Project Name: Millers Creek Regional Detention at Thurston Pond

Project Location (Primary County): Washtenaw Waterbody Type(s): Pond

Waterbody Name: Millers Creek HUC Code: 04090005

Project includes/impacts TMDL or 303(d) listed waters Yes (select one)

Project includes Phase 2 storm water areas Yes, more than 1/3 of project area (select one)

Organization Name: Washtenaw County

Organization Address: (street name and #) 220 N. Main St

(city, zip code) Ann Arbor 48107-8645

Organization FAX #: 734-994-2459 Organization Phone: 734-222-6851

Contact Person: Harry, Sheehan

(name)(title)

Contact’s E-Mail: sheehanh@ewashtenaw.org

Grant Type:

☐ Developing an approved watershed management plan.
☒ Implementing an approved watershed management plan.
☒ Implementing an approved watershed plan developed under a Phase 2 storm water permit.

Watershed Plan Name: Millers

Watershed Plan is approved No Date(s) of approval Update pending

Grant Amount Requested: $89,000 + Local Match: $29,761 = Project Total: $118,761

Senate District Number(s): 18

Representative District Number(s): 53

Person w/ Grant Acceptance Authority: (name) Janis Bobrin, (title) Drain Commissioner

Signature: ____________________________ Date: ____________________
Project Name: Millers Creek Regional Detention at Thurston Pond
Project Location (Primary County): Washtenaw Waterbody Type(s): Pond
Waterbody Name: Millers Creek HUC Code: 04090005
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Project includes Phase 2 storm water areas Yes, more than 1/3 of project area (select one)
Organization Name: Washtenaw County
Organization Address: (street name and #) 220 N. Main St
(city, zip code) Ann Arbor 48107-8645
Organization FAX #: 734-994-2459 Organization Phone: 734-222-6851
Contact Person: Harry, Sheehan
(name)(title)
Contact's E-Mail : sheehanh@ewashtenaw.org
Grant Type:
☐ Developing an approved watershed management plan.
☒ Implementing an approved watershed management plan.
☒ Implementing an approved watershed plan developed under a Phase 2 storm water permit.
Watershed Plan Name: Millers
Watershed Plan is approved No Date(s) of approval Update pending
Grant Amount Requested: $84,380 + Local Match: $84,381 = Project Total: $168,761
Senate District Number(s): 18
Representative District Number(s): 53
Person w/ Grant Acceptance Authority: (name) Janis Bobrin, (title) Drain Commissioner
Signature: __________________________________ Date: ____________________

(Official use only)
Received: ______ DEQ District: _____ Tracking code: ______________
This is page 1 of all proposals. Continue on the next page
The Nonpoint Source (NPS) Pollution Program requires certain standards to be followed. To meet these requirements, applicants must indicate compliance by initialing each statement below. Failure to agree to any of these requirements will render the application ineligible.

For Implementation Projects:

- Applicant confirms that the proposed project is in a watershed with a plan approved as meeting the United States Environmental Protection Agency (USEPA) 9 Minimum Measures for Watershed Planning or that these elements will be addressed prior to the end of the project. 
- Applicant agrees that the proposed project is in compliance with all applicable state laws and rules or will result in compliance with state laws and rules. 
- Applicant agrees that they are willing to follow NPS Program site plan procedures (meaning that engineered plans will be submitted to a NPS Program Engineer for review and approval prior to the implementation of Best Management Practices). 
- Applicant agrees that all applicable permits will be obtained prior to the implementation of the site plan. 
- Applicant commits to conducting an evaluation of the effectiveness of the project, including a commitment to provide monitoring data or other information that documents improvement in water quality, the reduction of pollutant loads, or other project outcomes.
- Applicant agrees to follow Quality Assurance/Quality Control procedures for any water quality monitoring or social surveys conducted as part of the project.

For Planning Projects:

- Applicant agrees to follow State and Federal Guidance for watershed planning (the final watershed management plan will meet the funding requirements under both the Clean Michigan Initiative (CMI) rules and Section 319 guidance). 
- Applicant commits to conducting an evaluation of the effectiveness of the project, including a commitment to provide monitoring data or other information that documents improvement in water quality, the reduction of pollutant loads, or other project outcomes.
- Applicant agrees to follow Quality Assurance/Quality Control procedures for any water quality monitoring or social surveys conducted as part of the project.
**Millers Creek Regional Detention at Thurston Pond**

**Project Description**

**A. Statement of Water Quality Concerns/Issues**

Millers Creek has a 2.4 square mile watershed and is the smallest named tributary of the Huron River. The Millers Creek watershed, located mostly in Ann Arbor, is in the contributing basin of several waterways with established pollutant budgets set by the DEQ – Total Maximum Daily Loads (TMDLs). One TMDL is for phosphorus in Ford and Belleville Lakes, and the other is for *Escherichia coli (E. coli)* in Geddes Pond, at the mouth of Millers Creek, on the Huron River.

