meet proposed outcomes ☒
d. Likely exceed proposed outcomes
e. Greatly exceed proposed outcomes

Confidence of outcome determination

1. Low ☐
2. Medium ☒
3. High ☐

Provide an explanation of the reason(s) for the determination. Although the site was only recently worked on, the site appears to have been designed and installed to current standards. Establishment of the broadcasted seed does not appear to have matured as of the day of inspection, but it is possible that some of the seed will establish in spring of 2013 within the existing 100% cover. In either case, successful stabilization of the soils has been achieved.

Site Assessment Lead(s) Conducting Site Review (Signature Required):



2

Clean Water Fund, Fiscal Year 2011
Sauk River Runoff Reduction and Riparian Restoration

Project Sponsor:	Sauk River Watershed District
Partners:	Natural Resources Conservation Service, SWCDs from Douglas Pope Todd and Stearns Counties, Cities of Sauk Centre Spring Hill Cold Spring Oakis St. Martin St.Cloud and Waite Park
Grant Period:	January 2011 – December 2012
Contact:	Lynn Nelson, (320) 352-2231, lynn@srwdmn.org

Project Narrative:

The Sauk River Stormwater Runoff Reduction and Riparian Restoration Project is a watershed–wide effort to reduce the amount of nutrients delivered by stormwater and bank erosion to area surface waters. Funds will be used to assist local schools and municipalities with their restoration project design, installation, and financing. … Riparian restoration projects provide multiple benefits. Restoring streambanks using native materials (bioengineering) stabilizes the bank from further erosion while offering better habitat for aquatic wildlife, a more diverse plant community, and a more natural corridor for recreational uses. The SRWD will conduct water quality monitoring along the Sauk River using other funding sources to determine project effectiveness.

Board of Water and Soil Resources

Evaluation Summary

This water quality improvement grant applied a multifaceted approach throughout the Sauk River Watershed to reduce delivery of nutrients to surface waters. Two of the eight shoreline restoration sites completed with this grant were assessed in September 2012. The first a streambank stabilization on the Sauk River utilizing "soft armoring" and native vegetation. The second a steep hillside shoreline restoration. Both projects utilized accepted bioengineering stabilization methods and have the potential to achieve planned goals with appropriate continuation of prescribed management and maintenance. Projects were visited in a very early stage of establishment, follow up visit are needed to confidently assess plant establishment and achievement of project goals.

Panel Comments / Recommendations:

- Projects should consider retaining and / or establishing woody shrubs and trees, to the extent practicable, for woody root stabilization.

- Lakeshore slope: consider phasing removal of trees and woody shrubs to reduce slope instability and erosive undercutting of coco-blanket; hydro-seed on coco blanket must maintain soil contact on slope to succeed, backfill and stabilize as needed.
- Sites should be revisited by evaluation program during the first three years to track vegetation establishment and performance of bioengineered stabilization.

Three project site evaluation forms are included, pages. 27-32

Clean Water Fund – Sauk River Runoff Reduction and Riparian Restoration – Sauk River project

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: Vadnie, Michael Date of Review: 9-17-2012

Project Location: County Stearns Township/Range/Section Sec 3 R 28 T 124

Project Manager / Affiliated organization, Contact: Sauk River WD

Fund: OHF ☐ CWF ☒ PTF ☐ Project Start Date (Fiscal Year): 20 12

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☒ Aquatic ☒

1. Goal(s) of the restoration Stabilize toe of streambank and filter lawn runoff

Quantifiable objectives of the restoration

What plans / record of project decisions / prescription worksheets are available? Where are they located? Streambank bioengineering, transitional zone and upland buffer planning along with site inspections and an O&M plan were presented by the Sauk River WD as summary of work and are held by Sauk River WD.

2. Is habitat restoration a primary or secondary objective of the project? Primary ☐ Secondary ☒

3. What is the status of the project? Treatment / establishment phase ☒ Post-establishment phase ☐

4. Has the plan or project implementation been modified from the original plan? Yes ☐ No ☒
If yes, why and how?

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☒
If yes, how?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Wade Johnson (MNDNR), Dan Shaw (BWSR), Carol Stojny (BWSR), Shawn Tracy (HDR) - Project managers: Sauk River WD - Property owners: Michael Vadnie

5. Site description (by reviewer): The site is located on a very slight outside bend of a stream. The bank rises approx. 2-3 feet from the shallow water environment to a flat floodplain dominated by low-medium density residential development with 30-50% suprecanopy coverage of native deciduous tree cover.

Soils: Sandy Loam
Topography: Fluvial morphology with no blufflands on site or on adjacent properties
Hydrology: Fluvial
Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): 50-75% overstory cover of deciduous trees cover, <15% subcanopy cover, 50-75% cover of native forbs, grasess and sedges (predominanly massed on one half of buffer) and 10-15% cover of non-native species (annuals and perenials)

1

Surrounding conditions (adjacent land use / veg.): Manicured lawns and landscapes to edge of stream with occurences of Reed Canary Grass predominating invasive species components and satellite prevalence of Purple Loosestrife.

6. Survey methods used (include deliverable format, # of pgs.): Visual inspection of structural and vegetative components

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no.

8. List indicators of project outcomes at this project stage: No obvious end running or undercutting behind cocnut fiber logs or sheet, rill or gully erosion in transitional or upland zone.

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☒ No ☐
If yes, explain. It woud be advisable to re-plant either dormant live stakes into the bank toe in late winter. Similarly, it would be advisable to continue to encourage plant establishemnt within the transitional zone with yearly invasive species control and perhaps a dormant or early spring seeding and/or supplemental plug-planting with watering every 4 days throughout the initial growing season of. This is most important for the half of the site with notably less densely established plants. Seed can be harvested from the adjacent, more densly populated area. Supplemental planting behind the coconut logs, in spring, of River Rush, Canada BlueJoint Grass or Fox Sedge is encouraged.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☐
If no, explain.

13. Are follow-up assessments needed? Yes ☒ No ☐ Explain. As with most restoration and stabilization projects, annual follow up for the first three years, or as needed, should be done. In this case, ensuring vegetative establishement in the transitional zone is paramount to the project's success. Upland vegetative re-establishment should come with time, but inspections will help guide the WD and homeowner on how and when to assist the process, thereby ensuring soil retention on the slope.

14. Additional comments on the restoration project. The project has currently, successfully stabilized the toe and slope of this reach of the stream, with minimal armoring, using vegetation and soft armoring techniques. The stream level is low for this first year of establishment and, as such, has not likely provided much in the form of scour against the toe in this crucial first year (an advantage). That being said, it didn't provide much in the way of soil moisture for the live plantings low on the bank either, limiting the estabblishment of a dense root mass behind and within the coconut log area (a disadvantage). Similarly, the transitioanl zone's vegetation is somewhat sparse on one half of the site. It is likely that with only minimal fine-tuning inputs by the homeowner, the integrity of the bank and transitional buffer will mature to a self-sustaining trajectory. The system is designed and installed very well and it is expected that with minimal supplimental planting, watering and continued weeding, the site will accelerate its positive trajectory in a fashion designed for and meet its goals.

PROJECT EVALUATION

The project will:
a. Likely not meet proposed outcomes ☐

Confidence of outcome determination
1. Low ☐

2

Clean Water Fund – Sauk River Runoff Reduction and Riparian Restoration – Sauk River project

b.	Minimally meet proposed outcomes	☒	2. Medium	☐
c.	Meet proposed outcomes	☐	3. High	☒
d.	Likely exceed proposed outcomes	☐		
e.	Greatly exceed proposed outcomes	☐		

Provide an explanation of the reason(s) for the determination. As explained in 14, above, the design and implementation, teamed with the signed O&M plan, are solid. It was unfortunate that the 2012 growing season was so dry. This lack of water has slowed the designed and displayed trajectory of the restoration and, as such, has likely contributed to one half of the transitional and toe zones not filling in entirely. It is recommended that the vegetative component of the design be re-assessed and supplemented to accelerate the designed functions of the native species specified for the site. It will imperative that a solid root mass and ground cover be established by 2014 to ensure the designed system matures into a self-sustaining state before the degradation of temporary erosion control measures.

Site Assessment Lead(s) Conducting Site Review Shawn Tracy (HDR Inc); Dan Shaw, Carol Stojny (BWSR)

Signature:

3

Clean Water Fund – Sauk River Runoff Reduction and Riparian Restoration – Lake Shore

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: Leither, Eric Date of Review: 9-17-2012

Project Location: County Stearns Township/Range/Section T 123N R30W S28

Project Manager / Affiliated organization, Contact: Sauk River WD

Fund: OHF ☐ CWF ☒ PTF ☐ Project Start Date (Fiscal Year): 20 11

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☒ Aquatic ☒

1. Goal(s) of the restoration Stabilize toe of shoreline and restore nativ eplant species to slope

Quantifiable objectives of the restoration

What plans / record of project decisions / prescription worksheets are available? Where are they located? Lakeshore bioengineering, transitional zone and upland (woodland opening) restoration planning along with site inspections and an O&M plan were presented by the Sauk River WD as summary of work and are held by the Sauk River WD.

