# MEMO

## Engineering Department

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| To: | Board of Public Works |
| From: | John Neumeier, Director of Public Works/City Engineer |
| Date: | 4/14/2025 |
| Re: | Great Lakes Sediment and Nutrient Reduction Program (GLSNRP) Grant Application for 1,000 Islands |

**Background information:**
Outagamie County Land Conservation Department (LCD) has offered to help the City apply for Great Lakes Sediment and Nutrient Reduction Program (GLSNRP) Grant to provide restoration and stabilization projects within the 1,000 Islands Conservancy, on/near the former Hoersch property. Some photos, background material, and cost-share information produced by LCD is attached to this memo. More information on the grant program can be found at: www.glc.org/work/sediment

The proposed regenerative stormwater conveyance for ravine stabilization is a somewhat new and innovative practice. It utilizes more natural solutions to restore and protect ravines and outfalls while providing stormwater management benefits. A short article helping to explain the practice is attached. This project is also completing a Total Maximum Daily Load (TMDL) Action item for the City, providing a Total Suspended Solids and Total Phosphorus reduction to the Lower Fox River basin.

For the grant application, we have requested a letter of support from Plan Commission, which also serves as our City Stormwater Advisory Board, along with this Board, and we will request the same from Common Council, and 1,000 Islands Committee.

**Strategic Plan:** This restoration project shows the City's commitment to be respectful stewards of the environment. The cooperation of 1,000 Islands, Outagamie County LCD, and the City to complete this restoration work and to look for alternate funding source are great examples of collaboration and fiscal responsibility. With the possibility of a grant, we can stretch the City CIP dollars from

One small project, into an all-encompassing project to significantly reduce the erosion issues and create an innovation solution as an example for our region.

Along with the restoration, trail improvements will make the area more accessible and increase the number of visitors of our 1,000 Islands eastern trails.

**Budget:** The City has budgeted $100,000 in the 2025 Capital Improvement Plan for restoration projects on this property. Those funds would be used as the local match if awarded a grant.

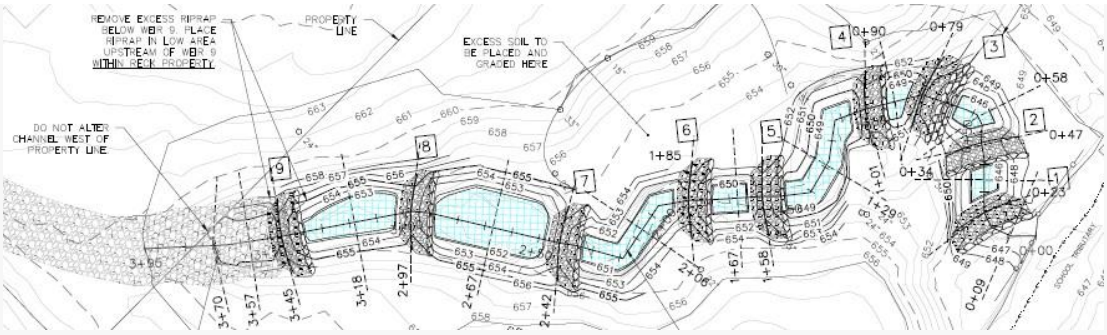
**Staff Recommended Action:**
Motion for authorize the Chair of the Board Public Works to send a Letter of Support from the Board for a Great Lakes Sediment and Nutrient Reduction Program (GLSNRP) Grant Application for 1,000 Islands Ravine Stabilization.

# Not Your Everyday Stormwater Conveyance System

October 19, 2020 - **Riley Stone, Civil Engineer for raSmith**

While the design of swales, infiltration practices, ponds, or storm sewer can be common practice, regenerative stormwater conveyance systems can be used as a substitute in many situations and provide a number of benefits. Regenerative stormwater conveyances offer a unique solution to addressing water quality and quantity concerns.

Regenerative stormwater conveyances are synonymous with regenerative step pool storm conveyance, regenerative stream channel and biofiltration conveyance, along with many other names. The similarity with all of these systems is that they work to convey and treat stormwater runoff using a series of riffles and pools of sand/woodchip media beds. Regenerative stormwater conveyances can be used to stabilize erosive channels or as a stormwater system for new developments or even as a retrofit to old and/or failing systems.

