

**Environment and Natural Resources Trust Fund
2015 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 059-B

Improving Water Quality, Daylighting Trout Brook

Category: B. Water Resources

Total Project Budget: \$ 400,000

Proposed Project Time Period for the Funding Requested: 2 years, July 2015 - June 2017

Summary:

The City of Saint Paul requests \$400,000 to install a pump to daylight 3000 channel of the Trout Brook which acts like a "Brita Filtration" system for water resource protection.

Name: Kathleen Anglo

Sponsoring Organization: City of St. Paul

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Location

Region: Metro

County Name: Ramsey

City / Township: Saint Paul

Alternate Text for Visual:

The graphic shows a cross-section of the pump, pond, stream system and the location of the stream from Lake McCarrons to the Mississippi River.

| | | | |
|--------------------------|-------------------------|-----------------------------|----------------------|
| _____ Funding Priorities | _____ Multiple Benefits | _____ Outcomes | _____ Knowledge Base |
| _____ Extent of Impact | _____ Innovation | _____ Scientific/Tech Basis | _____ Urgency |
| _____ Capacity Readiness | _____ Leverage | _____ TOTAL | |



PROJECT TITLE: Improve Water Quality of the Trout Brook by daylighting an urban stream

I. PROJECT STATEMENT

The City of Saint Paul is requesting \$400,000 to help fund the installation of a stormwater wet well and lift station to improve the water quality within the Trout Brook watershed by daylighting approximately 3,000 lin. ft. of an urban stream. Trout Brook is the longest stream corridor and drains the largest subwatershed within the boundaries of the Capitol Region Watershed District. Due to past transportation and industrial development, approximately 70% of Trout Brook was diverted underground and is contained within an existing storm sewer pipe. This project would daylight an additional 15% of the historic stream length from Lake McCarrons to the Mississippi river. This daylighting segment is within the Trout Brook Nature Sanctuary, located between Maryland Ave. and Cayuga St. west of 35E. Construction on the 42 acre Trout Brook Nature Sanctuary began in the fall of 2013.

In order for the stream channel to function as a daylighted perennial stream and provide optimal water quality benefits, a continuous flow of water must be harvested from the existing Trout Brook storm sewer. The current storm sewer pipe that contains the Trout Brook in this section is approximately 20' below grade which requires a pump system to bring the water to the surface. This flow of water is imperative for:

- Stream morphology: flowing water is needed to closely mimic a natural stream system
- Water Quality Benefits
 - Maximized nutrient removal: streams and riparian buffers absorb pollutants via uptake by in-stream and surrounding vegetation, algal uptake, microbial uptake and hydraulic processes. It is estimated that the constructed stream will remove 340 lbs/ year of phosphorus, 2220 lbs./year of nitrogen, and reduce sediment by over 160 tons/year.
- Flood Protection Benefits
 - Restoration efforts such as daylighting can lessen the frequency or severity of localized flooding
 - The stream channel in conjunction with constructed wetlands and iron enhanced sand filter ponds within the Trout Brook Nature Sanctuary will provide approximately 7 ac. ft. of stormwater storage capacity for reduction of stormwater peak flows.
- Ecological Benefits
 - Perennially flowing streams have a higher quality food web base. The continuous flow provides the physical habitat for macroinvertebrates, fish, reptiles, and amphibians. The greater diversity and abundance of life within the stream has a direct effect on birds and other terrestrial life that depend on the aquatic organisms for food.
 - This portion of the stream in the Trout Brook corridor helps to reinforce other restoration work done, such as Bruce Vento Nature Sanctuary.
- Community Revitalization and Education
 - Education programming through the Watershed District, School District and Parks and Recreation.
 - Reconnecting people in an urban environment to nature within a continuous greenway that also contains the Trout Brook Regional Trail and connects to the Gateway State trail.