2. Is habitat restoration a primary or secondary objective of the project? Primary ☐ Secondary ☒

3. What is the status of the project? Treatment / establishment phase ☒ Post-establishment phase ☐

4. Has the plan or project implementation been modified from the original plan? Yes ☒ No ☐
If yes, why and how? It is likely that the original design of the soil bags would not support the slope above for more than a few seasons. the plan was modified to extend a lift of soil bags out from the toe to create a tiered structure with more lateral force support, similar to retainting wall constructure of structure higher than 3-4 feet. Hydroseeding was initially applied to the soil lift bags but wind removed the mixture before germination and rooting could occur. Therfore, an erosion balnket was placed ove rthe bags and hydroseeded in an attempt to provide additional binding and rooting substrate.

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☒
If yes, how?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Wade Johnson (MNDNR), Dan Shaw (BWSR), Carol Stojny (BWSR), Shawn Tracy (HDR) - Project managers: Sauk River WD - Property owners: Eric Leither

5. Site description (by reviewer): A 20-25 foot tall bluff, dropping to transitional and emergent zones of the lake with buckthorn underbrush cleared. Several mature deciduous, native trees remain with llittle understory and

1

ground cover approx. 60-70%. Toe is currently stable with a soil bag toe forming a bench that a second lift of soil bags rises from, tying into the upland slope. A rip-rap toe armors the bottom-most section of soil bags.

Soils: Sandy Loam
Topography: Lakeshore bluffland
Hydrology: Lake bounce and wave action with likely minimal piping from ground water through bank face
Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): 25% overstory native deciduous tree canopy, <15% native shrub canopy, 60-70% ground cover of predominantly native regeneration and planted species with approximately 15% non-native regeneration or volunteers.
Surrounding conditions (adjacent land use / veg.): Native woodland bluff land with predominant Buckthorn inderstory and soils relatively bare and posibly poor in organic content. Medium density residential shoreline development with and agricultural matrix on the landscape scale.

6. Survey methods used (include deliverable format, # of pgs.): visual survey

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no. Secured soil bag lifts and hydroseeding are consistent with accepted practices

8. List indicators of project outcomes at this project stage: Although it is early in the establishment phase, it appears the design is approporate for the site given the stability of the soil lifts and rock toe. Control of Buckthorn on the upland slope is extensive and obviously actively maintained. The overal vegetation re-establishment is still in early stages but appears to be on-track with expectations for this stage of work. No apparent sheet, rill, gully or toe undercuttign appears to be occuring as the design and implmentation of the plan appears to be effective.

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☒ No ☐
If yes, explain. It woud be advisable to re-plant either dormant live stakes into the bottom-most soil lifts in late winter following a fall with high lake levels. Similarly, it would be advisable to continue to encourage plant establishemnt within the transitional zone and upland with annual invasive species control and perhaps a dormant or early spring seeding with watering every 4 days throughout the growing season of 2013.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☐
If no, explain. The O&M plan provided by the Sauk River WD does an excellent job of detailing the considerations for both plantings and soil bag work for years 1, 2 and 3-and-beyond.

13. Are follow-up assessments needed? Yes ☒ No ☐ Explain. As with most restoration and stabilization projects, annual follow up for the first three years, or as needed, should be done. in this case, ensuring vegetative establishement in the transitional zone is paramount to the project's success. Upland vegetative re-establishment should come with time, but inspections will help guide the WD and homeowner on how and when to assist the process, thereby ensuring soil retention on the slope.

14. Additional comments on the restoration project. The project has currently, successfully stabilized the toe and slope with minimal armoring using vegetation and soft armoring techniques. The lake level is low for this first year of establishment and, as such, does not likely provide much in the form of wave energy against the toe in this crucial first year (an advantage). That being said, it didn't provide much in the way of soil moisture for the live plantings low on slope either, and little living vegetaion was observed in the soil bag wall structure (a disadvantage). Similarly, given the droughty year 1, the slope's vegetation is somewhat sparse and growth is markedly inhibited. Given the indicators provided by the planted seed and root-stock, the integrity of the soil lifts and slope cover in regards to

2

long-term stabilization of soils is not yet matured or self-sustaining. The system is designed and installed very well and it is expected that with minimal fine-tuning inputs on supplimental planting, watering and continued weeding, the site will accelerate its positive trajectory in a fashion designed for and meet its goals.

PROJECT EVALUATION

The project will:

a. Likely not meet proposed outcomes ☐
b. Minimally meet proposed outcomes ☒
c. Meet proposed outcomes ☐
d. Likely exceed proposed outcomes ☐
e. Greatly exceed proposed outcomes ☐

Confidence of outcome determination

1. Low ☐
2. Medium ☐
3. High ☒

Provide an explanation of the reason(s) for the determination. As explained in 14, above, the design and implementation, teamed with the signed O&M plan, are solid. The 2012 growing season was particularly dry. This lack of water has slowed the designed and displayed trajectory of the restoration and, as such, has led to a lack of self-sustaining seed bank and root mass. It is recommended that the vegetative component of the design be re-assessed and supplemented to accelerate the designed functions of the native species specified for the site. It will imperative that a solid root mass and ground cover be established in 2013-2014 to ensure the designed system matures into a self-sustaining state before the degradation of temporary erosion control measures.

Site Assessment Lead Conducting Site Review (Signature Required): Shawn Tracy (HDR Inc); Dan Shaw, Carol Stojny (BWSR)

3

Clean Water Fund, Fiscal Year 2010
Enhanced Shoreline Restoration, Infiltration and Protection

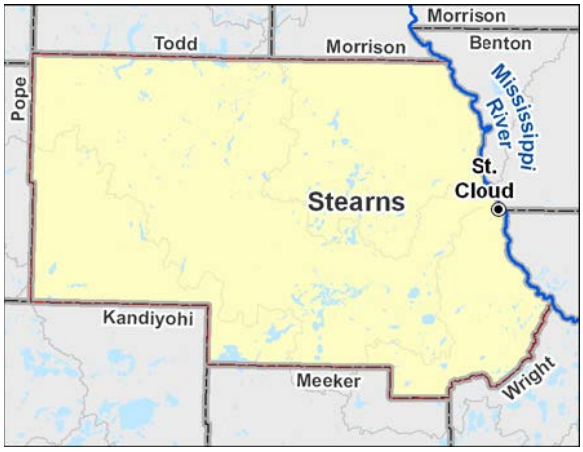
Project Sponsor:	Stearns County Soil and Water Conservation District
Partners:	West Central Technical Service Area, private landowners, Stearns County Lake Associations
Grant Period:	January 2010 – December 2011
Contact:	Dennis Fuchs, (320) 251-7800, Dennis.fuchs@mn.nacdnet.net

Project Narrative:

The Stearns County SWCD Enhanced Shoreline Restoration, Infiltration and Protection Program has accelerated natural resource restoration projects in Stearns County. The project partners are assisting in recruiting landowners to implement shoreline restoration, erosion control and infiltration projects to protect and improve water quality as well as fish and wildlife habitat. We have prioritized projects based on location and impact. The site will be ranked as a higher priority if it is located near a body of water that has been listed as impaired or has an approved TMDL. Higher pollutant removals will also result in a higher priority ranking. All of the sites will be evaluated and documented by using eLINK and/or Hydrocad. The Stearns County SWCD Board also has established a policy that all shoreland restoration projects are required to have a native buffer in existence or planted. The native buffer shall cover at least 75% of the shoreline length and extend at least 25 feet landward of the Ordinary High Water Level of the lake or watercourse.

In January 2011, approximately 50 landowners have requested assistance from the SWCD. All of the sites have been evaluated thru the project development stage. Of those sites, three have been selected based on priority ranking and have been designed and completed. All three of those sites completed involved shoreline restoration and one site included a raingarden. The balance of the sites that have been identified are currently being pursued in priority order.

As a part of the shoreland conservation projects, the Stearns County SWCD Shoreland Deed Restriction process is being used to ensure projects done today will be in place for future generations.



Board of Water and Soil Resources

Evaluation Summary

Stearns County Soil and Water Conservation District supported the implementation of eighteen water quality restoration projects utilizing this Clean Water Fund grant. Three of these project sites were assessed in September 2012. Evaluated projects included a riverbank and channel stabilization on the Crow River, a lakeshore slope stabilization on Long Lake and a runoff off reduction project adjacent to Big Fish Lake using grading/drainage manipulation combined with agricultural field conversion to grassland vegetation. All projects were well sited and installed for clear water quality benefits. The

West Central Technical Service Area Engineer provided current science based designs for all projects. All projects show clear direction towards achieving planned goals. Continued investment and maintenance from landowners, directed by well written maintenance agreements, will support the success of these projects.