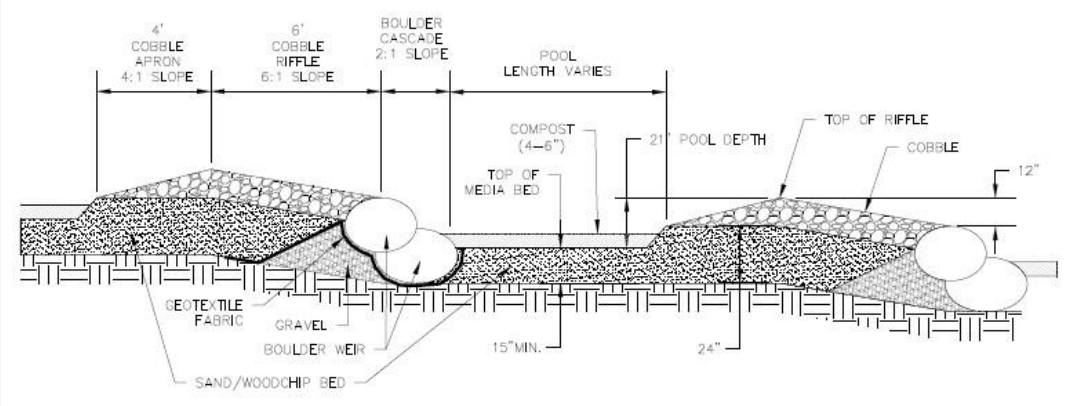



Regenerative stormwater conveyance systems offer an innovative solution to addressing water quality and quantity concerns.

## How do regenerative stormwater conveyances work?

Regenerative stormwater conveyances consist of a series of riffles and pools. The diagram below shows a typical profile section of a regenerative stormwater conveyance. Stormwater enters the system into a pool and depending on the characteristics of a particular site, this could be a plunge pool filled with riprap or it could be the start of sand/woodchip media beds. Once the runoff enters this bed, it will either infiltrate (small storms) into the media bed or it will start to pond (larger storms).

As the pools start to pond in larger storms, the runoff will spill over a parabolic-shaped weir constructed of cobbles. These cobbles will vary in size but typically have a diameter of approximately six inches. Once the ponding water overtops the weir, it will move over and through the cobble riffle and cascade down a set of large boulders into a second pool. When the runoff reaches the second pool, the process repeats itself with multiple weirs and pools, depending on the length and gradient of the system, until it reaches its ultimate discharge point.



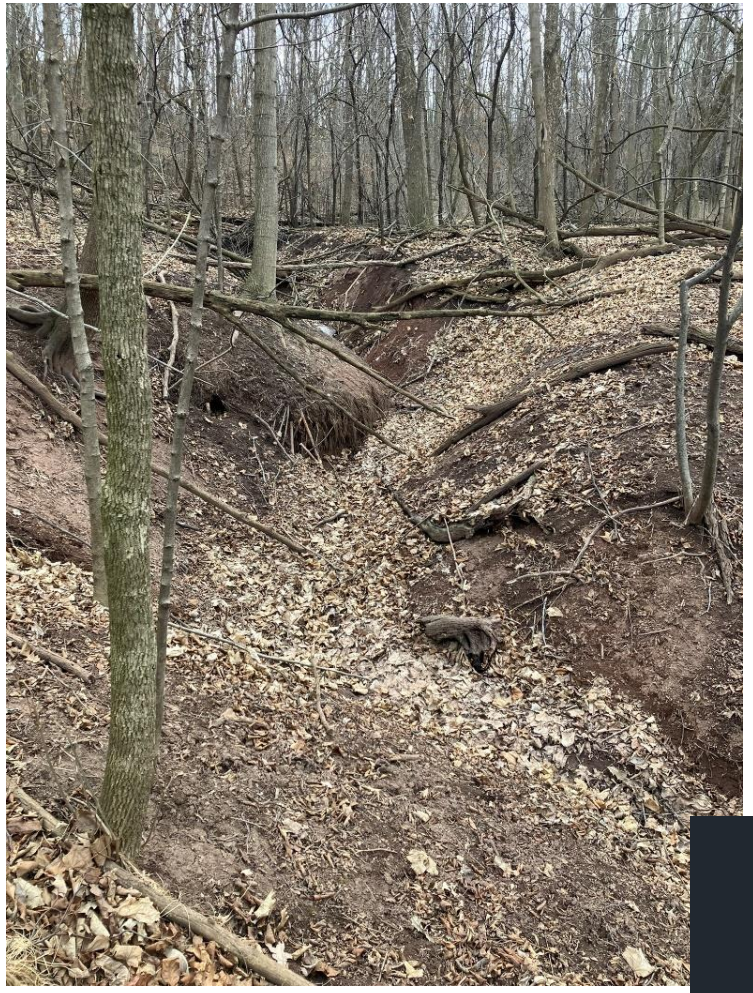

This diagram shows the standard components of a regenerative stormwater conveyance system.

