Restoring, Protecting and Sustaining the Root-Pike Basin

NEUMILLER WOODS
Wetland Restoration Project

Quality Assurance Project Plan
Project ID: LM1701_Neumiller
Grant ID: GL-00E02317

Prepared for:
Wisconsin Department of Natural Resources (WDNR)
101 S Webster Street
Madison, WI 53703

Root-Pike Watershed Initiative Network, Inc. ~ 262-898-2055 ~ www.rootpikewin.org ~ 800 Center Street, Room 118, Racine, WI 53404

A1. Title of Plan and Approval

Quality Assurance Project Plan
Neumiller Woods – Somers Branch of the Pike River
Wetland Restoration Scrape

Approvals

William Morris — 9-24-18
Village Administrator, Village and Town of Somers

Cheryl Bougie — 10/29/18
Project Manager, Wisconsin Department of Natural Resources

Donalea Dinsmore — 10/30/2018
Great Lakes Funding & Quality Assurance Coordinator, Wisconsin Department of Natural Resources

Dave Giordano — 10/17/18
Executive Director, Root-Pike Watershed Initiative Network

Alice Thompson — pending signed contract with Village & Town of Somers — 10/18/18
Owner and Wetland Ecologist, Thompson & Associates

Note: Schedule is being adjusted to reflect winter construction. Donalea Dinsmore

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Owner and Wetland Ecologist, Thompson & Associates

A2. Table of Contents

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A3. Distribution List

William Morris
Village Administrator, Village and Town of Somers
7511 – 12th Street
Somers, WI 53171
bmorris@somers.org
(262) 859-2822

Cheryl Bougie
Project Manager, Sediment & WQ Monitoring Coordinator, WI Department of Natural Resources
2984 Shawano Avenue
Green Bay, WI 54313-6727
cheryl.bougie@Wisconsin.gov
(920) 662-5170

Donalea Dinsmore
Great Lakes Funding & Quality Assurance Coordinator, WI Department of Natural Resources
101 S Webster Street
Madison, WI 53703
donalea.dinsmore@Wisconsin.gov
(608) 266-1926

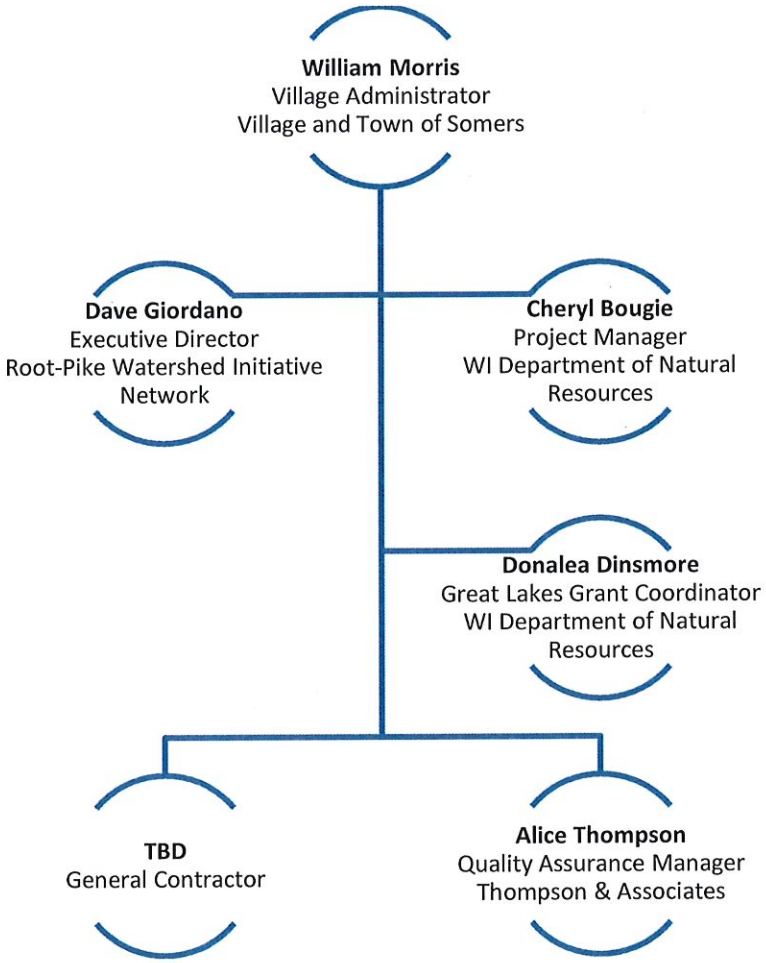
Dave Giordano
Executive Director, Root-Pike Watershed Initiative Network
262-898-2055
800 Center Street, Room 118, Racine, WI 53404
dave@rootpikewin.org
(262) 898-2055

Alice Thompson
Owner and Wetland Ecologist, Thompson & Associates
1514 Menomonee Ave.
S.Milwaukee, WI 53172
thompsonandassoc@sbcglobal.net
(414) 571-8383

A4. Project/Task Organization

Below is the organizational structure for the Neumiller Woods Wetland Scrape Project. All lines of communication, management activities, and technical direction within this project team will follow this organizational arrangement. Any directions or communications from the U.S. EPA will be given to the Village and Town of Somers Village Administrator through the Wisconsin Department of Natural Resources Project Manager. Root-Pike Watershed Initiative Network's Executive Director will assist The Village and Town of Somers to communicate directions to Alice Thompson of Thompson & Associates and the chosen general contractor. The Wisconsin Department of Natural Resources will be notified of all proposed changes in personnel.

Figure 1. Organizational Chart



Wisconsin Department of Natural Resources (WDNR) - Great Lakes Funding and Quality Assurance Coordinator
The WDNR Quality Assurance Reviewer for this project will be Donalea Dinsmore.
1. Evaluate project progress, on-site inspections.
2. Coordinate with Project Manager to provide project oversight.
3. Review and approve the QAPP.
2. Technical consultation on data quality issues.
3. Communication with USEPA Grant Manager.
4. Prepare grant progress reports for USEPA.

