



Forest Lake Stormwater Filtration Retrofit (Hilo Lane)

Project ID Number: PRJ06792-003

Executive summary

Problem

- Forest Lake is located within the City of Forest Lake, roughly one mile east of Highway 35. The lake outlets at the north end of the westernmost basin into the Sunrise River, where it eventually flows through Comfort Lake toward the St. Croix River.
- Forest Lake is not currently listed as impaired.
- Though the lake currently meets state standards, there are periods during the growing season when phosphorus and secchi depth standards are exceeded. This project will help meet the District's long term goal of achieving a summer average in-lake concentration of 30ug/L of phosphorus, continuing to improve the lake's water quality and prevent any further degradation.
- A major contributor to the phosphorus load in Forest Lake is urban runoff.
- Neither a Total Maximum Daily Load (TMDL) nor Watershed Restoration and Protection Strategies (WRAPS) were completed.

Waterbody improved

- This project will complete excavation and reshaping of an existing stormwater treatment feature and add an iron-enhanced sand filtration bench to the existing feature for increased stormwater treatment. The project will also reshape and stabilize the actively eroding channels that convey runoff from a 14-acre area to the treatment feature. Additionally, the project will include a shoreline stabilization piece to address issues related to erosion on Forest Lake where the stormwater feature outlets.
- As of July 2016, construction of the project is not complete. Once finished, the project will result in an 11.9 lb/yr reduction of phosphorus to Forest Lake, subsequently resulting in improved water quality.

Project highlights

- The three major components of the project include the retrofitted stormwater facility, stabilized conveyance channels, and restored shoreline.
- The City of Forest Lake was a major partner in this project as they had input on project design and construction specs. The City also played a role in easement acquisition.
- Outreach activities and project design began in summer 2013. The District encountered some setbacks with land acquisition, causing that stage of the project to take up the majority of 2014 and some of 2015. Project bidding and construction began in early 2016.
- This project fits into the larger context of the District's 2012-2021 Watershed Management Plan under items 5228C Urban Stormwater Retrofit Planning and Design and 5228D Urban Stormwater Retrofit Implementation. Descriptions of these items can be found on page 50 of the plan here: <http://www.cflwd.org/documents/CLFLWDWatershedManagementPlanVoll-Amended27Aug2015.pdf>.
- Several homeowners in the area have expressed interest in the District's BMP cost-share program for raingardens and native plantings. Moving forward, District staff will continue to communicate with interested homeowners and implement cost-share BMPs as they become possible.

Results

- Project construction is expected to be completed in late 2016 or early 2017. Water monitoring data from 2016 and 2017 will provide information on what water quality goals were achieved.
- Once completed, this project will result in an 11.9 lb/yr reduction of phosphorus to Forest Lake.
- Forest Lake is not listed as impaired, so it could not be delisted as a result of this project.
- No new ordinances or laws were put into place as a result of the actions.

Body of main report

Section I – Work plan review

- The only change that was made to the work plan was an unexpected delay in project construction timeline. This was due to setbacks in easement acquisition caused by difficulties communicating with a remote landowner.
- List and brief report on each activity/task identified in the work plan
 - Objective 1: Education and outreach to affected property owners, development of project agreements
 - Task A: Contact affected property owners: Initial contact with property owners was made in 2013 by sending letters and holding neighborhood meetings. Contact remained steady with a few interested landowners throughout 2014 as easement acquisition was underway. Contact with all landowners increased in early 2016 as project construction commenced.
 - Task B: Secure any temporary/permanent land transactions or agreements: The greatest setback of the project as a whole was easement acquisition for a single property. The majority of the project is located on the parcel in question, making that particular easement critical to implementation. The owner of this parcel does not live in the state of Minnesota and was difficult to maintain contact with. After multiple years of back and forth communication, the easement was finally secured in early 2016. The remaining five easements were obtained shortly thereafter.
 - Task C: Develop a cooperative project agreement with the City of Forest Lake: A cooperative agreement with the City was developed in 2013 and amended in 2016 to incorporate potential additional work desired by the City including removal of the sediment delta from Forest Lake and disposal of soils offsite.
 - Objective 2: Pre-Design Work
 - Task A: EOR, under contract with the CLFLWD will complete necessary pre-design services. This included environmental analysis of sediment in the existing stormwater feature to be retrofitted, topographic survey for development of stormwater models, design plans and construction documents, and survey of utilities, features and property lines.
 - Task B: Using information gathered during Task A, EOR will develop an existing conditions drawing as well as a site specific H&H model which will be used to inform the final engineering design.
 - Objective 3: Project Design and Bidding
 - Task A: Preliminary Design: Preliminary design plans (60%) were prepared utilizing information gathered and developed under Objective #2.
 - Task B: Final Design: Preliminary design plans (60%) were further refined to 90% design plans. Plans were circulated to agencies for permitting needs.
 - Task C: Final Construction Documents: 90% plans were refined to final design and construction drawings. Project specifications were also developed which were incorporated into contract documents for bidding and construction.
 - Task D: Bidding: Staff held a pre-bid meeting at the CLFLWD office to answer any questions bidders may have. The project was then put out to bid. The bid opening meeting was then held, and the District selected Sunram Construction Inc. to complete the project. In addition to the project bidding, the District collected several quotes for tree trimming and removal services. Uppercut Tree Services was selected to perform the work.
 - Objective 4: Project Construction
 - Task A: Project Construction: Initial tree trimming and removal work began in early May 2016. Project construction began in June 2016. Due to anticipated wet conditions during the summer months, majority of project construction including excavation and pipe work will hold off until fall or winter 2016.
 - Task B: Project Inspection: EOR and District staff provided project inspection throughout the tree work and initial project construction phases. This included inspecting erosion control measures, ensuring construction specs were being followed, and communicating with property owners.