Panel Comments / Recommendations:

- Standards for shoreland deed restrictions and minimum project specifications (ie *75% of shoreline at least 25 feet inland from water*) provide strong support for overall effectiveness of the grant program; May serve as an exemplar for other grant programs.
- Big Fish Lake Ag. field conversion and drainage modification provides excellent water quality and habitat benefits at a low cost per estimated nutrient reduction.
- Should establish simple quantifiable milestones for vegetation establishment.

Three project site evaluation forms are included, pages. 35-42

Note: Evaluation Panel Member Greg Berg is directly associated with this Clean Water Grant to Stearns County Soil and Water. He was recused of comment regarding these projects.

Clean Water Fund – Stearns SWCD – Enhanced Shoreline Restoration – Crow River

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: Nehring, Mike Date of Review: 9-17-2012

Project Location: County Stearns Township/Range/Section T122 R32 S16

Project Manager / Affiliated organization, Contact: Greg Berg, Stearns SWCD

Fund: OHF ☐ CWF ☒ PTF ☐ Project Start Date (Fiscal Year): 20 11

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☒ Aquatic ☒

1. Goal(s) of the restoration Stabilization of a streambank and its woodland habitat

Quantifiable objectives of the restoration Estimated reduction of 59.28 tons/yr-Soil, 0.42 tons/yr-TSS and 0.63 lbs/yr-P

What plans / record of project decisions / prescription worksheets are available? Where are they located? Streambank bioengineering, barb structure, woodland restoration planning along with eatimated water quality results and an O&M plan were presented by the Stearns SWCD as summary of work and are held by Stearns SWCD.

2. Is habitat restoration a primary or secondary objective of the project? Primary ☐ Secondary ☒

3. What is the status of the project? Treatment / establishment phase ☒ Post-establishment phase ☐

4. Has the plan or project implementation been modified from the original plan? Yes ☒ No ☐
If yes, why and how? One additional stream barb was included along the reach, slight adjustments in barb siting were made given the upstream influence on final thalwag trejectory in regards to the project's bank.

Have alterations in plan or implementation changed the proposed outcomes? Yes ☒ No ☐
If yes, how? It is possible that the performance of the adjustment is enhanced by the addition of the extra barb but no modeled estimate has been made.

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Wade Johnson (MNDNR), Dan Shaw (BWSR), Carol Stojny (BWSR), Shawn Tracy (HDR) - Project managers: Greg Berg (SSWCD) - Property owners: Mike Nehring

5. Site description (by reviewer): Control of invasive woody species in the woodland habitat is very apparent. Stream barbs are desigded and constructed as per industry standards and appear stable and functioning. Cedar Tree revetmentsalso appear to be sufficently sited and installed for the expected performance requirement of the project. Vegetative re-establishmnet of shrubs and trees appears to be taking as well as signs of seed germination to a point expected for the conditions of the site.
Soils: Sandy Loams

1

Topography: Stream bank drops approx. 12-15 feet to the channel at approximately a 1.5:1 slope; mild proevious toe undercutting apparent behind cedar tree revetments. Fluvial morphology.
Hydrology: Stream channel flows with bank full approximately 3-4 feet above thalwag depth. Floodplain on inside bends typical of the region.
Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): Supercanopy dominated by native hardwoods at 75% cover; subcanopy sparse with native species at <15% cover; ground cover (forbs, grasses, sedges, ferns, vines) sparse at <25% cover, likley due to recent past dominance of Buckthorn and north facing, dry, steep and wooded slope.
Surrounding conditions (adjacent land use / veg.): Low density residential within an agricultural matrix

6. Survey methods used (include deliverable format, # of pgs.): visual

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no.

8. List indicators of project outcomes at this project stage: Stream barbs appear stable with evidence of srteam endrunning or cutting behind keyed-in ends or below depth of scour; majority of cedar tree revetments appear stable and functioning; year 2 vegetation establishment is within expectations given the difficult growing conditions and drought (expected to improve in time).

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☒ No ☐
If yes, explain. If stream flow levels exceed cedar tree revetment's midline elevation (i.e., the midway point of the treatment up the bank), some insecure cedars may be lost or provide little reduction in flow rate at the sediment/water interface or allow for aggradation of bank toe. However, the majority of revetments are secure and are expected to provide adequate funtions for the majority of expected stream flows. If treatment for flows 1-3 feet higher than bankfull are desired, the loose cedar revetmetns should be re-anchred.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☐
If no, explain.

13. Are follow-up assessments needed? Yes ☒ No ☐ Explain. If the SWCD and homeonwer desire to effectively treat the bank with cedar tree revetments beyond the bankfull conditions. If so, an inspection ensuring the revetments are securing bound to the soil without significant movement is recommended. It wooul dbe advisable to inspect the stream barbs during and after peak spring flows to determine their integrity an need (or lack thereof) for modification; this inspection should include their influence on thalwag location to the banks as well,a s was done during their installation.

14. Additional comments on the restoration project. The site appears to stabel and succesfull. The majority of the soil loss reductions are likely attributable to the dsign and construction og the barbs with supporting stabilization benefits from the cedar tree revetments and, eventually, live plantings. The projects' trajectory appears promising and is within the expectations of the reviewers for long-term success for foreseable conditions.

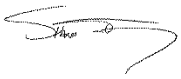
PROJECT EVALUATION

The project will: Confidence of outcome determination

2

a.	Likely not meet proposed outcomes	☐	1.	Low	☐
b.	Minimally meet proposed outcomes	☐	2.	Medium	☒
c.	Meet proposed outcomes	☒	3.	High	☐
d.	Likely exceed proposed outcomes	☐			
e.	Greatly exceed proposed outcomes	☐			

Provide an explanation of the reason(s) for the determination. Given that this project makes use of bioengineering and in-stream flow alterations withn what appears to be a moderateyl flashy streaam system, it is difficult to ascribe anything beyond a Medium confidence rating. That being said, it is the reviewer's experience that similar practices as those found within this project have been employed succefully at several similar projects in similar watershed systems. Therefore, we feel the project is succesfull in meeting its proposed outcomes and believe the trajectory of sedimentation and plant recolonization will continue to move in a restorative direction with the conintued management of non-native woody species and monitoring and management of revetments and barbs.

Site Assessment Lead(s) Conducting Site Review (Signature Required): 

3

Clean Water Fund – Stearns SWCD – Enhanced Shoreline Restoration – Long Lake shoreline

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: Ackert, David Date of Review: 9-18-2012

Project Location: County Stearns Township/Range/Section T122 R31 S11

Project Manager / Affiliated organization, Contact: Greg Berg, Stearns SWCD

Fund: OHF ☐ CWF ☒ PTF ☐ Project Start Date (Fiscal Year): 20 11

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☐ Aquatic ☒

1. Goal(s) of the restoration Stabilize eroding (slumping) lakeshore bank to reduce sedimentation and its resulting TSS and TP loading

Quantifiable objectives of the restoration Reduce soil less by 8.91 Tons/yr, P by 3.79 Lbs/yr, and TSS by 3.79 tons/yr

What plans / record of project decisions / prescription worksheets are available? Where are they located? Stabilization plans, water quality results and O&M plans were presented by the Stearns SWCD as summary of work and are held by Stearns SWCD.

2. Is habitat restoration a primary or secondary objective of the project? Primary ☐ Secondary ☒

3. What is the status of the project? Treatment / establishment phase ☒ Post-establishment phase ☐

4. Has the plan or project implementation been modified from the original plan? Yes ☐ No ☒
If yes, why and how?

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☒
If yes, how?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Wade Johnson (MNDNR), Dan Shaw (BWSR), Carol Stojny (BWSR), Shawn Tracy (HDR) - Project managers: Greg Berg (SSWCD) - Property owners: David Ackert

5. Site description (by reviewer): Project site shows compliance with proposed design. No apprent soil eriosion sheet, rill, gulley, slumping or toe undercuttign apparent. Erosion control practices remain in tact
   Soils: NA
   Topography: Lakeshore bank, approx.2:1 slope and approx. 10-12 feet high
   Hydrology: Lakeshore elevation bounce, boat traffic and groundwater influences on transitional zone surface and soil moisture

1

Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): 75% cover of native seed mix species and 25% non-native species (predominantly Sweet Clover, Plantain, Kentucky Bluegrass and Fescue spp.).
Surrounding conditions (adjacent land use / veg.): Developed shorelines with rip-rap and lawns

6. Survey methods used (include deliverable format, # of pgs.): visual inspection

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no. Rock toe protection as per DNR rip-rap standards; erosion control materials and their application as per industry standards; bioengineering and native plant selection and implementation as per industry standards.

8. List indicators of project outcomes at this project stage: No apprent soil loss from the site indicates the desired outcomes of the project are being met as estimates on TSS and Tp were derived from the stimated soil loss prior to project implementation.

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☐ No ☒
If yes, explain.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☐
If no, explain.