This is an opportunity to re-create a historic stream segment that was lost to transportation and industrial development and use it as a pilot project for evaluation and recommendations for other proposed stream restoration projects within the City. The stream and Nature Sanctuary provide a research opportunity to



Environment and Natural Resources Trust Fund (ENRTF)

2015 Main Proposal

Project Title: Improve Water Quality of the Trout Brook by daylighting an urban stream

optimize water quality benefits and a recreational and environmental education benefit to the North End neighborhood where open space is lacking. The project creates additional “stepping stones” of habitat establishment in a fragmented greenway corridor from the Mississippi River to Lake McCarrons and points north.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Daylighting of Trout Brook

Budget: \$400,000

Construction of wet well and lift station to harvest water from the existing Trout Brook storm sewer interceptor to provide water quality improvements and stream habitat

| Outcome | Completion Date |
|---|------------------------|
| <i>1. Water is pumped from existing Trout Brook storm sewer to constructed stream channel where it is filtered, then flows into an existing pond.</i> | <i>October 2016</i> |
| <i>2. Sediment and nutrient removal as well as storm flow equalization.</i> | <i>On-going</i> |

III. PROJECT STRATEGY

A. Project Team/Partners

- Receiving Funds from this request
 - City of Saint Paul – oversight of stream construction and stream water harvesting
- Not receiving funds from this request
 - Capitol Region Watershed District – Contributing funds to cost of project implementation, water quality monitoring, evaluation, and education
 - Great River Greening – Upland habitat restoration oversight
 - Research Partners and Additional Stakeholders – MNDNR, MPCA, U of M and Metro area Watershed Districts.

B. Project Impact and Long-Term Strategy

The City, along with the Capitol Region Watershed District, has identified the establishment of a continuous greenway or “blue corridor” between Lake McCarrons and the Mississippi River as discussed in the City’s *Trout Brook Corridor Small Area Plan* and CRWD’s *Stream Corridor Restoration Plan*. This project is the second phase in the water resource development of the Nature Sanctuary and the first phase in the creation of a “blue corridor” to the Mississippi River. In the first phase of the Nature Sanctuary water resource development, ponds, wetlands, and the stream channel were excavated during soil remediation, regional and nature trails, user amenities such as parking, restrooms, benches, and picnic tables were installed. The City will use the monitoring and evaluation data from this pilot project to provide direction on additional daylighted segment priorities of Trout Brook and for other urban stream daylighting projects within the City and watershed. Future feasibility studies will be performed by the City and/or CRWD for daylighting the remaining segments of the Trout Brook ecosystem. Further stream daylighting segments along Trout Brook will require additional redevelopment and acquisition opportunities. Dates for implementation of additional stream segment restoration will be evaluated following analysis of research data and determination of cost.

C. Timeline Requirements

The project is designed and ready for bidding. Easements and permits are in place. Construction would begin as soon as funds are allocated and could be completed within 6 months. Future daylighting segments of the Trout Brook are possible, but timelines are not estimated at this point due to further studies needed, private property ownership, and transportation barriers.

2015 Detailed Project Budget

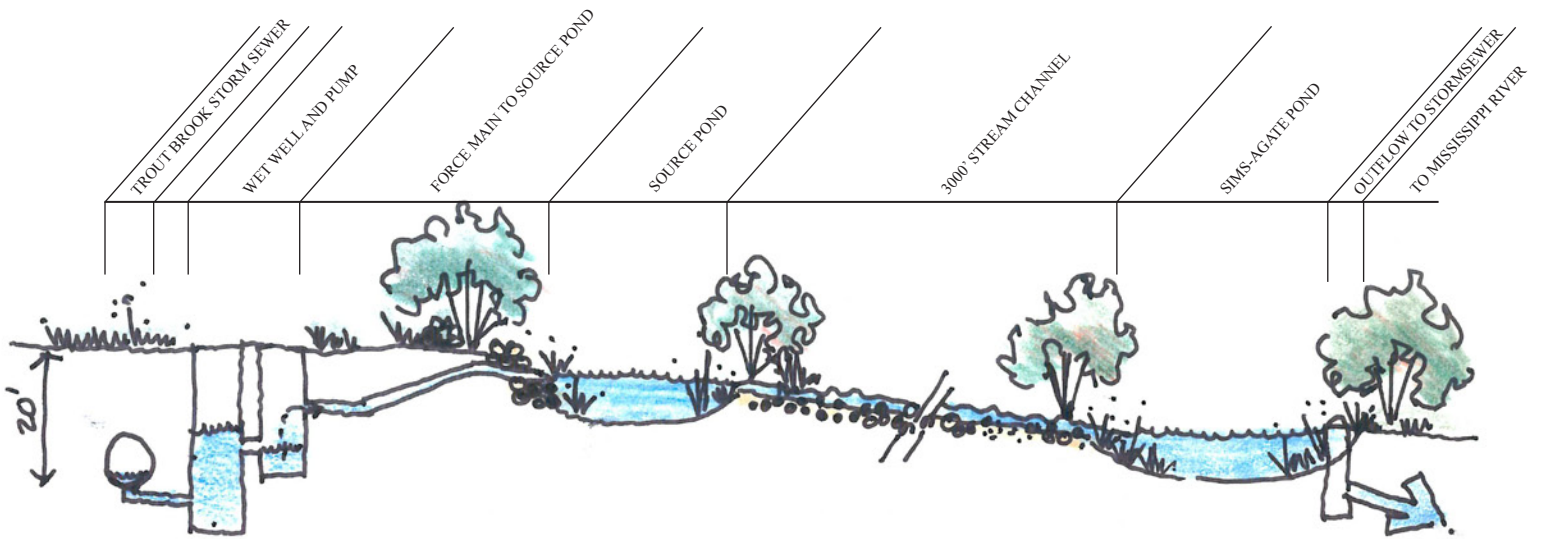
Project Title: : Improve Water Quality of the Trout Brook by daylighting an urban stream