Wisconsin Department of Natural Resources - Project Manager
The project manager for the WDNR will be Cheryl Bougie. The WDNR project manager has overall responsibility for project oversight.
1. Provide technical consultation services to the Village and Town of Somers Village Administrator.
3. Oversee and address project progress.
4. Communicate with the Village, WDNR, Root-Pike WIN, and contractors.
5. Review progress reports detailing work accomplished.
6. Approve project invoices charged to the grant (per aid agreement).
7. Review all final reports.

Village and Town of Somers - Village Administrator/Project Manager
The project manager for the Village and Town of Somers will be William Morris, the Village Administrator.
The Village Administrator/project manager has overall responsibility for implementing the project. The Village Administrator / Project Manager will:
1. Direct project activities.
2. Prepare and submit progress reports detailing work accomplished, funds spent, and the project status.
3. Be responsible for review of project deliverables, development of project planning, and the project strategies.
4. Review site reports for consistency with objectives stated in work plans.
5. Provide final signature on all assessments.
6. Assure timely invoicing to WDNR for eligible project expenses.

Quality Assurance Manager – Thompson & Associates
The wetland scrape Quality Assurance Manager for this project will be Alice Thompson of Thompson & Associates. The Quality Assurance Manager will:
1. Oversee activities to ensure that restoration methodology and construction method procedures are followed.
2. Assist in any QA issues during the wetland scrape construction activities.
3. Conduct field audits.
4. Communicate with the Village project manager, contractor, Root-Pike WIN, and WDNR on project progress.

General Contractor – To Be Determined
The general contractor and their project manager has yet to be selected. Once selected, they will be supervised by the Quality Assurance Manager and the Village Administrator. The general contractor is responsible for implementing the project, and has the authority to commit the resources necessary to meet project objectives and requirements. The project manager's primary function is to ensure that technical, financial, and scheduling objectives are achieved.
The project manager will:
1. Be responsible for planning, coordinating, monitoring, and evaluating of project field activities.
2. Define project objectives and develop a detailed work plan schedule.
3. Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task.
4. Develop project plans and strategies and review all project deliverables.
5. Review the work performed on each task to ensure its quality, responsiveness, and timeliness.
6. Resolve technical problems.
7. Be responsible for environmental reports and documents.

Project Communication Consultant – Root-Pike Watershed Initiative Network
Root-Pike Watershed Initiative Network Executive Director, Dave Giordano, will serve as the project communication consultant. The project communication consultant will work with all the project entities to advance the goals and benefits of the project.
The project communication consultant will:
1. Help define the scope of work, schedule and budget
2. Assist in the development of the bid documents
3. Coordinate interest in the project and the pre-bid meetings
4. Supervise the work activities along with the Quality Assurance Manager and Village Administrator
4. Promote the features and benefits of the project to the community
5. Provide or procure the necessary resources to ensure the project is a success

A5. Problem Definition/Background

The Lake Michigan Lakewide Management Plan (LaMP) 2008 is the most recent published LAMP document for Lake Michigan (it is scheduled to be updated in 2019). The document includes a discussion of Nonpoint Source Pollution (pg. 7-9) as "the most important remaining uncontrolled source of water pollution and provides for a coordinated effort to reduce polluted runoff from a variety of sources." Resource managers working in the Lake Michigan Basin continue to identify runoff pollution as a key stressor to the Lake Michigan ecosystem.

9 Key Element (9KE) Plans are important for creating that "coordinated effort to reduce polluted runoff from a variety of sources" as they provide detailed information about the feasible management measures that can be implemented to address sources of phosphorus and sediment within a watershed. The plans provide the basis for the many partners working in the area to coordinate their efforts and ensure that the most effective best management practices are selected and implemented in the appropriate locations. Root-Pike Watershed Initiative Network, a 501c3 group based in Racine, championed the first completed 9KE in Wisconsin – for the Pike River. The Pike River is one of the most degraded and impaired Lake Michigan tributaries in Wisconsin. The proposed Neumiller Woods project, a 7.9-acre site located in the Village of Somers, is identified as a "high priority" for action in the Pike River 9KE Plan (project G113).

The Pike River 9KE Plan identifies challenges and threats to the watershed as:

- 80% of the stream and tributary length is moderately to highly channelized
- 59% of stream and tributary length is moderately to highly eroded causing total suspended solids and total phosphorus loading downstream, and
- 50% of stream and tributary riparian corridor area in poor condition

The Neumiller Woods project helps to address these challenges and threats while also addressing the following sub-goals of the Lake Michigan LaMP 2008:

- "Are land use, recreation, and economic activities sustainable and supportive of a healthy ecosystem?"
- "Are sediment, air, land, and water sources or pathways of contamination that affect the integrity of the ecosystem?"
- "Are ecosystem stewardship activities common and undertaken by public and private organizations in communities around the basin?"
- "Is collaborative ecosystem management the basis for decision-making in the Lake Michigan basin?"