13. Are follow-up assessments needed? Yes ☐ No ☒ Explain.

14. Additional comments on the restoration project. continued control of weedy species, supplemental planting, seeding or transplanting and watering (for 2013) is recommended to enhance the native species diversity and density

PROJECT EVALUATION

The project will:

a. Likely not meet proposed outcomes ☐
b. Minimally meet proposed outcomes ☐
c. Meet proposed outcomes ☒
d. Likely exceed proposed outcomes ☐
e. Greatly exceed proposed outcomes ☐

Confidence of outcome determination

1. Low ☐
2. Medium ☐
3. High ☒

Provide an explanation of the reason(s) for the determination. Given that the toe, slope and crest of the bank has been stabilized with no apprent soil apparent soil loss post plan implementation, the erosion control and bioengineering methods have show sustained integrity and the vegetative cover is 100%, the project is determined as meeting the proposed outcomes

Site Assessment Lead(s) Conducting Site Review (Signature Required):

Clean Water Fund – Stearns SWCD – Enhanced Shoreline Restoration – Field conversion

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: Hamann, Arnie Date of Review: 9-17-2012

Project Location: County Stearns Township/Range/Section T124 R30 S29

Project Manager / Affiliated organization, Contact: Greg Berg, Stearns SWCD

Fund: OHF ☐ CWF ☒ PTF ☐ Project Start Date (Fiscal Year): 20 11

Predominant Habitat Type: Prairie/Savanna/Grassland ☒ Wetland ☐ Forest ☐ Aquatic ☐

1. Goal(s) of the restoration Reduce sediment and nutrient inputs from the subwatershed to the lake

Quantifiable objectives of the restoration Estimated 15.47 tons/Yr of sediment load reduction from the field

What plans / record of project decisions / prescription worksheets are available? Where are they located?
Water and sedimnet control basin and structure plans, water quality results and O&M plans were presented by the Stearns SWCD as summary of work and are held by Stearns SWCD.

2. Is habitat restoration a primary or secondary objective of the project? Primary ☐ Secondary ☒

3. What is the status of the project? Treatment / establishment phase ☐ Post-establishment phase ☒

4. Has the plan or project implementation been modified from the original plan? Yes ☐ No ☒
If yes, why and how?

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☒
If yes, how?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Wade Johnson (MNDNR), Dan Shaw (BWSR), Carol Stojny (BWSR), Shawn Tracy (HDR) - Project managers: Greg Berg (SSWCD) - Property owners: Arnie Hamman

5. Site description (by reviewer): The previous agricutural field is in the establishment phase of a prairie restoration (Y2). The berm, the basin it creates, its inlet/outelt structure and the culvert extension and riser all have been installed and are functioning.

Soils: Sandy

Topography: Rolling field with drainage to the new basin and outelt riser of the culvert.

Hydrology: surface water runoff from the field to the north of the basin drains via a subtle waterway, infiltrates and, possibly overflows via a rate control standpipe leading to a sedge meadow (broad swale) to the south. The southern portion of the field drains to this meadow and the combined flows pool and infiltrate below the stand

1

pipe structure attached to the culvert routed under Jessica Lane to the wooded ravine east of the site. Overflows via this culvert are likely to be rare.
Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): Predominant native cover with 10% non-native species such as Horse Tail
Surrounding conditions (adjacent land use / veg.): The site is encircled by roadway. Outside of this roadway are low density residential development lakshore properties within an agricultural matrix.

6. Survey methods used (include deliverable format, # of pgs.): Visual

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no.

8. List indicators of project outcomes at this project stage: Stable berm and sediment/WQ basin, functioning rate control structure with the basin, stable outfall?daylighting of pipe and funstioning outlet riser.

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☐ No ☒
If yes, explain.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☐
If no, explain.

13. Are follow-up assessments needed? Yes ☐ No ☒ Explain.

14. Additional comments on the restoration project. The converion of the field to a prairie, though not funded by Legacy Funds, is fundamental in maintaining the long-term performance of the sediment/WQ basin's ability to infiltrate runoff and provide its targetted water quality benefits. Maintaining a dense prarire cover of the field and berm will reduce flow volumes and rates as well sediment mobilization to the basin which would otherwise attenuate infiltration capacity. As built, the area defined by the prairie restoration is expected to be "off-line" from the nearby lake it once drained to.

PROJECT EVALUATION

The project will:
a. Likely not meet proposed outcomes ☐
b. Minimally meet proposed outcomes ☐
c. Meet proposed outcomes ☐
d. Likely exceed proposed outcomes ☐
e. Greatly exceed proposed outcomes ☒

Confidence of outcome determination
1. Low ☐
2. Medium ☐
3. High ☒

Provide an explanation of the reason(s) for the determination. The Legacy Funds used for this project were exceeded due to the fact that the site incorporated a CRP project that improves not only its intended water quality functions over time, but succesfully adds on significant wildlife habitat. The trajectory of the plant community establishment is expected to continue to be succesfull thereby increasing the likelihood of the long term stability of the the berm, basin and sedge meadow.

2

Clean Water Fund – Stearns SWCD – Enhanced Shoreline Restoration – Field conversion

Site Assessment Lead(s) Conducting Site Review (Signature Required):

3

Outdoor Heritage Fund, Fiscal Year 2011
5 (c) Cold Water River and Stream Restoration, Protection and Enhancement
Project: West Indian Creek Habitat Restoration

Project Sponsor: Trout Unlimited
Partners: MN DNR
Grant Period: 2010 – June 2013
Contact: John Lenczewski, (612) 670-1629, jlenczewski@mntu.org

ML 2010 Appropriation Language

Laws of Minnesota 2010, Chapter 361, Article I, Section 2, Subd. 5(c): Cold Water River and Stream Restoration, Protection, and Enhancement. $1,269,000 in fiscal year 2011 is to the commissioner of natural resources for an agreement with Trout Unlimited to restore, enhance, and protect cold water river and stream habitats in Minnesota. A list of proposed acquisitions and a list of proposed projects, describing the types and locations of restorations and enhancements, must be provided as part of the required accomplishment plan. The commissioner of natural resources must agree in writing to each proposed acquisition, restoration, and enhancement.

Program Narrative:

Our program will restore and enhance in-stream and riparian fish and wildlife habitat in six cold water streams in the State of Minnesota. The proposed projects will improve habitat for both game and non-game fish and wildlife species uniquely associated with cold water trout streams and provide expanded recreational opportunities for Minnesota anglers.

The specific fish habitat restoration or enhancement methods used on each stream will vary depending upon the distinct natural resource characteristics of each ecological region, as well as variations in the type and magnitude of poor land uses practices within each watersheds. MNTU will tailor each project accordingly in close consultation with resource professionals within the Minnesota DNR. The projects to be undertaken by MNTU as part of this program will be designed to accomplish a number of the following purposes: a) reduce stream bank erosion and associated sedimentation, b) reconnect streams to their flood plains to reduce negative impacts from severe flooding, c) increase natural reproduction of trout and other aquatic organisms, d) maintain or increase adult trout abundance, e) increase biodiversity for both instream and non-game species, f) be long lasting with minimal maintenance required, and g) improve angler access.

These brief project summaries outline the types of actions, participants and timetables for each individual project: Lost Creek (Fillmore); North Branch of Whitewater River (Wabasha); Pine Creek (Winona); West Indian Creek (Wabasha).

Habitat will be restored on a section of each of these four Southeast Minnesota streams. Specific project sites have been selected in coordination with the MNDNR. At least 3.0 miles of in-stream habitat and stream banks will be restored or enhanced between July 2010 and June 2012. These projects will be very similar to the cooperative projects done by Hiawatha Chapter TU and the MNDNR in the past several years. They will consist of sloping and stabilizing stream banks using rip-rapping and/or vegetation, installing overhead cover for trout and installing soil erosion blankets. Mulching and seeding of exposed stream banks with be performed, with native plant species used where appropriate. Improving and

maintaining stream access road(s) and stream crossing(s) will be necessary to complete these projects. Removal of undesirable woody vegetation (box elder, buckthorn, etc.) from riparian corridors of these streams will reduce competition with desirable plant and grass species and allow beneficial sunlight to reach the stream corridors. All these projects are designed for reducing bank erosion, increasing overhead bank cover, increasing large trout and trout wintering cover, improving habitat for invertebrate species and other non-game species, reconnecting streams to their flood plain, adding native plant species whenever appropriate and possible, improving/increasing sunlight to streams by removing nonnative and undesirable tree and shrub species, increasing trout angling opportunities and local economic impact by providing improved trout populations and habitat.
** Restoration and enhancement are used interchangeably throughout this document as the precise dividing line between them is not always clear.*

Evaluation Summary

This project greatly improved the physical habitat of a highly degraded 4200 foot section of West Indian Creek. The pre-project conditions consisted of a wide shallow stream bed with steep eroding banks. This project re-graded, widened and re-vegetated the streambanks and utilized a combination of rip rap and large rock habitat structures to stabilize and define the stream bank and channel. Re-vegetation work utilized an appropriate diversity of native seed. Minnesota Trout Unlimited worked jointly with the Lanesboro and Lake City Fisheries offices in identifying project sites and planning for this site. Plans for site specific features and locations were developed by Trout Unlimited in consultation with Habitat Solutions LLC. Site installation was completed in the fall of 2011. An evaluation site visit was conducted in September 2012. This project achieved planed goals of restoring and enhancing cold water fish habitat in this section of West Indian Creek.