IV. TOTAL ENRTF REQUEST BUDGET 2 years

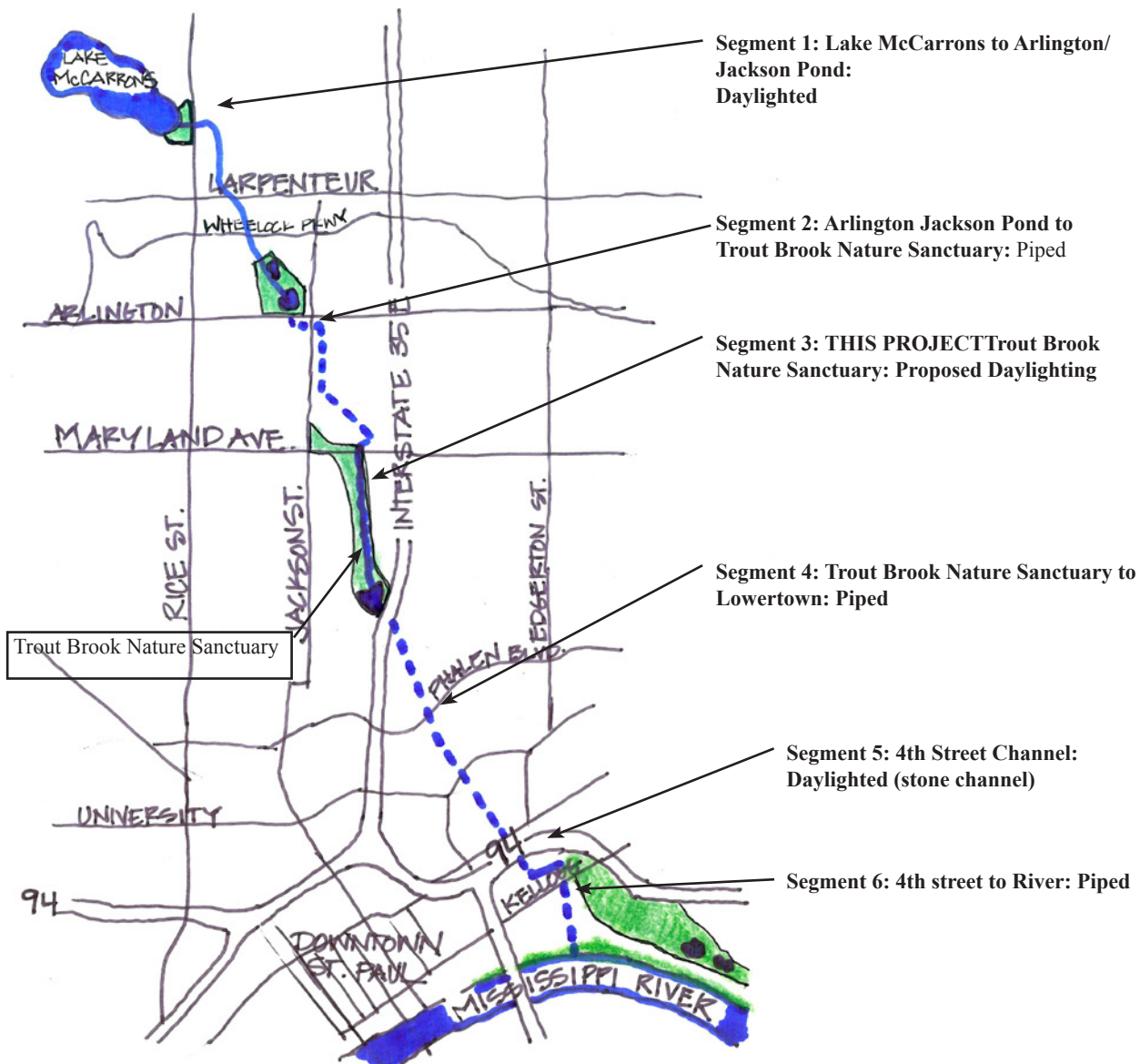
| <u>BUDGET ITEM</u> | <u>AMOUNT</u> |
|--|-------------------|
| Contracts: Construction Contract for wet well, pump, and force main. To be put out for bid. | \$ 400,000 |
| TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST = | \$ 400,000 |