Section II – Grant results

For TMDL/WRAPS Development Projects describe the work products of the contract, such as a written TMDL/WRAPS or technical report, data files, maps, and any other attachments that were produced by the project.

- **Measurements:**
 - Once completed, this project will result in a reduction of 11.9 lbs/yr of phosphorus to Forest Lake.
- **Products:**
 - Project fact sheet: <http://www.cflwd.org/documents/HiloLaneProjectFactSheet.pdf>

o Photographs:



Existing stormwater facility (5/17/16)



Existing outlet pipe to Forest Lake (5/17/16)



Existing shoreline (5/17/16)



Channel stabilization in progress with erosion control (6/10/16)



Rock check dams shortly after installation (6/10/16)



Neighborhood meeting (5/11/16)

Photos of completed project will be available on District's website (www.cflwd.org) after construction is finished.

- **Public outreach and education:** Public participation was a major aspect of this project due to the location and nature of the BMPs being implemented. In 2013, initial public outreach was performed by mailing out letters and holding neighborhood meetings. Before project construction began, outreach ramped up again with additional mailers and neighborhood meetings. Apart from the difficulties communicating with one landowner, public outreach was largely well received. Multiple homeowners expressed great interest in the project and the effects it would have on the neighborhood and Forest Lake. Six easements (some temporary, some permanent) were obtained, requiring communication with over a dozen local landowners. Additional landowners from the area attended a 2016 neighborhood meeting and expressed interest in the project and the District's cost-share program. Overall, at least 30 local residents were reached due to this project.
- **Long-term results:**
 - One result of this project will be an increased understanding of iron-enhanced sand filtration systems, which are still relatively new BMPs. The District will be able to monitor long-term performance of this BMP and not only gain an understanding of its effectiveness, but additionally gain insight into how to optimize performance of an iron-enhanced sand filtration bench.
 - Another long-term outcome of this project is increased public awareness of the CLFLWD's goals and objectives for local water resources. The public outreach portion of this project introduced several local residents to the idea that the CLFLWD can be a resource for answering technical questions and protecting the lakes that they know and love.
 - The District formed several new alliances with local stakeholders as a result of this project. Multiple landowners near the project site have been increasingly helpful in the project's implementation, and have developed ongoing lines of communication with District staff as a result. The District's pre-existing partnership with the City of Forest Lake was further strengthened as a result of this project due to the necessity for communication and collaboration throughout the planning, outreach and construction process.
 - Preliminary results of the project have been shared at CLFLWD board meetings. Once the project is complete, an informational press release will be sent to local newspapers, a project summary will be posted on the District's website, and a presentation will be given at a CLFLWD board meeting.
 - Additional presentations could be given at Forest Lake Lake Association meetings, and informational materials could be displayed in Forest Lake City Hall to illustrate the success of the project and collaboration between the City and the CLFLWD.