Table 1. Roles and Responsibilities

Individual(s) Assigned	Responsible for:	Authorized to:

William Morris
Village Administrator and Project Manager
Village and Town of Somers
	• Managing the project on behalf of the Village and Town of Somers
	  o Ensuring the project is on schedule
	  o Ensuring the project is on budget
	  o Project invoicing and billing
		• Stop work
		• Approve contracts
		• Approve change orders
		• Approve invoices

Cheryl Bougie Project Manager Wisconsin DNR	• Project oversight • Technical assistance • Reporting internally to DNR	• Stop work
Donalea Dinsmore Grant Coordinator Wisconsin DNR	• Quality Assurance	• Approve QAPP
General Contractor (to be determined)	• Construction activities: Site restoration and enhancement installation • Installation and maintenance of storm water BMPs • Installation and maintenance of in-water TSS controls • Implementing corrective actions • Preparing weekly construction oversight reports	• Select subcontractors • Stop work due to weather or safety • Address spills and erosion issues
Alice Thompson Quality Assurance Manager Thompson & Associates	• Performing daily oversight of restoration specifics • Serving as the main point of contact at the site for WDNR/City/engineer • Performing weekly inspections of stormwater BMPs • Performing weekly inspections of inwater TSS controls • Preparing weekly reports, uploading to FTP site • Prescribe corrective actions for BMPs and process • Identifying necessary corrective actions and follow-up on implementation	• Recommend stop work to the Village PM • Prescribe corrective actions for wetland features including the physical structure and native plantings
Dave Giordano Project Communications Root-Pike WIN	• Preparing draft budget, QAPP plan, schedule and edits • Communicating updates to the public/grantors • Assisting the Village in preparing bid documents	• Communicate the project to public and grantors

A6. Project/Task Description

Proposed Work

In 2013, the Village and Town of Somers received a grant from Fund for Lake Michigan to conduct an eco-hydrological analysis and restoration feasibility study of the entire Somers Branch of the Pike River, as well as site-specific restoration plans for two town-owned properties totaling just over 33 acres – including Neumiller Woods. Neumiller Woods Park has many areas that are still in pre-settlement condition, one of the few remnants in the area of active development. Surrounding development and upstream agricultural parcels have increased runoff pollution and flooding issues, contributing sediment and phosphorus to the Pike River. Wisconsin DNR supported this project and issued a letter of support.

The scope of work for the Neumiller Woods wetland scrape includes the creation of a 0.5-acre wetland depression to connect to the main tributary of the Somers Branch, replant the area with native vegetation, deposit the spoils within the park in a non-wetland area, re-vegetate the spoils and perform three years of maintenance on the area with a primary focus on the wetland plants.

The plans for this wetland scrape were completed in early 2014 with a construction estimate of $26,000; however, the Village and Town of Somers had not secured funding for project implementation. The Village and Town of Somers received another grant for $27,000 from the Fund for Lake Michigan to implement the project. In December of 2017, Root-Pike Watershed Initiative Network secured the remaining funds necessary to complete the wetland scrape along with three years of maintenance.

Partner Collaboration

Root-Pike Watershed Initiative Network (WIN) was formed more than two decades ago through a partnership with the DNR to address the under-served, highly-impaired Root-Pike basin. Their mission is to "Restore, protect and sustain the Root-Pike basin watersheds through funding and facilitation of a regional network of locally initiated projects." Root-Pike WIN is working with the Village and Town of Somers, and other communities, landowners, and stakeholders to fund and implement 9KE recommendations from three completed plans within the Root-Pike basin. In addition, Root-Pike WIN also conducts the outreach and education recommendations of the 9KE plans to demonstrate the public value of projects like Neumiller Woods. Their efforts are building public support for the projects and they have successfully competed for grants through the Fund for Lake Michigan and the Great Lakes Commission. DNR is supportive of their efforts and as indicated above, has provided a letter of support for previous phases of this project. The Neumiller Woods Park is a highly-visible property and successful completion of this project will be communicated in numerous media channels through Root-Pike WIN and the Village and Town of Somers.

B1. Primary Goals and Objectives

The purpose of the Neumiller Woods wetland scrape is to create more wetland habitat in an area that has become overrun with invasive species and sediment deposition. This relates to the recommendations within the Somers Branch Eco-hydrological Analysis and Restoration Plan (2014) and the Pike River Watershed Restoration Plan (2014). The achievement of the goals outlined in that plan would mean that conditions have improved such that plant and animal diversity are strengthened in a very unique and fragile segment of the Somers Branch of the Pike River. There are multiple projects identified in the Eco-hydrological Analysis. The first project was implemented with a newly sized culvert downstream of the railroad bed where flow was blocked. This second project builds on that removal of obstruction. More wetland work is planned in the neighboring Gitzlaff Park eventually. The goals of this phase include:

- Improved wetland functionality by removing sediment buildup to a non-floodplain area and increasing habitat heterogeneity.
- Setting up the circumstances to promote habitat for diverse and functional invertebrates and amphibians. could be
- A healthy and diverse native vegetation community has been restored in an area of reed canary grass.
- Tree plantings shall increase diversity where green ash trees are expected to die from Emerald Ash Borer damage.

In support of these goals, the objectives and related target criteria of this restoration are as follows:

- **Restore benthic habitats for use by invertebrates and native forage fish and amphibian species**
  - Relocate sediment buildup and relocate to non-floodplain areas in the park
  - Establish small populations of submergent native vegetation in the wetland scrape.
  - Increase biodiversity and within the emergent aquatic communities by establishing native plants to provide spawning habitat.
- **Establish healthy and diverse native vegetation communities.**
  - Restore/create community types threatened in the Pike River Ecological Landscape.
  - Install a variety of grasses, sedges, forbs, shrubs, and trees currently and historically found within this area of the Somers Branch and the Pike River watershed.
  - Invasive species should be controlled to the greatest extent possible within the wetland scrape area and the relocated spoils area outside of the wetland/floodplain.
- **Restore wetland habitat for use by invertebrates, amphibians, reptiles, mammals and birds.**
  - Native vegetation capable of providing a variety of food and cover will be established throughout the restored/created communities.
  - Downed woody debris will be placed in the emergent aquatic and wet meadow communities to provide sites for loafing and basking.
  - Bat houses will be erected to provide roosting sites.

- **Create awareness of how wetland restoration projects have multi-tiered benefits**
  - The project presents opportunities for public outreach, education, recreation, beautification, and connectivity with other nearby restoration projects. As a result of achieving the restoration objectives, the project will also increase wetland functional values significantly. This project is being conducted as one of the multiple projects concurrently planned for the South Branch of the Pike River. The overall goal is to contribute to delisting the Pike River from the 303d impaired waters list.