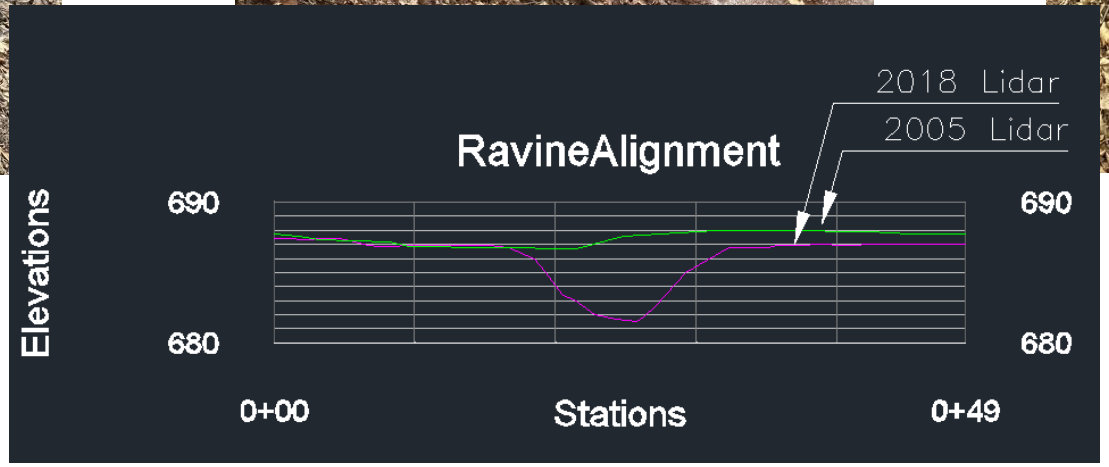
## The Benefits of Regenerative Stormwater Conveyances

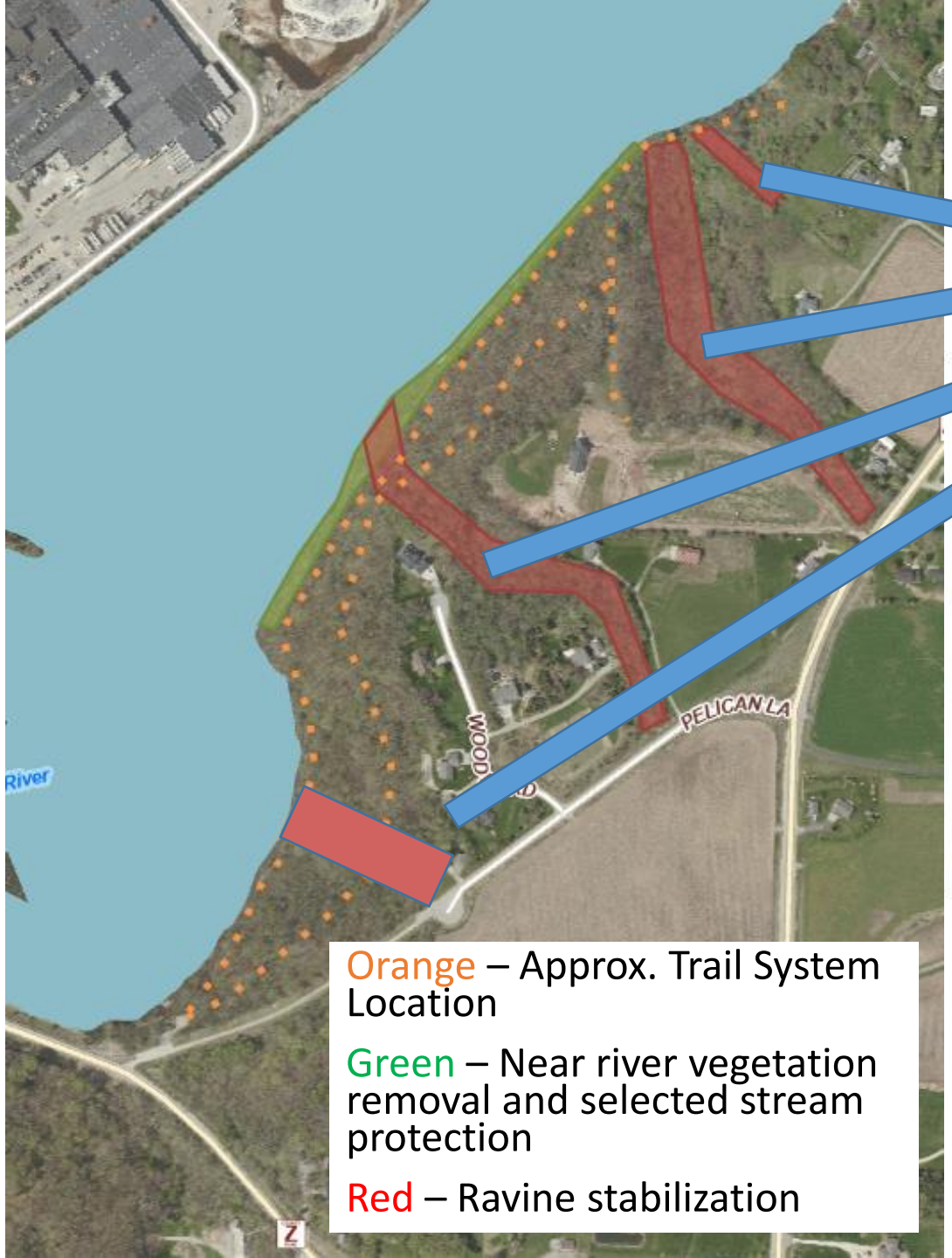
Regenerative stormwater conveyances provide significant energy dissipation, which is why these systems are often used to replace degraded, highly erosive channels and ravines. The slowing of water as it moves through the system allows for vegetation growth and reduces the chances of future erosion. The rock weirs help to spread out the flow path of runoff, which can help pass larger rain events in a safer manner. The pools help to infiltrate stormwater and settle out any pollutants that enter the stormwater system. The pools also provide detention during rain events that will help reduce flooding downstream of the system. Not only do regenerative stormwater conveyances provide all of the benefits mentioned above, but they also provide a diverse habitat for the surrounding wildlife and can be aesthetically pleasing.