Section III – Final Expenditures

Grant project summary

Project title: Forest Lake Stormwater Filtration Retrofit (Hilo Lane)
Organization (Grantee): Comfort Lake – Forest Lake Watershed District
Project start date: July 18, 2013 Project end date: In progress Report submittal date: July 28, 2016
Grantee contact name: Mike Kinney Title: District Administrator
Address: 44 Lake St. South, Suite A
City: Forest Lake State: MN Zip: 55025
Phone number: 651-395-5850 Fax: N/A Email: Michael.kinney@cflwd.org
Basin (Red, Minnesota, St. Croix, etc.)
/Watershed & 8 digit HUC:: St. Croix (07030005) County: Washington

Project type (check one):

- Clean Water Partnership
- Total Maximum Daily Load (TMDL)/Watershed Restoration or Protection Strategy (WRAPS) Development
- 319 Implementation
- 319 Demonstration, Education, Research
- TMDL/WRAPS Implementation

Grant funding

Final grant amount: \$ 41,615.00 Final total project costs: \$ 106,044.02
Matching funds: Final cash: \$ 64,429.02 Final in-kind: \$ 6,591.00 Final Loan: N/A
MPCA project manager: Chris Zadak

Executive summary of project (300 words or less)

Problem (one paragraph)

Although Forest Lake is currently meeting state standards, there are periods during the growing season when phosphorus and secchi depth standards are exceeded. This project will treat runoff from a 14-acre area of urban development before discharging into Forest Lake. This will help meet the District's long term goal of achieving a summer average in-lake concentration of 30 ug/L of phosphorus, continuing to improve the Lake's water quality, and preventing any further degradation.

Waterbody improved (one paragraph)

Forest Lake (82015900) is located in the Comfort Lake-Forest Lake Watershed District (CLFLWD) and adjacent to the City of Forest Lake in northern Washington County. It has a surface area of 2,220 acres and is the largest lake in the CLFLWD and the largest lake wholly in Washington County. This lake is an important recreational and ecological resource with three public access sites, good water quality, and a healthy fish and aquatic plant community. While Forest Lake is not on the impaired waters list for excess nutrients, phosphorus levels are near the threshold for the North Central Hardwood Forests ecoregion. The watershed of Forest Lake is 8,160 acres and dominated by open water lake surfaces, medium-density residential, wetlands, and forested land cover. The more developed area of the City of Forest Lake is situated along the west and southern shores of Forest Lake, and discharges storm water to Forest Lake through numerous storm water outfalls dispersed around the lake perimeter.

Project highlights (one paragraph)

This purpose of this project is to design and retrofit an existing stormwater management facility in the City of Forest Lake to increase the amount of treatment realized by the feature. The project will work to complete excavation and reshaping of the existing stormwater treatment feature and add an iron-enhanced sand filtration bench to the existing feature for increased stormwater treatment. The project will also work to reshape and stabilize the actively eroding channels that convey runoff from a 14 acre area to the treatment feature. Additionally, the project will include a shoreline stabilization piece to address issues related to erosion on Forest Lake where the stormwater treatment feature outlet. The designed and installed project will result in an 11.9 lb/yr reduction of phosphorous to Forest Lake, MN DNR Lake ID: 82-0159-00.

Results (one paragraph)

Though the majority of project construction has yet to occur, several components have been completed to date including tree trimming/removal and channel stabilization. Several trees and shrubs impeded project construction and were therefore trimmed or removed in accordance with the City of Forest Lake's Woodland Preservation Regulations. Channel reshaping and stabilization also occurred with the addition of multiple rock check dams along the corridor to reduce flow velocity and erosion. The remainder of project construction including stormwater feature excavation and reshaping, installation of the iron-enhanced sand filtration bench, and shoreline stabilization will be completed in fall/winter 2016.

Partnerships (Name all partners and indicate relationship to project)

The City of Forest Lake was a major partner on this project as they signed a cooperative project agreement with the CLFLWD and helped coordinate easement vacation and acquisition. The City previously had a large easement on the parcel on which the stormwater feature is located. For the purpose of the project, the City vacated a large portion of that easement. This enabled the CLFLWD to obtain an easement on that property, and prevent the majority of the property from being covered by easements.

The individual homeowners in the project area were each major partners as well due to their involvement with land access from the beginning of the project. A few of the homeowners communicated with District staff regularly and assisted with neighborhood meeting coordination.

The MN Pollution Control Agency could, of course, be listed as a project partner as well due to the involvement with grant financing.

Pictures

*see pages 3 and 4