V. OTHER FUNDS

| <u>SOURCE OF FUNDS</u> | <u>AMOUNT</u> | <u>Status</u> |
|---|--------------------|----------------|
| Other Non-State \$ To Be Applied To Project During Project Period: | | |
| Region Watershed District | Capitol \$ 200,000 | <i>Secured</i> |
| City of Saint Paul | \$ 365,000 | <i>Secured</i> |
| Other State \$ To Be Applied To Project During Project Period: | | |
| In-kind Services To Be Applied To Project During Project Period: | NA | NA |
| Funding History: | \$ - | |
| Federal EPA Funds | \$ 400,000 | |
| City of Saint Paul | \$ 2,000,000 | |
| CRWD | \$ 200,000 | |
| Federal Transportation Enhancement funds | \$ 649,000 | |
| Great River Greening ENRTF Appropriation FY 2013 | \$ 37,000 | |
| Great River Greening LSOHC - OHF Appropriation | \$ 93,000 | |
| Remaining \$ From Current ENRTF Appropriation: | | |
| | | |



GENERAL SECTION OF PUMP_STREAM_POND SYSTEM



TROUT BROOK: Daylighting a Portion of an Urban Stream
 2015 LCCMR Proposal
 Project Location Map

**CITY OF SAINT PAUL**

Mayor Christopher B. Coleman

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25 West 4th Street
Saint Paul, Minnesota 55102
www.stpaul.gov/parksTelephone: 651-266-6400
Facsimile: 651-292-7311**Project Manager Qualifications and Organization Description****Trout Brook: Daylighting an Urban Stream
City of Saint Paul****Project Manager: Kathleen Anglo – Landscape Architect**

Kathleen has worked for the City of Saint Paul Division of Parks and Recreation for over 16 years. Kathleen received her degrees in Landscape Architecture and Environmental Design from North Dakota State University. Kathleen has worked on large environmental projects throughout the City, such as Phase II of development of Harriet Island Regional Park, which included a stormwater bio-swale to the river, shoreline restoration work, and recreation amenities. Kathleen has worked on the Trout Brook Nature Sanctuary project since 2005. She has led a Metropolitan Council approved Master Plan process for the regional trail corridor, which includes the Nature Sanctuary, she has worked in partnership with Capitol Region Watershed District on a Water Resource Feasibility study and has managed the oversight of a large consultant team through detail design and construction documents for the nature sanctuary and regional trail project. Kathleen has also developed a relationship with the community for the successful stewardship of the project and has worked in partnership with Great River Greening on the native restoration of the site. Kathleen is also working in the Frogtown neighborhood of Saint Paul on a new park and urban farm on the site of the former Amherst H. Wilder Foundation headquarters.

Organization Description: City of Saint Paul, Department of Parks and Recreation

The Department of Parks and Recreation is a nationally-accredited department that manages approximately 17% of the land mass within the City or roughly 4,000 acres. We have led many restoration projects such as Bruce Vento Nature Sanctuary, Swede Hollow, and Lilydale Regional Park. Our Mission is to make Saint Paul the most livable city in America by facilitating active lifestyles, vibrant places and a vital environment. Our Vision is to respond creatively to change, innovate with every decision, and connect the entire city.