Regenerative stormwater conveyance was effectively used for the Reck South Ravine stabilization project in Kenosha County, WI.

# Current Ravine Conditions



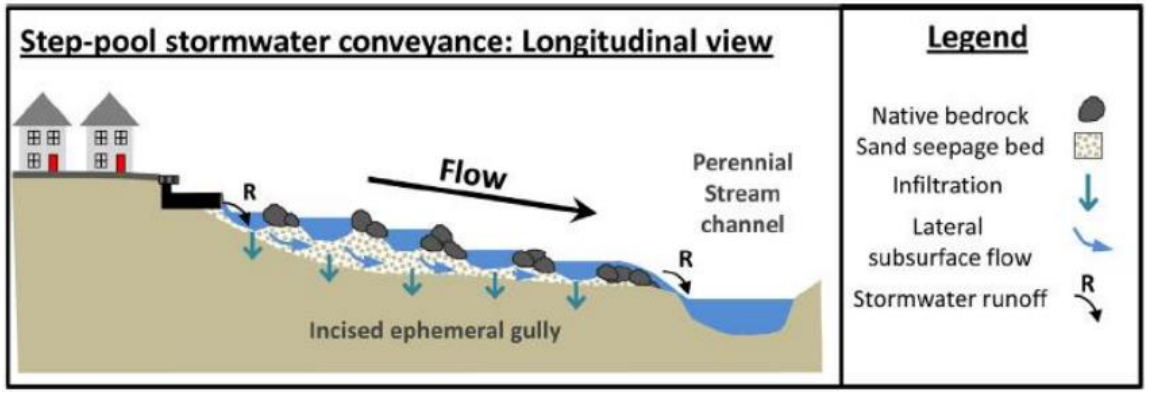




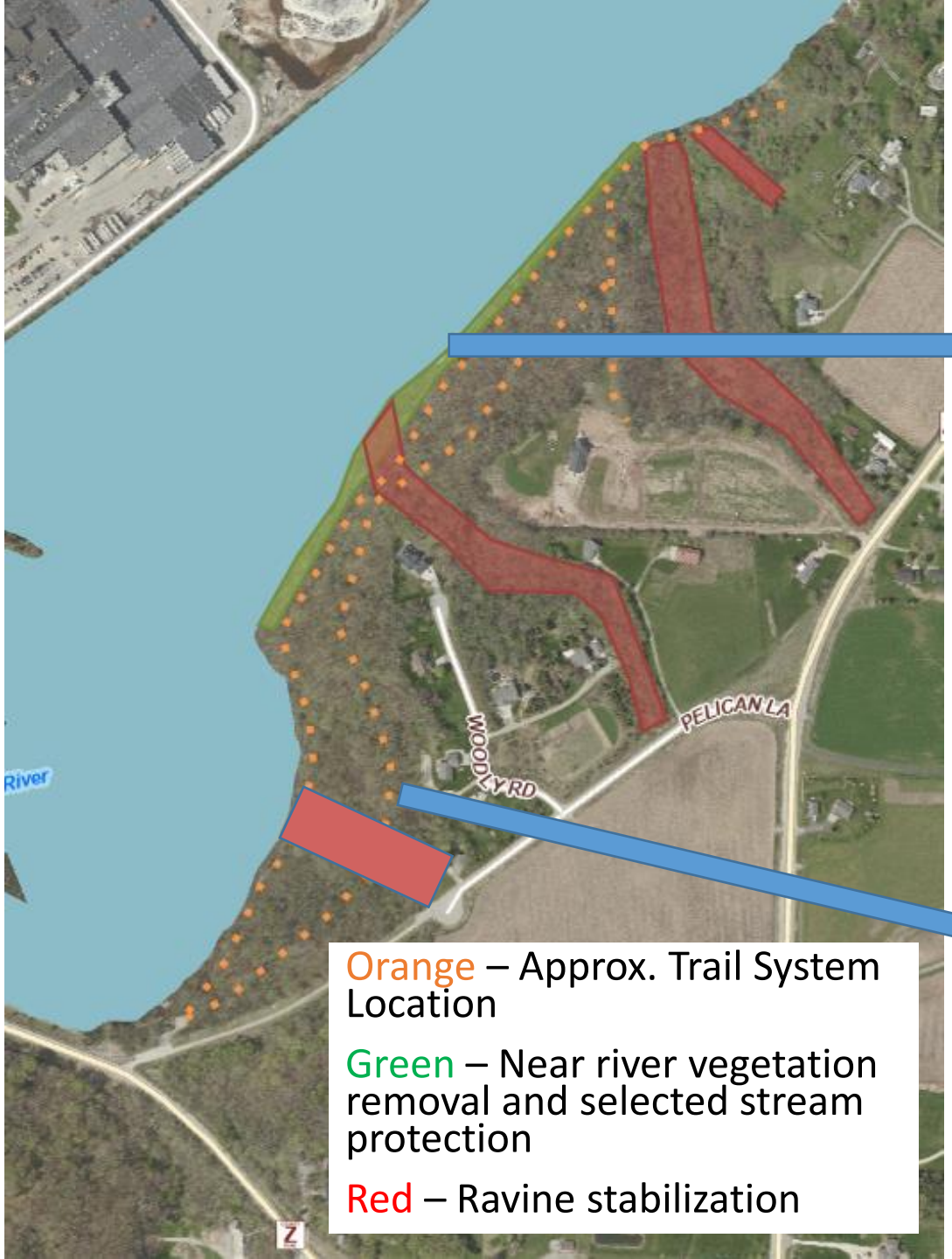

Orange – Approx. Trail System Location

Green – Near river vegetation removal and selected stream protection

Red – Ravine stabilization








Orange – Approx. Trail System Location

Green – Near river vegetation removal and selected stream protection

Red – Ravine stabilization

Near stream tree removal replaced with native plantings. Also shows bio-engineering to protect the toe.

Re-use woodchips from removed trees to improve the walking trails. Great opportunity for volunteers!

# ESTIMATED COST - THOUSAND ISLANDS

| Item | Units | Quantity | Unit Cost | Total | GLSNRP | City | In Kind |
|---|---|---|---|---|---|---|---|