As indicated in the site evaluation additional habitat diversity could have benefited this project. Potential alterations include replacing some portion of the rip rap bank stabilization with root wads or toe-wood/sod mats, reducing artificial cover (skyhooks) and including submerged woody cover in some pool habitats. During an intense rainfall event in May of 2013 several of the installed streambank stabilizing rock habitat structures were compromised as above bankfull flows scoured around them and eroded beyond the channel defined in 2011. Intense “flashy” high stream flows are not uncommon or unexpected in Southeast Minnesota. As such, stream restoration planning and design should adequately anticipate and design flexibility into the system where possible, versus repairing around fixed rock structures to maintain the channel course.

Panel Comments / Recommendations:

- Encourage integration of new evolving techniques such as natural channel design analysis and implementation methods on future projects to provide 1) increased integrated planning based on watershed and stream dynamics 2) greater flexibility for natural stream channel movement and 3) improved long-term structure for aquatic habitat by increased emphasis on predominantly living vegetation and woody materials.

Outdoor Heritage Fund ML-10 5(c) – Trout Unlimited, Cold Water Habitat – West Indian Creek

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: West Indian Creek Habitat Improvement Date of Review: 9/18/2012

Project Location: County Wabasha Township/Range/Section

Project Manager / Affiliated organization, Contact: John Lenczewski/Trout Unlimited

Fund: OHF ☒ CWF ☐ PTF ☐ Project Start Date (Fiscal Year): 20 12

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☐ Aquatic ☒

1. Goal(s) of the restoration Reducing bank erosion, increasing overhead bank cover, increasing large trout and trout wintering cover, improving habitat for invertebrate species and other non-game species, reconnecting streams to their flood plain, adding native plant species whenever appropriate and possible, improving/increasing sunlight to streams by removing non-native and undesirable tree and shrub species, increasing trout angling opportunities and local economic impact by providing improved trout populations and habitat.

Quantifiable objectives of the restoration

What plans / record of project decisions / prescription worksheets are available? Where are they located?
MN TU worked jointly with the Lanesboro and Lake City Fisheries offices in the project planning for this site. Most of the materials were included in the DOW permit application, which is available from the Lake City DNR office.

2. Is habitat restoration a primary or secondary objective of the project? Primary ☒ Secondary ☐

3. What is the status of the project? Treatment / establishment phase ☐ Post-establishment phase ☒

4. Has the plan or project implementation been modified from the original plan? Yes ☐ No ☒
If yes, why and how?

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☒
If yes, how?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Kevin Stauffer MNDNR Fisheries Lake City, Steve Klotz MNDNR Fisheries Lanesboro, Wade Johnson MNDNR - Project managers: John Lenczewski Trout Unlimited - Property owners:

5. Site description (by reviewer): Kevin Stauffer
Soils:
Topography: Valley Bottom, near level to moderate slope

1

Hydrology:
Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other):
Surrounding conditions (adjacent land use / veg.):

6. Survey methods used (include deliverable format, # of pgs.): Visual assessment on September 19, 2012. DNR Fisheries has also collected pre-project data on fish population and stream geomorphology. Post-project surveys will be completed over the next few years. Reports on fish population assessments are available at the Lake City DNR Fisheries office.

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☒ Describe for yes or no. The type of habitat work done on the West Indian site has a long history of use in the Driftless Area of SE MN. The treatments used rely on significant quantities of rock to form and stabilize a stream channel that has habitat features (pools, overhead cover, etc.) for adult trout. These treatments are proven to enhance trout populations and angler success in SE MN. Prior to the project, the stream channel was overly wide and very shallow with high, eroded banks. The recent project created a narrower and deeper channel that provides much improved habitat for brown trout. Extensive bank sloping in the project will allow flood flows to pass through this stream reach without damaging stream banks and will allow for the establishment of high quality riparian vegetation.

While the treatments used on the West Indian site are deemed appropriate and effective in meeting the stated objectives, there is a growing expectation that this type of habitat restoration move away from the "hard armoring" approach and toward a "natural channel design" that allows the stream to adjust to its hydrology over time. The reason I mention this is that several other LSOHC funded projects in the Driftless Area will be implemented using natural channel design concepts. This may be an opportunity to compare methods over time to evaluate which approach is most successful in achieving goals and objectives for these projects.

8. List indicators of project outcomes at this project stage: Physical habitat in the stream is much improved from original conditions, based on visual examination. Eroded banks have been sloped and stabilized, which will substantially reduce soil from entering the stream on this site. DNR Fisheries conducted a trout population assessment in September 2012. Those results will be compared to pre-project assessments, however it will likely take several years post-project to get an accurate assessment of population response to the habitat improvement work. Stream geomorpholgy data (longitudinal profiles, cross sections and pebble counts) were collected pre-project and will be repeated this fall. The geomorphological survey this fall will serve as the "as built" condition and allow monitoring for change in future years. While there has been no formal survey of anglers or property owner, it is very obvious that they are extremely pleased with the project and the stream reach has received considerably more angler activity that it would have without the project.

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☒ No ☐
If yes, explain. Establishment of riparian vegetation may need some additional attention in places. There has only been one growing season since this project was completed, so the seeding/establishment should be monitored next season and addressed as needed. The campground operator will be notified about a mowing setback, which is currently to close to the stream.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☐ No ☐
If no, explain. I am not aware of any future steps that are proposed.

2

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☐ No ☐
If no, explain. I am not aware of any future steps that are proposed.

13. Are follow-up assessments needed? Yes ☒ No ☐ Explain. Ideally a project like this should be assessed again in 3 to 5 years. The initial "as completed" assessment is a good opportunity to see the finished product and compare it to the original conditions. However, the ecological functions take time to develop and monitoring progress over time will provide a more accurate assessment project. Additionally, one of the stated goals of the project is that it will be "long lasting and require minimal maintenance." I think this will likely be the case, but SE MN streams typically have a very flashy hydrology and the potential for some project failure is always a possibility that may require unforeseen maintenance and repair.

14. Additional comments on the restoration project. Overall the project is very well done and has generated a great deal of interest from anglers and local residents. Nearby landowners have indicated their interest in potentially selling an angling easement to the DNR. The project was implemented as designed and agreed to with DNR Fisheries, but in hindsight, there was probably some additional habitat diversity that could have been included in the project. Specifically, pool habitats could have been improved by including submerged woody cover. Root wads or toe-wood/sod mats could have been used in some bank stabilization areas instead of rip rap. The use of artificial overhead cover (i.e. skyhooks) could have been reduced by 10-20% in several pools.

PROJECT EVALUATION

The project will:

a. Likely not meet proposed outcomes ☐
b. Minimally meet proposed outcomes ☐
c. Meet proposed outcomes ☒
d. Likely exceed proposed outcomes ☐
e. Greatly exceed proposed outcomes ☐

Confidence of outcome determination

1. Low ☐
2. Medium ☐
3. High ☒

Provide an explanation of the reason(s) for the determination. There is a long history of this type of project in SE MN and based on prior projects success, this project will very likely meet the proposed outcomes.

Site Assessment Lead(s) Conducting Site Review: Kevin Stauffer

3

Outdoor Heritage Fund, Conservation Partners Grant, Fiscal Year 2010
Rollie Johnson Island Shoreland Restoration

Project Sponsor: Rollie Johnson Natural & Rec. Area Joint Powers Board

Grant Period: 2010 – June 2012
Contact: James Brandt (218) 543-6483

Project Description

The Rollie Johnson Big Island is a rare surviving example of an undisturbed old-growth maple-basswood forest. A major threat to Big Island fish, plant and wildlife habitat is the loss of vegetative cover and shrubs and trees in the upland areas due to shoreline erosion. Because of the size of this area a multi-year restoration effort is in process. The outcome of this funding phase was to complete approximately 300 additional linear feet of shoreline restoration. Once completed, the area will have sufficient vegetative cover to prevent shoreline and upland erosion and allow for the area and adjacent littoral zone to support expanded plant and aquatic communities.

Evaluation Summary

The Rollie Johnson Island Shoreland Restoration is a volunteer lead effort that has successfully stabilized over three hundred linear feet of shoreline with slopes up to 30 feet high. A suite of appropriate structural (coconut-coir blankets, fascines, biologs) and vegetative bioengineering solutions were applied with good success. Native plant species selection, spacing and follow up watering were appropriate. Yearly monitoring of the effects of winter ice push on the toe of slope will be essential to ensuring the stability of vegetation on these sandy slopes. Despite difficult site conditions, ongoing efforts by volunteers supported by technical assistance from partner organizations (MN DNR, Crow Wing SWCD) indicate the likelihood of successful outcomes.