C1. Quality Control

a) Quality Control Procedures

To understand the role of Quality Control in the overall Quality Assurance/Quality Control (QA/QC) process, it is important to distinguish the terms Quality Control and Quality Assurance. Establishing Quality Assurance for this project is the overall purpose of this QAPP. Quality Assurance defines the successful project outcome based on the project's objectives, data inputs, available resources, and required technical skills. In contrast, Quality Control is the set of procedures used to check that the QA process is being followed and that the end product meets the standards established by the Quality Assurance Project Plan.

As is appropriate for most construction projects, Quality Control will be accomplished primarily through site reviews by the project manager and wetland restoration consultant through pre-construction team meetings, submittal reviews, plant inspections, and site surveys. The Village and Town of Somers' project manager and Thompson & Associates will be in contact with the General Contractor on daily basis to address questions or concerns. The Village of Somers' project manager and Thompson & Associates will document work on a weekly basis and will create weekly reports that will summarize the weekly activities completed. In addition to reviews and report generating, deliverables will be presented to the project management team (Village and Town of Somers, Thompson & Associates, and Root-Pike Watershed Initiative Network) for review and comment, providing another layer of QC for the project.

During site reviews, the Village and Town of Somers' project manager, Thompson & Associates' wetland restoration ecologist, and the Executive Director from Root-Pike WIN will inspect the site to verify compliance with all permits associated with this project. Then will meet with the General Contractor's site superintendent to discuss current activities and potential future activities. Thompson & Associates' wetland restoration ecologist will document what work has been completed and will photograph the site to document the site review. The site information obtained will be compiled and included in the weekly reporting.

At the project management team "check-in" meetings, work items that have been completed since the last meeting and upcoming work items will be discussed. During this meeting the Village and Town of Somers, Thompson & Associates, Root-Pike WIN and WDNR will discuss concerns any party has in regard to the work that is currently taking place, or for future work items. "Check-in" meetings will be scheduled in an agile manner to align with day-to-day progress and significant milestone activities.

Submittal reviews will be completed in accordance with Specification section 01 32 19, Submittals. Submittals will be sent to DNR for review on all items specified within the project specifications.

b) Special Training/Certification

Construction oversight personnel must be licensed in Wisconsin as a Professional Engineer (PE), have designation as an Engineer in Training (EIT), Restoration Ecologist, or by a Senior Engineering Technician with direct oversight by a PE, and have experience or training in construction observation, and ecological planting installation.

Environmental compliance personnel shall have had training in the principles and practices of erosion and sediment control measures, and possess the skill to assess conditions that could impact storm water quality, and to assess the effectiveness of any sediment and erosion control measures that are in use.

c) Documents and Records

Root-Pike WIN will set up a shared, but secure Google Docs site, which will be made accessible to all parties involved in the project and be updated, as necessary, with the most current approved versions of the project plan drawings, QAPP, and Erosion Control & Storm Water Management Plan, as deemed necessary by the project team. This site could also be utilized for dissemination of progress reports, audit reports, construction observation logs, and inspection records. An email notification shall be sent to personnel identified in the Distribution List upon upload of any updated plans. The Google Docs site will also provide templates for forms used by field personnel. In addition to the documents outlined below, additional submittals and documentations, as required by the technical specifications, shall also be prepared and distributed.

The following deliverables will be provided by the Village and Town of Somers:

- Provide final bid plans and specifications for the wetland scrape, relocation of the spoils, re-vegetation plan, and construction access and staging
- Final ecological restoration plan and specifications
- Final signed copies of all QAPPs (wetland restoration)
- Quarterly project progress reports
- Oversight of project—(construction records)
- Timely submittal of invoices
- Final construction documentation report (as built reports) of wetland ecological restoration.
- Ecological restoration monitoring, maintenance and invasive species control reports will be provided based on the final ecological restoration plans and specifications

Documentation will be prepared throughout the project by the responsible parties for the following:

1. Schedule, budget, and personnel details (Root-Pike WIN)
2. Conformance to project specifications (Thompson & Associates)
3. Construction quantities management (General Contractor)
4. Materials and equipment taken off-site and brought on-site (General Contractor)
5. Photographs and written records management (Thompson & Associates)
6. Materials utilized, including those plantings, and seed mixes placed (Thompson & Associates)
7. Site challenges and actions taken to address. (Thompson & Associates)
8. Maintenance plan (Thompson & Associates)

The documentation gathered during site construction, operations, and closure, including as-constructed drawings, will be assembled into a project documentation report that will be provided to the WDNR following cessation of construction and planting activities, in addition to each year of maintenance activities. Electronic copies of all items will be made available to the WDNR and the Village and Town of Somers.

Construction observation logs shall include details and photographs for weekly construction activities. These logs shall be retained for the duration of the project plus at least three years post-construction. Construction observation shall be used to produce reports that include documentation of all of the following:

1. Plant inspection reviews
2. Site preparation
3. Construction as-built drawings as part of a Construction Completion Report
4. Material quantities
5. Data will be recorded on the appropriate field forms or in field logbooks.

d) Procedures for Corrective Actions

During the construction and implementation portion of this project, the Village and Town of Somers, Thompson & Associates will work closely with the Contractor to ensure implementation follows the intent of the bidding documents. The project management team will work within the parameters of sound engineering/ecological procedures to adapt to changes in climate, water levels, plant availability, and other natural effects throughout the construction and ongoing monitoring and maintenance component of the project. The following are general parameters of the approval and implementation practices.

Contractor will submit a draft version of shop drawings and any other requests for interpretations to the Village and Town of Somers, Thompson and Associates, and DNR personnel for review and comment. The reviewer will provide comments and edits to Thompson and Associates for incorporation into the construction project and will discuss the comments as necessary to ensure clarity. The review process will be documented by maintaining edited copies and comments in the project file. Once formal approval is given for shop drawings, the contractor can move into implementation phase.