| Trail Prep and Stabilization | Job | 1 | $10,000.00 | $10,000.00 | $0.00 | $10,000.00 | |
| Stream Protection / Near Stream Veg. Removal | Job | 1 | $40,000.00 | $40,000.00 | $30,000.00 | $10,000.00 | |
| Ravine Stabilization (Series of Check Dams) | Job | 3 | $70,000.00 | $210,000.00 | $140,000.00 | $70,000.00 | |
| Ravine Stabilization (Step Pool System) | Job | 1 | $80,000.00 | $80,000.00 | $70,000.00 | $10,000.00 | |
| FWS Partner Program Seed (Native Seeding) | Job | 1 | $10,000.00 | $10,000.00 | | | $10,000.00 |
| | | | | | | | |
| **Other** | | | | | | | |
| Volunteer Work (Trail maint., spreading chips, etc.) | Job | 1 | $10,000.00 | $10,000.00 | | | $10,000.00 |
| LCD Project Management | Job | 1 | $10,000.00 | $10,000.00 | | | $10,000.00 |
| Technical Assistance | Job | 1 | $60,000.00 | $60,000.00 | $60,000.00 | $0.00 | |
| | | | | | | | |
| | | | TOTAL | $430,000.00 | $300,000.00 | $100,000.00 | $30,000.00 |