Land use within Miller Creekshed is 44% high-density residential; 27% Institutional (University of Michigan, Ann Arbor Public Schools); 21% Commercial/Industrial; 7% recreational/vacant/utilities.

Thurston Pond is an 8.4-acre shallow pond at the headwaters of Millers Creek. Originally a meadow, the pond was constructed as a natural area for the Bromley and Orchard Hills neighborhoods when constructed in the early 1970s. The neighborhood storm sewer network carries most of the drainage around the pond and very quickly (without upstream detention) to the first open channel reach in Millers Creek.

During the summer, the downstream reach is often stagnant and consistently having the highest phosphorus and *E. coli* concentrations found in the creekshed.

Over time, with lack of flushing, the occasional untreated storm sewer discharge, and direct drainage from adjacent yards, the pond has been experiencing eutrophication. The pond has been slowly disappearing and in the summer the water column is dominated by algae. The pond used to be part of the environmental education curriculum of adjacent Thurston Elementary School. But over the last several years the decline in density and diversity of aquatic life has prompted the Ann Arbor School District to take the pond off their list of field trip sites. Thurston students are now bussed to other pond sites.

In April of 2004, the Millers Creek Watershed Plan was completed that set recommendations to improve stream habitat and watershed hydrology, improve recreational and educational activities and help local stakeholders achieve the objectives of the Ford and Belleville Lakes TMDL.

Since 2004 several elements of the plan have been implemented (summary attached). An advisory team has been established and meets monthly to coordinate implementation activities. Thus far, many activities have been initiated, including tree planting, a planned floodplain and stream bank
restoration, and several rain gardens have been installed. A highly successful education initiative, the Millers Creek Film Festival, was held in 2006 and will be repeated in 2007. A more complete summary can be found in the attached document “Improvement Plan Implementation”.

**B. Project Goals and Objectives**

**Goal** – To improve water quality, reduce the frequency and intensity of storm flow in Millers Creek.

**Objectives**

- Provide retrofit detention for 38 acres (126 parcels) of high-density residential land. Events 1.5” and less will be detained.
- Provide primary treatment of storm water from these 126 parcels via a proprietary swirl concentrator to reduce annual total suspended solid (TSS) load by 6620 pounds per year, and phosphorus load by 25-37 pounds per year.
- Construct two residential rain gardens capable of retaining the first flush volume of each garden’s contributing area.

Objectives will be achieved by installing a pipe diversion inside an established right-of-way to re-route storm water runoff from the targeted 38 acres to Thurston Pond. That runoff currently drains directly to Millers Creek. At the diversion location, a swirl concentrator sufficient to remove TSS and phosphorus necessary to meet stated objectives will be installed.

Two hundred-eighty linear feet of storm sewer will be installed to connect the swirl concentrator to the pond. A combination of open cut, directional drilling and possibly, bore & jack methods may be applied in order to minimize cost, soil disturbance and existing vegetation. These tasks are recommended in the Miller Creek Watershed Improvement Plan task 8.3.2 (1c), Page 86.

The pond outlet will be modified via an existing 319 grant (2005-0114); that activity is not included in this application.

Two residential rain gardens will be constructed on private property in the Bromley and Orchard Hills area to interpret and reinforce the significance of the larger pond restoration for the entire neighborhood association. A program to construct residential rain gardens is already in place at the Office of the Washenaw County Commissioner. These gardens may also act as interpretive sites for the Ann Arbor School District, which is planning to utilize the Thurston Nature Area as a study site. This task is recommended in the Miller Creek Watershed Improvement Plan, Page 105.

Over the course of an assumed 20 year life cycle, load reductions will be 132,400 lbs and 540 lbs for TSS and phosphorus, respectively. Considering the cost proposal attached, this equates to $1.27/lb for TSS, and $313/lb for phosphorus over the 20 year time frame. Aside from the reduction in TSS and phosphorus, detaining runoff will improve hydraulic dynamics in the
downstream reach via extended detention and slow release over a 2-3 day period after a storm event.