If changes in conditions require corrective action after the work has been finalized, the Village of Somers' Project Manager will convene a meeting of the project management team and notify them there is a need for corrective action. This team will identify the necessary actions to address the issue and prepare a formal response and it will be sent to Thompson and Associates and the General Contractor for implementation. Corrective actions will be made relative to attaining the same overall project goal as identified within this document and supporting habitat plan, design plans, and construction specifications.

As potential changes are encountered during the construction process, Thompson & Associates will notify Village and Town of Somers and the DNR of the item, and the Village and Town of Somers and the DNR will determine if the proposed alteration still falls within the proposed plans and specifications. Thompson & Associates will provide recommendations to the Village and Town of Somers, Root-Pike WIN and WDNR either through e-mail, telephone conversations, or at daily meetings. The Village and Town of Somers, Root-Pike WIN and WDNR will have time to review the proposed alteration recommendation or discommendation and will provide comments to Thompson & Associates.

Then Thompson & Associates will work with the General Contractor to address the change within a contract modification, amending the contract documents or will work to implement the specified items as detailed. The General Contractor and Thompson & Associates will ensure the Wisconsin Plant List FQA prefereed species that have been specified are correct and which ones are not available at the time of ordering. The FQA list can be found at: https://dnr.wi.gov/topic/wetlands/methods.html . If a species specified is available next year, Thompson & Associates will document the species and will direct the General Contractor to install these plants in 2018 once available again. If a species is not available, and is potentially not available in 2018, Thompson & Associates will notify WDNR of the species and will include additional seeds, plants, tress, or shrubs that are currently available to maintain the proper vegetative growth planned for each corresponding zone.

e) Performance Standards

Maintenance Plan

The maintenance plan developed by the contractor shall strive to obtain the performance standards that are identified in Section b) Performance Standards. The maintenance plan shall be a fluid document that will need to address unpredictable weather patterns such as drought, high waters, excessive prolonged heat, extreme weather, but not limited to these items, and potential remedies that will address each potential scenario to ensure the performance standards are reached. If extreme conditions persist beyond the reasonable expectation of a warranty, or extend beyond the warranty period, alternate funding sources may need to be identified to supplement planting deficiencies that may be a result of significant naturally occurring conditions. WDNR, Village and Town of Somers, Root-Pike WIN and Thompson & Associates will review and comment on the maintenance plan provided from the Contractor, to ensure that all possibilities are addressed within this document. Specifications attached within Appendix B discuss the maintenance plan requirements in further detail and clarification.

The below performance standards will be used to verify the success of the restored wetland and upland communities. Some of the standards will also help determine if the wetland is providing increased functional values.

Year 1

a. The wetland scrape in located in an area of reed canary grass and is intended to create more depth heterogeneity. Reed canary grass shall be reduced due to the removal of sod and increase in depth in the basin. Any new invasives – including giant reed grass, non-native cattail spp., or purple loosestrife be treated in the first year. Because reed canary grass is established in the system it is beyond our scope to eliminate it. However, tree and shrub plantings will reduce its dominance as reed canary grass thrives in high light levels.
b. After one year, >50% of the vegetative cover within the restoration site will be native species, <25% of the cover will be invasive, non-native species, except for reed canary grass which we expect to persist, however not in the basin area.
c. Eighty percent of the site will be vegetated within one year. Ponded areas may not re vegetate. Ephemeral wetlands often have bare areas due to ponding and low light levels.
d. 70 of the 100 planted shrubs and live stakes within the Shrub-Carr community will be present and healthy one year after installation.
e. The Open Water with Submergent and emergent Vegetation Community shall have a minimum of 10 native, non-invasive species present.

During the one-year warranty period, the General Contractor shall re-seed areas with poor germination and replace diseased, unhealthy, and dying plants. Prior to expiration of the one-year warranty period, follow-up inspection will be made to determine replacements required to be made by the General Contractor in accordance with provisions of the Plan Specifications. Thompson & Associates will document findings in field report, and forward copies to the General Contractor. Items identified for replacement will be tagged during inspection with plastic flagging. Decision of Thompson & Associates for required replacements is final and binding upon General Contractor. The General Contractor is responsible for repairing damage to property caused by defective workmanship and materials.

The General Contractor is not liable for replacement cost of seeds and plants damaged by extreme weather conditions and for plants not installed by the General Contractor under the General Contractor's supervision, by relocation or removal by others, by acts of God, or by vandalism, and losses because of curtailment of water by local authorities. If any of the above-mentioned items occur and the ecological plantings or seeding needs to be installed, the General Contractor will work with Thompson & Associates to determine costs associated with the item. It will be at the discretion of WDNR and Village and Town of Somers to determine if any remediation work will occur at additional costs.

Year 2

a) Aerial coverage of invasive, non-native species such as giant reed grass, , cattail spp., purple loosestrife, buckthorn, garlic mustard, teasel and spotted knapweed will not be >10% absolute cover after two years. Reed canary grass is inhibited by creating the basin and planting trees and shrubs to block light.
b) After two years, >80% of the vegetative cover within the restoration site will be native species, <25% of the cover will be invasive, non-native species.
c) The basin will take on the characteristics of an ephemeral pond- 80% of the site will be vegetated within two years, however ephemeral ponds can have bare areas due to ponding and low light levels.
d) 70 of the 100 planted shrubs and live stakes within the Shrub-Carr community will be present and healthy two years after installation. If predation is a factor- steps will be taken to guard other plantings.
e) The Open Water with Submergent Vegetation and emergent Community shall have a minimum of 12native species present.
f) Currently the entire site has a species richness of 116, mean C value of 2.2 and FQI is 23.3 (Neumiller Woods Stewardship Plan, 2012). The area around the scrape however has lower diversity as it is located within an open area with reed canary grass cover. The species richness, mean C and FQI shall be measured in the restoration area before construction. To ensure the restored communities have natural significance, the species richness, floristic quality index (FQI) and Coefficient of Conservatism (Mean C) for each shall be > increase from pre-construction values after two years. FQI values will be calculated utilizing all species present: non-native species will be assigned a value of zero.
g) If the budget is available, a summer survey of invertebrates and fish shall be undertaken to document the effectiveness of the habitat restoration under the direction of Dr. Tim Ehlinger (UWM).

h) The Town of Somers shall continue to monitor the railroad culvert to remove debris and facilitate flow downstream.
i) Community partners shall install bat houses in Neumiller Woods.