Panel Comments / Recommendations:

- Ambitious project implemented using best practices for bioengineered shoreline on a large sand-slope condition
- Good use of fascines; impressive on this scale
- Toe of slope stabilization should be closely monitored after melt out each spring; repaired as needed

Outdoor Heritage Fund, CPL Grant – Rollie Johnson Island Shoreline Restoration

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: Big Island, Whitefish Lake Date of Review: Aug. 28, 2012

Project Location: County Crow Wing Township/Range/Section 137, 28, 17

Project Manager / Affiliated organization, Contact: Jim Brandt, Ideal Township Supervisor

Fund: OHF ☒ CWF ☐ PTF ☐ Project Start Date (Fiscal Year): 20 13

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☐ Aquatic ☒

1. Goal(s) of the restoration to stabilize the toe of the shoreline and restore native plants on the upland slope; to provide some stability and to stop the slumping on these islands. Islands have been eroding since the dam was placed on the Whitefish chain in the early 1900s. Erosion is a natural process and is understood by the group conducting the restoration.

Quantifiable objectives of the restoration linear feet of shoreline stabilized/restored

What plans / record of project decisions / prescription worksheets are available? Where are they located?
plans for spring restoration and stabilization are with Judy Topinka (WAPOA) and Lindy Ekola (DNR, Glenwood)

2. Is habitat restoration a primary or secondary objective of the project? Primary ☒ Secondary ☐

3. What is the status of the project? Treatment / establishment phase ☒ Post-establishment phase ☐

4. Has the plan or project implementation been modified from the original plan? Yes ☐ No ☒
If yes, why and how?

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☒
If yes, how?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Heather Baird, Wade Johnson - Project managers: Jim Brandt, Judy Topinka, Dave Fisher - Property owners:

5. Site description (by reviewer): Shoreline, especially toe looked to be pretty well stabilized with biologs, brush bundles and native sedges, transitional zone plant species. All plant materials were suitable to this area for the restoration. The driving force behind the success of this restoration is in the winter with the ice push and at ice out time in the spring. If the biologs, brush bundles and plants hold up to the ice expansion and ice sheet movement in the spring then more plants can get established and it is less likely the bank will slump. The upland slopes also looked good and were stabilized by biodegradable erosion control fabric and brush bundles to break up the contours on the steep slope. Vegetation was growing on the slope especially the sumac that was trimmed to install the erosion

1

control fabric. The banks should continue to get more plants and trees, shrubs as long at the toe protecion holds up and there is little to no erosion at the toe.

Soils: sand
Topography: steep
Hydrology:
Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): early succesional tree/shrub canopy followed with native grass and wildflowers just getting started. 40% sumac, 20% native grass and forbes, less than 1% invasive species, some barren areas.
Surrounding conditions (adjacent land use / veg.): maple basswood mature forests on top of the slope

6. Survey methods used (include deliverable format, # of pgs.): site, visual inspection

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no.

8. List indicators of project outcomes at this project stage: percent slope vegetated, stabilized toe protection

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain. issues may arise if ice push does not allow for stable toe protection

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☐ No ☒
If yes, explain.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☐
If no, explain.

13. Are follow-up assessments needed? Yes ☒ No ☐ Explain. It would be good to do a follow up in the Spring 2013 and then again in the Fall of 2013 to see how the ice may have changed the restoration. Subsequent follow ups may be needed as ice can be hit or miss in the damage it causes to shorelines.

14. Additional comments on the restoration project. Overall a good proejct with great partners. Needs continual follow up due to the unknown of the ice push/winter conditions on the restoration.

PROJECT EVALUATION

The project will:

a. Likely not meet proposed outcomes ☐
b. Minimally meet proposed outcomes ☐
c. Meet proposed outcomes ☒
d. Likely exceed proposed outcomes ☐
e. Greatly exceed proposed outcomes ☐

Confidence of outcome determination

1. Low ☐
2. Medium ☒
3. High ☐

Provide an explanation of the reason(s) for the determination. I would have rated this higher if the islands were not effected by ice push and adverse winter conditions. The rating is no fault of the group or partners or their lack of effort in the restoration. It is simply a result of the effects of mother nature that may work to hinder some of thier work.

2

Outdoor Heritage Fund, CPL Grant – Rollie Johnson Island Shoreline Restoration

Site Assessment Lead(s) Conducting Site Review (Signature Required): Heather Baird

3

Outdoor Heritage Fund, CPL Grant – Rollie Johnson Island Shoreline Restoration

CPL Grant Program Ecological Restoration and Management Plan

RESTORATION PROJECTS ONLY

Contract #:	**B40651**
Organization Name:	**Rollie Johnson Natural and Recreational Area Joint Powers Board**
Name of Project:	**Rollie Johnson Island Shoreland Restoration Project**
FY of Grant Awarded:	**FY2010**
Contact Name:	**James Brandt (Grantee) & Judith Topinka (Fiscal Contact)**
Contact Phone:	**218-543-6483 - 218-568-4356**

Please choose the correct response to the below statements as it relates to your above project.

1) To the extent possible, only vegetation or seed of ecotypes native to Minnesota, and preferably of the local ecotype, using a high diversity of species originating from as close to the restoration site as possible have been or will be used in this project, protecting existing native prairies from genetic contamination.

☒ Yes ☐ No, explain

2) MCC was given consideration to and timely written contact was made with the Minnesota Conservation Corps for consideration of possible use of their services to contract for restoration and enhancement services.

☒ Yes ☐ No, explain

3) This project is on land permanently protected by conservation easement or public ownership.

☒ Yes ☐ No, explain

4) Is this project consistent with the highest quality conservation and ecological goals for this site?

☒ Yes ☐ No, explain

5) Is the best available science being used to achieve the best restoration?

☒ Yes ☐ No, explain

Outdoor Heritage Fund, CPL Grant – Rollie Johnson Island Shoreline Restoration

CPL Grant Program Ecological Restoration and Management Plan

RESTORATION PROJECTS ONLY

6) Has consideration been given to soil, geology, topography and other relevant factors that would provide the best chance of long term success of this restoration?

☒ Yes ☐ No, explain

Restoration Implementation Timetable:

Activity	Timeline	Describe specific work activities
Site Prep	May 2010	Install erosion control materials on +/- 300 feet of shoreline and upland bluff area, install signage.
Establish Vegetation	June 2010	Seed and plant native ground cover, native sod flats and shrubs/trees.
Maintenance	June 2010	Jun to Sep - Maintain and water plantings as needed to ensure growth.
Site Prep	May 2011	Install erosion control materials on +/- 300 feet of shoreline and upland bluff area, install signage.
Establish Vegetation	June 2011	Seed and plant native ground cover, native sod flats and shrubs/trees.
Maintenance	June 2011	Jun to Sep - Maintain and water plantings as needed to ensure growth.
Maintenance	May 2012	May - Jun - Maintain and water plantings as needed to ensure growth.

Identify Long Term Maintenance and Management Needs, Source(s) of Funding:

Need	Timeframe	Financial source
Provide maintenance as needed.	Ongoing	Volunteers

☒ I certify that the information provided above is accurate and that I am authorized by the above organization to submit this report. If this information should change at any time during the grant period, I will notify CPL grant staff immediately.

Name: James Brandt — Judith Topinka

James B. Brandt — Judith Ann Topinka

Title: Grantee — Fiscal Contact

Please submit this form within 30 days of work beginning on the above project or with the first request for payment. You may email this form or print and mail to CPL grant staff.

CPL Grant Program Ecological Restoration and Management Plan (Restoration) Page 2

Outdoor Heritage Fund, Fiscal Year 2011
5(a) Metro Big Rivers Habitat Program, Phase 1
Project: Cherokee Bluff Restoration

Project Sponsor: Minnesota Valley National Wildlife Refuge Trust
Implementer: Great River Greening
Grant Period: July 2010 – June 2012
Contact: MN Valley Nat Wildlife Refuge Trust: Deb Loon
Great River Greening: Wayne Ostlie 651 665.9500

ML 2010 Appropriation Language

$2,397,000 in fiscal year 2011 is to the commissioner of natural resources for agreement s for projects to protect, restore, and enhance natural systems of the Minnesota River, St. Croix River, Mississippi River, and their major tributaries as follows: $500,000 with Minnesota Valley National Wildlife Refuge Trust, Inc. for fee title land acquisition; $1,500,000 with the Trust for Public Land for fee title land acquisition; $227,300 with the Friends of the Mississippi River for restoration, enhancement , and conservation easement acquisition; and $169,700 with Great River Greening for restoration and enhancement . The accomplishment plan must include an easement stewardship plan. All restorations must comply with subdivision 9, paragraph (b).