The stated goal and objectives complement similar efforts including basin retrofits being constructed in Malletts Creek, and being studied in Allen’s Creek, as well as the County’s ongoing rain garden program. Together, these projects seek to provide nonpoint TSS and phosphorus reductions proscribed in the Ford/Belleville Lakes TMDL. Various nutrients and metals are treated concurrently and a more natural flow regime is established.

C. Organization Information

The mission of the Office of the Washtenaw County Drain Commissioner is to provide for the health, safety and welfare of Washtenaw County citizens and the protection of surface water and the environment and to promote the long term environmental and economic sustainability of Washtenaw County by providing storm water management, flood control, development review and water quality programs.


Additionally, the Rules of the WCDC for storm water management are a recognized model for post-construction runoff control and have been adapted for use by Livingston and Wayne Counties, and eleven other local communities.

Project Staff

Harry Sheehan, Environmental Manager – Harry Sheehan is a Senior Environmental Manager and holds a Masters Degree in Natural Resources. He has managed several relevant DEQ-funded projects including the Impervious Surface Reduction Study (GLPF), Northeast Area Park Storm Water Demonstration Project (2000-0067), and all grant programs mentioned above.

Janis Bobrin, Drain Commissioner – Janis Bobrin has served as Washtenaw County’s Drain Commissioner since 1988. In addition to her commitments to the County, Ms. Bobrin has served in an advisory capacity to many local and state-wide organizations. Most recently she has served on MDEQ’s Environmental Advisory Council (2004-2006), President of the Michigan Association County Drain Commissioners (2003-2005), and Chair of the Huron River Watershed Council (1999-present).
D. Partners & Related Funding

CMI

The Ann Arbor Public School District applied for and received a Clean Water Act 319 pass through grant from the Department of Environmental Quality for the Thurston Pond restoration. That restoration work plan included a provision to divert the flow of storm water runoff from Yorktown Drive, thereby increasing discharge into the pond. A pre-treatment swirl concentrator was proposed for the Yorktown location. A subsequent survey of the area demonstrated that the proposed modifications at Yorktown would be problematic.

This grant proposes a substitute source of storm flow from Bluett Road, and would allow the restoration to proceed. The flow diversion at Bluett Road requires a larger swirl concentrator than provide for in the 319 project, and pipe installation at a greater depth.

Should the DEQ choose to fund this proposal via the Clean Michigan Initiative, it is assumed that the 319 contract with AAPS would be amended to provide the swirl concentrator and design engineering as match.

Rain Gardens will be designed and installed via the County’s Phase II stormwater implementation program. This program includes annual funding for ten rain garden installations countywide.

319

Should 319 be utilized as a funding source, all match will be provided by the County and will not be the same monies used for any grant or match in grant the existing grant (2005-0114). The swirl concentrator will be purchased and delivered via the 319 grant, but will not be used as eligible match in this proposal. Design costs will be shifted to a grant obligation.

E. Project Sustainability

In order to complete the diversion, a permit will be required from the city of Ann Arbor. Once completed, the new infrastructure will, by regulation, be integrated into the City’s storm sewer network. Maintenance of the pipe system and periodic cleanout of the swirl concentrator will become an obligation of the City of Ann Arbor, funded via their storm water utility. Currently the City maintains six swirl concentrators within its jurisdiction.

No land use conflicts exist according to the Ann Arbor Planning Department and the Northeast Ann Arbor Area plan.

F. Evaluation

The project will be evaluated based on the measurable objectives:
Objectives

1. Provide retrofit detention for 38 acres (126 parcels) of high-density residential land. Events 1.5” and less will be detained.
   - Design and as-built drawings will identify the volume of storage and the corresponding event capacity of Thurston Pond detention in inches of runoff.

2. Provide primary treatment of storm water from these 126 parcels via a proprietary swirl concentrator to reduce annual non-phosphorus load by 25-37 pounds per year.
   - Post construction water quality sampling is a requirement of the 319 restoration grant already in place. These data can be extrapolated to provide an expected annual phosphorus removal rate. If needed, dry weight measurements of TSS can be taken as swirl concentrators are emptied during routine maintenance. Phosphorus removal can be measured directly, or estimated based on the correlation between TSS and phosphorus. Note: maintenance will occur long after grant closeout.