Year 3

a) Aerial coverage of invasive, non-native species such as giant reed grass, , cattail spp., purple loosestrife and spotted knapweed will not be >10% absolute cover after three years. Reed canary grass is inhibited by creating the basin and planting trees and shrubs.
b) After three years, >85% of the vegetative cover within the restoration site will be native, non-invasive species, <15% of the cover will be invasive, non-native species.
c) Ninety percent of the site will be vegetated within three years.
d) 70 of the 100 planted shrubs and live stakes within the Shrub-Carr community will be present and healthy three years after installation.
e) The Open Water with Submergent and Emergent Vegetation Community shall have a minimum of 15 native, non-invasive species present.
f) Vegetation shall be monitored and species richness, FQI and Mean C shall be recalculated. The before and after calculations shall document increased vegetation richness.
g) A spring amphibian survey shall be implemented in either the 2nd or third year and we will document any reptileand amphibian, usage either through direct observation, calls or sign left by the species. The fish, invertebrate, and amphibian habitat data shall be shared with all partners in order to gage the ability of the system to harbor species.
h) The Town of Somers shall continue to monitor debris in the railroad culvert and remove debris to facilitate connection downstream.

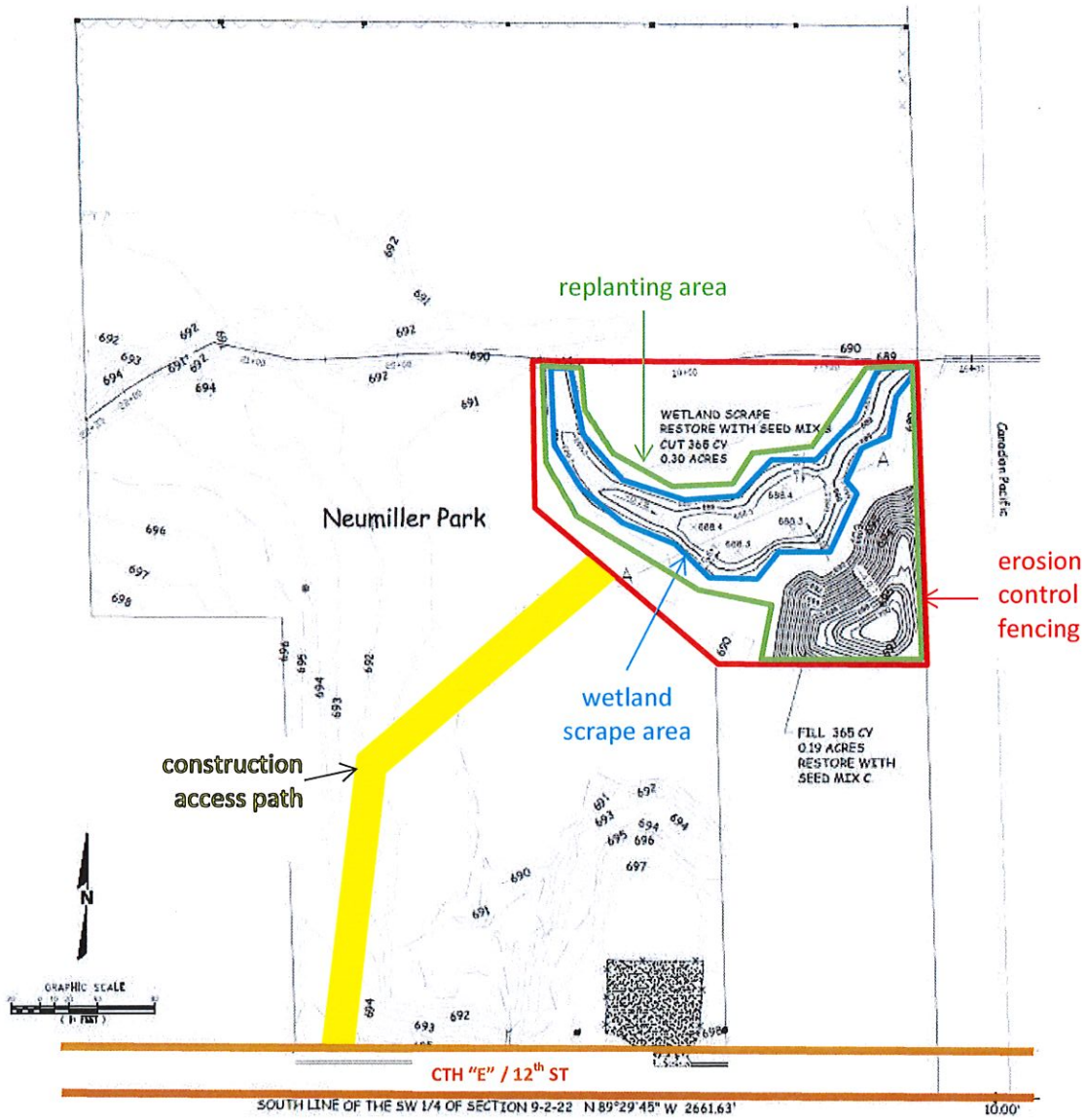
After Year 3

The Village and Town of Somers will be responsible for maintaining the habitat restoration area. The Village and Town of Somers will work with Root-Pike Watershed Initiative Network and WDNR to continue with long-term maintenance activities to help limit invasive species from reestablishing, ensure habitat structures are viable for fowl, and to help protect the revitalization of the Neumiller Woods habitat.