Evaluation Summary

Cherokee Bluff is one of many restoration projects undertaken through the Metro Big Rivers Habitat Program. The Cherokee Bluff site is within the City of St Paul Cherokee Park, above the Mississippi River across from downtown St Paul. The bluff is dominated by a dry oak forest plant community; a one acre remnant dry prairie/savanna is also located within the project area. Great River Greening implemented restoration activities on this site utilizing Outdoor Heritage Funding to leverage ongoing support from the City of St Paul Park's restoration efforts. The Outdoor Heritage funded projects supplement ongoing restoration activities at Cherokee Bluff directed by a 2002 restoration and management plan. A walk through assessment of restoration activities was conducted in August of 2012. Great River Greening utilized current science based practices in buckthorn removal/treatment and prescribed burning to achieve the stated goal of 80% dominance of native vegetation. Additional woody removal will be needed around the remnant prairie to control woody encroachment. Ongoing support from the City of St Paul will be essential to achieving and maintaining restoration outcomes.

Panel Comments / Recommendations:

- Good planning / implementation: Pre-existing management plan utilized and adapted to current conditions to direct restoration efforts
- Quantifiable objectives; "*control Buckthorn over ½" diameter*; & *80% dominance of native vegetation*"; provided clear milestones for tracking phases of project progress
- Combined cutting/herbicide and burning of remnant high-diversity urban prairie produced excellent results towards preserving locally rare remnant plant community

Outdoor Heritage Fund ML10 5(a) – MN Valley National Wildlife Refuge Trust, Metro Big Rivers Habitat Program – Cherokee Park

RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: Cherokee Park Restoration Date of Review: 17 August 2012

Project Location: County Ramsey Township/Range/Section

Project Manager / Affiliated organization, Contact: Todd Rexine

Fund: OHF ☐ CWF ☒ PTF ☐ Project Start Date (Fiscal Year): 20 11

Predominant Habitat Type: Prairie/Savanna/Grassland ☒ Wetland ☐ Forest ☒ Aquatic ☐

1. Goal(s) of the restoration Improve the health and habitat value of oak forest and remnant prairie communities.

Quantifiable objectives of the restoration Control ground-layer invasvie species and increase the dominance and diversity of dry prairie/savanna and dry oak forest native vegetation through prescribed burning, and minimize invasive species dominance by removing large buckthorn(greater than 1/2 inch) by cutting and stem treatment. An outcome of 80% dominance of native vegetation was set for the oak forest and prairie areas.

What plans / record of project decisions / prescription worksheets are available? Where are they located?
The Cherokee Park Management Plan and Cherokee Park Prairie Ecological Inventory and Restoration Management Plan developed by Great River Greening provided guidance for the management activities that were conducted. The Cherokee Park Management plan is located on the Great River Greening Website at: http://www.greatrivergreening.org/publications.asp#plans . A copy of the Cherokee Park Prairie Plan is available at the Great River Greening office.

2. Is habitat restoration a primary or secondary objective of the project? Primary ☐ Secondary ☒

3. What is the status of the project? Treatment / establishment phase ☐ Post-establishment phase ☒

4. Has the plan or project implementation been modified from the original plan? Yes ☐ No ☒
If yes, why and how?

Have alterations in plan or implementation changed the proposed outcomes? Yes ☐ No ☒
If yes, how?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Dan Shaw BWSR, Wade Johnson MNDNR - Project managers: Todd Rexine, Steve Thomford - Property owners: City of St.Paul (not present)

5. Site description (by reviewer): The site encompasses a stretch of bluff across the river from downtown St.Paul. The area is a little over a mile long, and about 250 feet wide in most areas. The bluff is dominated by a dry oak forest plant community. A remnant, dry prairie/savanna area is also located within the project area (about one acre in size).

1

Soils: Loess Soils
Topography: Northwest facing bluff with steep slopes
Hydrology: Generally dry soils except for areas where seeps occur along the bluff and within ravines.
Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): Ironwood, quaking aspen, white oak, northern pin oak, and bur oak are dominant tree species in the oak forest. the prairie/savanna is dominated by big bluestem, little bluestem and a variety of prairie forbs. Common Buckthorn was the dominant invasive species in the oak forest, some Tartarian honeysucle was also present. Sweet clover was a dominant invasive in the prairie/savanna
Surrounding conditions (adjacent land use / veg.): The top of the bluff is residential housing. The base of the bluff consists of a road and then a floodplain area that runs paralell to the Mississippi River.

6. Survey methods used (include deliverable format, # of pgs.): Visual assessment by meandered search through the site and along the top of the bluff.

7. Is the plan based on current science (best management practices, standards, and guidelines)?
Yes ☒ No ☐ Describe for yes or no. The plan was develped by Great River Greening ecologists and provides detailed information about the native plant communities, as well as detailed information about management recommendations. Work was conducted by experienced crews.

8. List indicators of project outcomes at this project stage: The primary outcomes set for the project involved effective control of buckthorn (greater than 1/2 inch in diameter) and effective execution of the prescribed burn in the remnant prairie and oak forest areas, resulting in 80% dominance of native vegetation. Buckthorn was effectively controlled in the removal area with little regrowth. The prescribed burns appeared to have carried effectively through the remnant prairie (on the bluff slope), ground layer vegetation appeared vigorous, though encroaching woody vegetation did not appear to be set-back substantially by the burn. A goal of the oak forest prescribed burn (a flat area at the top of the bluff) was to set back buckthorn and Tartarian honeysuckle seedligns. The burn of the oak forest area appeared to also carry effectively through the area and few invasive shrub seedlings were observed. The response of the ground layer vegetation was not as evident, it may be that the burn will benefit more spring ephemeral species that were not visible at the time of the site visit in August.

9. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes ☒ No ☐ Explain. The methods used for prescribed burning and buckthorn removal were appropriate to accomplish the proposed outcomes of 80% dominance of native vegetaton. Additional woody control will be needed around the prairie remnant to control encroaching woody vegetation. Back when the goal of 80% native vegetation was set(2002), buckthorn was much more dominant at the site; removal efforts through cutting and stump treatment was also conducted about eight years ago. The combination of the more recent removal (and burning) and this pervious effort has attained effective control of the species. The project manager stated that the contractor that conducted the more recent removal will be coming back this fall (2012) to cut and treat any buckthorn that is re-sprouting.

10. Are corrections or modifications needed to meet proposed outcomes? Yes ☐ No ☒
If yes, explain.

11. Has anything been done or planned that would detract from existing or potential habitat? Yes ☐ No ☒
If yes, explain.

12. Are proposed future steps, including long-term management, practical and reasonable? Yes ☒ No ☐
If no, explain.

13. Are follow-up assessments needed? Yes ☐ No ☒ Explain. As the results of the buckthorn removal and prescribed burn were evident, additional follow-up assessments should not be needed.

2

14. Additional comments on the restoration project. The site will require additional management in the future to control woody vegetation encroaching on the prairie remnant as some woody plants remain following the prescribed burn. Buckthorn under 1/2 inch were not targeted as part of the removal effort; as buckthorn of this size is scattered in the forest, additional control efforts will be needed in the future. Tartarian Honeysuckle was also not targeted as part of the control efforts. There is not a high percentage of the species at the site, but its removal would prevent it from spreading in the future.

PROJECT EVALUATION

The project will:

a. Likely not meet proposed outcomes ☐
b. Minimally meet proposed outcomes ☐
c. Meet proposed outcomes ☒
d. Likely exceed proposed outcomes ☐
e. Greatly exceed proposed outcomes ☐

Confidence of outcome determination

1. Low ☐
2. Medium ☐
3. High ☒

Provide an explanation of the reason(s) for the determination. A High confidence level is selected because the project met the outcomes of effectively controlling buckthorn greater than 1/2 inch, and resulting in effective prescribed burns of the remnant prairie and oak forest areas; as well as accomplishing an 80% dominance of native vegetation.

Site Assessment Lead(s) Conducting Site Review (Signature Required): Dan Shaw

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Parks and Trails Fund, Fiscal Year 2010
Three Rivers Park District
Project: Crow Hassan Park Reserve Hardwood Forest Restoration

Project Sponsor: Three Rivers Park District
Grant Period: July 2009 – June 2011
Contact: John Barton, (763) 694-7841 jbarten@threeriversparkdistrict.org

Project Description

The goal of this project is to restore an invasive, exotic brome grass field in the Crow Hassan Park Reserve to a native northern hardwood forest. Beginning in 2008 Three Rivers Park District, with Clean Water Legacy funds, restored 4.3 acres of this parcel within Crow Hassan Park to native woody vegetation. Building on this initial work the current project initially began as the reforestation of 4.4 acres of an old agricultural field to native woody vegetation. The planting, which is immediately adjacent to the Crow River in Crow-Hassan Park Reserve, ultimately ended up covering 14.4 acres. Forests have been shown to reduce phosphorus runoff by approximately 50% compared to grasslands/ pastures. This re-established native hardwood forest will help reduce nutrient loading from the site into the Crow River.

Three Rivers Park District provided 7,530 native trees and shrubs grown at the nearby Park District nursery from locally collected seed. The Park District also supplied all the equipment, chemical, mulch, and additional personnel needed for the project. Site preparation activities included mowing and herbicide treatment of undesirable plant species. Follow-up maintenance activities included spot herbicide treatments, application of deer repellants, mulching, and watering. Monitoring of the planting will continue into the future and additional site maintenance will be performed on an as-needed basis. .