3. Construct two residential rain gardens capable of retaining the first flush volume of each garden’s contributing area.
   - Volume of storage for each rain garden will be constructed based on the first flush runoff volume of the contributing area (1815 * runoff coefficient * acreage). Construction drawings will be provided.

G. Project Summary

Millers Creek is a 2.4 square mile catchment located in Ann Arbor. Urban land uses dominate the landscape: residential, commercial and institutional. The Creekshed is located within both Phase I and Phase II NPDES storm water communities, and is within the contributing basin of the Ford and Belleville Lakes phosphorus TMDL, and the Geddes Pond *coli TMDL.

The project goal of improving water quality, and reducing the frequency and intensity of storm water flows will be met by adding retrofit detention at Thurston Pond, a community owned nature area. Some 126 parcels that currently drain directly to Millers Creek will be served. Stormwater pre-treatment will be provided using a swirl concentrator. Residential rain gardens will be constructed to better interpret and reinforce the larger pond restoration objectives.

This project is recommended by the Millers Creek Watershed Improvement Plan, completed in April 2004. This plan is CMI approved.
Millers Creek Regional Detention at Thurston Pond
Work Plan

Task 1  Design
Responsible Party: Harry Sheehan, Environmental Mgr.
Percent of Time: 30

The Millers Creek Watershed Improvement Plan includes a calibrated hydrologic/hydraulic model that will be used in designing the proposed changes to the pond inlet. The design will maximize the discharge of completely treated storm flows into the pond, while maintaining approximately the average historic water level (± 1-foot), along with more frequent, but small (~1 ft) fluctuations.

A survey has been completed. A basis of design report will be prepared and submitted for DEQ review. This report will detail the H/H model results for the first flush, 1-year, 2-year, 10-year and 100-year design events. It will also include a summary of the pre-construction monitoring results, the proposed design, as well as projected flow reductions. The design will be an attempt to balance available resources with hydraulics, sedimentation, biology, ecology, and maintenance/accessibility needs. All local, state and federal permits will be prepared and submitted as part of this task.

Engineering plans shall be submitted for DEQ for a 9 week review. Construction shall not begin without DEQ approval. Construction documents will be prepared and the project will be competitively bid.

Deliverables:
1. Basis of Design Report
2. Completed permit applications
3. Construction documents
4. Contractor Qualification Forms (Engineering and Construction)

Task 2  Storm Water Diversion Construction
Responsible Party: Harry Sheehan, Environmental Mgr.
Percent of Time: 30

This task includes site layout, surveying, and construction administration, including submittal review and engineering. At substantial completion, as-built drawings will be prepared and submitted to MDEQ grant staff.

Deliverables:
1. As-built drawings
**Task 3**  
**Rain Garden Construction**

Responsible Party: Harry Sheehan, Environmental Mgr.  
Percent of Time: 35

The offer to assist and support rain garden installation will be advertised via the homeowners association and possibly through a newspaper article. After two viable sites have been found and property owners have committed, the construction phase will begin. Property owners will be involved in all aspects of construction:

- Meet with Homeowner on site
- Site and size individual gardens based on first flush capture of contributing area
- Calculate individual rain garden square footage, depth, and volume of storage.
- Submit general plans and storm water calculations (a site plan page is not included as no specific sites have been identified).
- Test for sufficient infiltration capability. This will be accomplished by digging several test depressions in the rain garden location, filling with water, and insuring adequate infiltration in 12-24 hours
- Design planting zones, number and species of plants needed
- Review plans with homeowner
- Dig garden
- Install amendments and plant materials
- Direct flow into rain garden

**Deliverables:**
1. Plans: One page plan sheet showing, contributing area runoff calculations, layout, size (SF & depth), volume of storage. One page planting plan.
2. Before and After photos

**Task 4**  
**Administration**

Responsible Party: Harry Sheehan, Environmental Mgr.  
Percent of Time: 5

Manage day-to-day project activities and be the central point of contact between partners.

**Subtask A** – Develop and submit status reports following ESSD guidance each quarter. Reports will be submitted within 30 days of the end of each quarter

**Subtask B** – Provide draft and final products and deliverables in both hard copy and electronic format. A minimum of five (5) hard copies and one electronic copy of all final products and deliverables will be submitted to the DEQ.
**Subtask C** – Develop and submit a draft final report and a final report following ESSD guidance, at least 45 days prior to the end of the project. Incorporate DEQ comments and submit final report within 30 days of the end of the grant.