Site Utilization Plan

The Contractor is under contract to perform year zero, 1, 2, and 3 of the longer-term maintenance plan. Work will begin when wetland conditions permit the use of heavy equipment.

Figure 2. Site Utilization Plan



It should be noted that there are two levels of performance standards identified within this document. The performance standards identified within the project specifications correlate to the standards that are expected to be reached by the installation contractor. These levels would be reviewed in association with a one-year warranty period. Additional standards apply to the ongoing monitoring and maintenance component of the project for the remaining three years of maintenance. Due to available funding the installation contractor has also been contracted to perform additional ongoing monitoring and maintenance. These guidelines and specifications are identified within the project plan, and identify proposed actions to be provided, and performance goals to be reached including plant retention, invasive species removal, and physical structure upkeep. The performance goals are also identified within Section E1 of this plan.

During the continued efforts of the monitoring and maintenance components of this project, the General Contractor will work with the Village and Town of Somers, Thompson & Associates and WDNR staff to become accustomed to the tasks they are likely to take on going forward. The General Contractor and Thompson and Associates will provide a visual maintenance plan to identify which plants are new and which ones are existing. The General Contractor is performing the three-years of monitoring and maintenance as part of their contract duties. Root-Pike WIN will play a significant role in the success of long-term maintenance of the habitat area, supplemented with professional assistance as deemed necessary by the Village and Town of Somers, WDNR and other stakeholders.

f) Data Review, Verification, and Validation

Upon receipt of observation and inspection reports, the QA/QC manager shall conduct a 100% completeness check to ensure all necessary information has been provided. Instances where information is missing shall be raised to the report compiler for resolution. If items are outside the specified restrictions for the material, results will be flagged, and the project team will investigate provide alternate resolutions. All resolutions will be documented.

g) Verification and Validation Methods

Throughout the project, Thompson & Associates will perform site reviews to document incremental progress on the project that can be compared with the General Contractors reported progress. In isolated areas, discrepancies in documentation will be reconciled on a case-by-case basis.

h) Inspection/Acceptance of Supplies & Materials

Thompson and Associates will be on-site to view supplies and materials delivered to the site. Thompson and Associates will validate that supplies and materials brought to the site meet the requirements of the specifications. During live plant stock delivery, Thompson and Associates will be on-site to view the plants delivered to the site to verify plant materials conform to contract documents with respect to quantity, quality, size, species, upright, green, healthy condition, and disease free. Once materials are installed on-site, Thompson and Associates will verify proper installation and location.

D1. Project Schedule

As a restoration project involving establishing plant communities, the timeline for this project is highly dependent on weather and the timing of the contracting processes.

The anticipated project duration is June1, 2018 through October 1, 2021.

Major Milestones	
Design Completion	December 31, 2017
Permit Approval	March 28, 2018
Construction Completion	September 30, 2018
First-Year Vegetation Maintenance	October 1, 2019
Second-Year Vegetation Maintenance	October 1, 2020
Third-Year Vegetation Maintenance	October 1, 2021
Final Report and Invoicing	December 30, 2021

Table 2. Estimated Construction Schedule*

2018	J	F	M	A	M	J	J	A	S	O	N	D
Develop Aid Agreement												
Permit Application												
Re-bid Project												
Bid Review and Contracting												
Site Construction												
Initial Vegetation Establishment												

** The critical path items are the permit application and the site construction. Site construction is highly dependent on weather conditions as the Neumiller Woods area is often very wet. The actual construction activities will take days rather than months, but the proposed timeframes are indicated in months to allow for slots in the schedule when site work can actually occur.*

E1. Site Maintenance and Vegetative Growth Goals

Site Maintenance

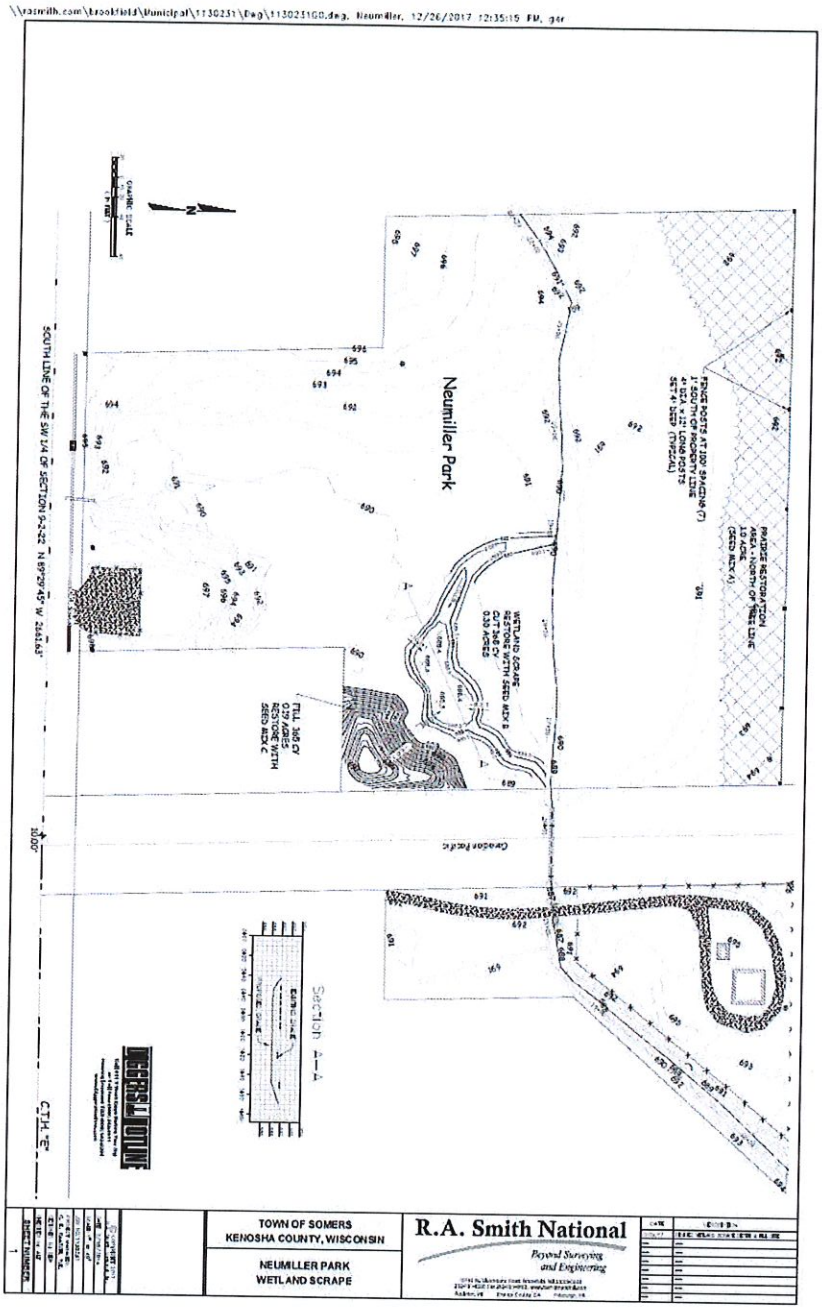
With regard to the long-term measurement standards for success, the Village of Somers will work together with the Thompson & Associates to implement a maintenance plan closely based on what is described earlier and summarized below:

Year One Performance Standards
This section applies to the first full growing season after wetland and upland establishment. For fall plantings it is the following growing season and for spring plantings it is the current growing season. Upland cover species should be present over the entire site by the end of the growing season.

Year Two Performance Standards
This section refers to the second full growing season of wetland and upland establishment. The site should have 50% cover of native grasses/sedges or native forbs. There should be no more than 20% cover of exotic, non-native invasive vegetation excluding reed canary grass.

Year Three Performance Standards
The restoration area should have 70% cover of native grasses/sedges and native forbs. There should be no more than 20% cover of exotic, non-native invasive vegetation excluding reed canary grass. Note that some species may not be visibly established in the first 5 years.

Appendix A – Construction Documents



Appendix B – Construction Specifications

Wetland Scrape Seed Mix

Wetland Restoration			
Wetland Cover			
barnyard grass	*Echinocloa crus galli*	2 lbs/acre	2 lbs/acre
Wetland Sedges and Grasses			
Common Name	Species	Rate lbs/acre	Total lbs
brown fox sedge	*Carex vulpinoidea*	0.5	0.5
Virginia wild rye	*Elymus virginicus*	2	2
fowl manna grass	*Glyceria striata*	0.5	0.5
rice cut grass	*Leersia oryzoides*	0.5	0.5
green bulrush	*Scirpus atrovirens*	0.5	0.5
river bulrush	*Scirpus fluviatilis*	1	1
wool grass	*Scirpus cyperinus*	0.5	0.5
bur reed	*Sparganium eurycarpum*	0.5	0.5
Total pounds:		**6**	**6**
Wetland Forbs			
Common Name	Species	Rate in ounces	Total oz
swamp milkweed	*Asclepias incarnata*	1	1
New England aster	*Aster novae-angliae*	1	1
marsh aster	*Aster simplex*	1	1
Joe pye weed	*Eupatorium maculatum*	1	1
Sneezeweed	*Helenium autumnale*	1	1
blue flag	*Iris versicolor*	1	1
cardinal flower	*Lobelia cardinalis*	0.5	0.5
great blue lobelia	*Lobelia siphilitica*	0.5	0.5
Monkey flower	*Mimulus ringens*	1	1
ditch stonecrop	*Penthorum sedoides*	0.5	0.5
pinkweed	*Polygonum pensylvanicum*	2	2
mountain mint	*Pycnanthemum virginianum*	0.5	0.5
Cup plant	*Silphium perfoliatum*	3	3
late goldenrod	*Solidago gigantea*	0.5	0.5
grass leaved goldenrod	*Solidago graminifolia*	0.5	0.5
blue vervain	*Verbena hastata*	1	1
Total ounces		**16**	**16**

Appendix B – Construction Specifications

Spoils Area Seed Mix

Neumiller Woods- Spoils adjacent Parking Lot			
Woodland Restoration			
Cover in lbs/acre:			
Oats	*Avena sativa*	5	5
annual rye	*Lolium multiflorum*	5	5
Woodland/Prairie Grasses:			
Common Name	Species	Rate lbs/acre	Total lbs
Canada wild rye	*Elymus canadensis*	2	2
bottlebrush grass	*Elymus hystis*	1.5	1.5
Silky wild rye	*Elymus villosus*	1.5	1.5
Virginia wild rye	*Elymus virginicus*	2	2
fowl manna grass	*Glyceria striata*	0.5	0.5
Switch grass	*Panicum virgatum*	1	1
Total pounds:		**8.5**	**8.5**
Native Forbs:			
Common Name	Species	Rate in ounces	Total oz.
white snakeroot	*Eupatorium rugosum*	2	2
pale-leaved woodland sunflower	*Helianthus strumosus*	1	1
Bergamot	*Monarda fistulosa*	3	3
Black-eyed susan	*Rudbeckia hirta*	3	3
sweet black eyed susan	*Rudbeckia subtomentosa*	3	3
brown eyed susan	*Rudbeckia triloba*	3	3
spiderwort	*Tradescantia bracteata*	2	2
Total ounces		**17**	**17**