A project overview is available on the Legacy Fund website at: http://www.legacy.leg.mn/projects/fy-2010-three-rivers-park-district-grant-project-4

Evaluation Summary

The Crow Hassan hardwood forest restoration was implemented in part utilizing funds granted to Three Rivers Park District from Metropolitan Council's Parks and Trails Fund appropriation. The Crow Hassan Reserve project was one of several restoration projects in the Three Rivers Regional Park System that utilized Conservation Corps Minnesota crews supported by the Parks and Trails funding. A walkthrough site assessment was conducted in May of 2013. Site preparation, herbivory abatement and maintenance activities are consistent with current best practices for ecological restorations in these habitat types. Existing invasive grasses are being managed with herbicide and will continue to be suppressed by shading from relatively dense of tree stocking. The Crow Hassan hardwood forest restoration appears to be on a positive trajectory to achieve the broad planned goals and improve the

habitat corridor along the Crow River. Long term commitment by the Three Rivers Park District to support monitoring and management indicate a high likelihood of successful outcomes.

Panel Comments / Recommendations:

- Significant benefit to habitat connectivity: Conversion from old field to floodplain and upland forest will benefit important habitat corridor adjacent to the Crow River
- Desired outcome of "*northern hardwood forest*" was ambiguous, utilizing specific native plant community types would help to direct species composition (e.g. DNR Native Plant Community Classifications: Southern Mesic Hardwood Forests MHs38, MHs39 and MHs49)
- Species selection and stocking densities could have been more strategic. Localized site conditions and competition through shade suppression will direct the suitable forest composition over time; benefits per investments would be greater if species and stocking were more strategic

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RESTORATION EVALUATION PROGRAM for LEGACY PROJECTS
Minnesota Board of Water and Soil Resources
Minnesota Department of Natural Resources

PROJECT EVALUATION FORM

PROJECT BACKGROUND

Project Name: Crow River Reforestation, Crow-Hassen Park Reserve Date of Review: 5/24/13

Project Location: County Hennepin Township/Range/Section T120N R23W Sec __

Project Manager / Affiliated organization, Contact: John Barten 763-694-7841 jbarten@threeriversparkdistrict.org

Fund: OHF ☐ CWF ☐ PTF ☒ Fiscal Year Funds – FY__ Project Start Date 20 09

Predominant Habitat Type: Prairie/Savanna/Grassland ☐ Wetland ☐ Forest ☒ Aquatic ☐

1. Goal(s) of the restoration Re-creation of 14.4 acres of Mixed Oak Woodland and Maple Forest. The site goal will result in additional benefits including creation of a larger contiguous woodland adjacent to the Crow River. Landscape fragmentation will be decreased.

   Quantifiable objectives of the restoration NA

   What plans / record of project decisions / prescription worksheets are available? Where are they located? "CCM 09-10 Accomplishments" # of large bareroot planted.

2. What is the status of the project? Treatment / establishment phase ☐ Post-establishment phase ☒

3. Has the plan or project implementation been modified from the original plan? If yes, why and how? NA

   Have alterations in plan or implementation changed the proposed outcomes?

PROJECT ASSESSMENT

Site Assessment Attendees - Reviewers: Wade Johnson, Michelle Martin MNDNR Forestry, Mark Cleveland MN DNR SNA Program - Project managers: John Barten, Jeff Warhol: Three Rivers Parks District - Property owners: Three Rivers Parks District

4. Site description (by reviewer): Old agricultural field turned to brome grass field 30 years ago that is now under forest restoration. The site is adjacent to the Crow River.

Soils: Predominantly sandy silt. Project manager indicated soils become heavier silty-clay at the south east edge of the project area.

Topography: level to gently sloping

Hydrology: upland, Restoration site is 50 meters fro the Crow River

Vegetation (structure, dominant species % cover, invasive species (MN DNR) % cover, other): former agricultural field dominated by cool season grasses including smooth brome grass and Kentucky bluegrass. m a mix of mostly decidious species (planted) and volunteer red cedar and box elder (hard to judge if the box elder were volunteers or planted) that were 3 feet to 20 feet tall depending on the species and level of browse.

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Surrounding conditions (adjacent land use / veg.): mesic woodland, to the west, south and north. East boundary is a county road. Adjacent land use along county road is a greenhouse facility and a mixture of small hobby farms and residential development. The forested buffer along the Crow River had "weedy" but native vegetation (box elder, prickly-ash) with some invasive species invasion (buckthorn, garlic mustard noted)

5. Survey methods used (include deliverable format, # of pgs.): meander; walked along established trails (hiking/horse trails and water line trails) and walked through the site to assess overall stand condition

6. Is the plan based on current science (best management practices, standards, and guidelines)? yes, the park staff clearly thought about what was the best management approach given their budget and site conditions (adjacent to river, lots of brome). They considered other practices that are cheaper and are more commonly employed through the park but decided that planting large trees via augering, close spacing (6 x 7 ft), watering, and herbiciding grass competition was the best method for protecting the river resource, high density of deer, and quickly shading out the ground layer. They also put some thought into where species should be planted on site given soil type (oaks and cherries on dryer areas and sugar maple and basswood in the loamy areas). Although, the tree and shrubs seemed randomly planted from the reviewer's point of view (or it wasn't very obvious that planting was done in this way). While not the least expensive method for establishing a mesic oak/maple forest, due to site conditions, high deer populations and access to water, the use of larger trees and shrubs appears to be a reasonable choice.

7. List indicators of project outcomes at this project stage: Succesful establishment of a wide variety of woodland tree and shrub species; growth of trees given browse pressure, degree of canopy closure; The site is strong on diversity of species that have been planted.

8. Does the project plan / implementation of the project plan reasonably allow for achieving proposed project outcome(s)? Yes. With the planting density, species variety and site maintenance. the park seems committed to adapting their plan to ensure a positive outcome but given the results thus far, the project seems like its on track for achieving it's objectives.

9. Are corrections or modifications needed to meet proposed outcomes? Explain. It is too soon to tell. It is anticipated that some woody species will be more successful that others and are more likely to become the dominant canopy trees. Shade supression will help control the current site dominance of brome grass. It is anticipated that understory plant community will require reintroduction of natural herbaceous plant species.

10. Has anything been done or planned that would detract from existing or potential habitat? Explain. No, if anything, habitat has been improved over the brome field it once was. This site has greater diversity of plant species and vertical and horizontal structure than it once had.

11. Are proposed future steps, including long-term management, practical and reasonable? Explain. The benefits of this project could be better articulated. Current project conditions are favorable for long term success. Three Rivers staff did communicate that as trees and shrubs continue to be managed and mature on the site, staff will be used selective thinning to maintain tree health and form, especially for oak species. The park staff are allowing nature to sort the site out, but with help from some intensive management (watering, herbicide) and in the future, they may weed out disease prone trees (ash, butternut, elm) if they see that they're outcompeting another native tree without the same diseae potential.

12. Are follow-up assessments needed? Explain. Evaluation and control of invasive herbaceous species and evaluation of woody species distribution would be useful. Part of the evaluation process should include analysis of success for each species planted, to assist in planning for future restoration projects.

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13. Additional comments on the restoration project. Restoration of this site for the goal stated was appropriate. A more specific plan with detailed objectives, maps, and treatments implemented (and future treatments planned) would be helpful from a reviewers stand point and for the long term success of a forest restortation project (although, I don't think this was a requirement for the funds). It was hard to track what was done when and why and how much money was spent doing each treatment. Also, a list of the species planted and at what density (and what size they were when planted) would be helpful too. We were given a list of planted stock, but the details of the planting were not clear. Some of the species planted were odd choices given the big woods landscape (bog birch, alder, spirea as some examples) but it will be interesting to see how "nature" sorts itself. Ariel photograps of the site Pre project and current projects would be useful. The planting density was high, but the post planting management direction appears to address this as would be the case in a direct seeding project. All in all, the park staff are enthusiastic about the project and are happy with the results thus far. It's clear that they have put a lot of effort into it's success and more importantly, seem very committed to seeing the project through to a successful ending.

PROJECT EVALUATION

The project will:

a. Likely not meet proposed outcomes ☐
b. Minimally meet proposed outcomes ☐
c. Meet proposed outcomes ☒
d. Likely exceed proposed outcomes ☐
e. Greatly exceed proposed outcomes ☐

Confidence of outcome determination

1. Low ☐
2. Medium ☒
3. High ☐

Provide an explanation of the reason(s) for the determination. With noted maintenance attenition, there should be a high survival rate of the tree and shrub species planted. As a forest is a community which includes understory as well as over story plants and their attendent faunal components, establishment of the tree and shrub species is the first step in a longer restoration process.

Site Assessment Lead(s) Conducting Site Review (Signature Required): Mark L. Cleveland 5/28/13

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