**Subtask D** – Submit a release of claims statement on letterhead with the final report.

**Subtask E** – Submit in both hard copy and electronic format a draft and final project fact sheet utilizing the ESSD template. The draft project fact sheet is due 30 days prior to the end of the project. The final project fact sheet will be submitted with the final report.

**Subtask F** – Submit an electronic copy of all before and after photos and other project-related photos with the final report.

**Deliverables:**

1. Quarterly reports
2. Five hard copies of all deliverables, on electronic copy of all deliverables.
3. Draft and final project report
4. Project fact sheet
5. Release of claims statement
## Millers Creek Regional Detention at Thurston Pond

**Proposed Timetable**

<table>
<thead>
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<th>Task</th>
<th>Oct-Dec 07</th>
<th>Jan-Mar 08</th>
<th>Apr-Jun 08</th>
<th>Jul-Sep 08</th>
<th>Oct-Dec 08</th>
<th>Jan-Mar 09</th>
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<tr>
<td>Task 2 Construction</td>
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<td>Task 3 Rain Garden</td>
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<td>Task 4 Administration</td>
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### Table 7.1 Costs and Proposed Implementation Schedule for Recommended Improvement Opportunities

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Priority</th>
<th>Activity</th>
<th>Responsibility</th>
<th>Schedule (Year)</th>
<th>Status</th>
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<td>Create Millers Creek Drainage District</td>
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<td>2</td>
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<td>Tree planting</td>
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<td>Reforestation</td>
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<td>UM Yellow Lots (NC53) detention creation at Huron Parkway</td>
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<td>6 3</td>
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<td>Michigan League/Dean Road detention creation</td>
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<td></td>
<td>Priority streambank stabilization</td>
<td>WCDC</td>
<td>X X X X</td>
<td></td>
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<tr>
<td>9,10 3</td>
<td></td>
<td>Priority bed stabilization</td>
<td>WCDC</td>
<td>X X X</td>
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<tr>
<td>9,10 3</td>
<td></td>
<td>Priority in-stream habitat improvements</td>
<td>WCDC</td>
<td>X X X</td>
<td></td>
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<tr>
<td>6,8,11 3</td>
<td></td>
<td>Non priority channel stabilization and habitat improvements</td>
<td>WCDC</td>
<td>X X X</td>
<td></td>
</tr>
<tr>
<td>1 1</td>
<td></td>
<td>Clague Middle School - storm sewer disconnect</td>
<td>AAS</td>
<td>X</td>
<td>Pending</td>
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<tr>
<td>2 2</td>
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<td>Ave Maria Bio-swale</td>
<td>Private/ WCDC</td>
<td>X</td>
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</tr>
<tr>
<td>6 2</td>
<td></td>
<td>Bioswale/UM Plant Services Storm Sewer Disconnect</td>
<td>UM</td>
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<tr>
<td>5,13 3</td>
<td></td>
<td>Stream Daylighting</td>
<td>WCDC</td>
<td>X X X</td>
<td></td>
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<tr>
<td>14 2</td>
<td></td>
<td>Ruthven Nature Area Access</td>
<td>AAPR</td>
<td>X</td>
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</tbody>
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**ANNUAL PROJECT COSTS**

- $497,720
- $262,600
- $2,694,622
- $3,148,044
- $3,015,114
- $2,070,968
- $1,838,397
- $943,858
- $891,752

**Notes:**

1 = First priority - Item is either on-going, low effort/high return or critical
2 = Second priority - Item is medium effort or short to mid-term need
3 = Third priority - Item is high effort or long-term need.
INDEPENDENT AUDITORS' REPORT

February 7, 2006

To the Drain Commissioner of
Washtenaw County
Ann Arbor, Michigan

We have audited the accompanying financial statements of the government activities and the aggregate fund information of the Washtenaw County Drain Commissioner, a component unit of Washtenaw County, Michigan, as of and for the year ended December 31, 2005, which collectively comprise the basic financial statements, as listed in the table of contents. These financial statements are the responsibility of the management of the Washtenaw County Drain Commissioner. Our responsibility is to express opinions on these financial statements based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinions.

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the government activities and the aggregate fund information of the Washtenaw County Drain Commissioner as of December 31, 2005, and the respective changes in its financial position for the year then ended, in conformity with accounting principles generally accepted in the United States of America.

The Washtenaw County Drain Commissioner has not presented Management’s Discussion and Analysis as required supplementary information. The GASB has determined that such information is necessary to supplement, although not required to be part of, the basic financial statements.

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[Signature]