



Green Infrastructure Funding Agreement W96001P18

Underwood Creek Channel Reconstruction Design

This Agreement is between the Milwaukee Metropolitan Sewerage District (District), 260 West Seeboth Street, Milwaukee, Wisconsin 53204-1446, and the Village of Elm Grove (Elm Grove), 13600 Juneau Boulevard, Elm Grove, Wisconsin 53122.

WHEREAS, Wisconsin law authorizes any municipality to establish an intergovernmental cooperation agreement with another municipality for the furnishing of services (Wis. Stat. sec. 66.0301); and

WHEREAS, the District is responsible for collecting and treating wastewater from locally-owned sewerage systems in the District's service area; and

WHEREAS, during wet weather, stormwater enters the sewerage system, increasing the volume of wastewater the District must collect and treat; and

WHEREAS, during wet weather, stormwater directly enters surface water, increasing pollution levels in those waterways and increasing the risk of flooding; and

WHEREAS, green infrastructure, such as constructed wetlands, rain gardens, green roofs, bioswales, and porous pavement, reduces the volume of stormwater in the sewerage system and the amount of pollutants discharged to surface waters; and

WHEREAS, the District's wastewater discharge permit requires the installation of twelve million gallons of new green infrastructure retention capacity before the end of 2017; and

WHEREAS, the District wants to expedite the amount of green infrastructure installed in its service area; and

WHEREAS, Elm Grove plans to install green infrastructure that supports the District's green infrastructure goals;

Now, therefore, for the consideration of the mutual promises made by the parties to this Agreement, the parties agree as follows.

1. Date of Agreement

This Agreement becomes effective immediately upon signature by both parties and ends when Elm Grove receives final payment from the District or when the parties terminate this Agreement according to sec. 12 of this Agreement.

2. District Funding

The District will reimburse Elm Grove for the cost of the project described in the attached project description (Project), up to \$85,000. The District will provide funding after the District receives the final report identified in sec. 4.

3. Location of the Project

The Project is in downtown Elm Gove, as shown in Figures 1 and 2. The Project area along Underwood Creek, starting south of Wall Street and extending to Watertown Plank Road.

4. Final Report

After completion of the Project, Elm Grove will provide to the District the final design plans and specifications and the related invoices from the design consultant showing all charges for time and materials.

5. Procedure for Payment

Elm Grove will submit an invoice to the District for the amount to be reimbursed. The invoice will document all costs to be reimbursed. Invoices from consultants will provide: their hourly billing rates, if applicable; the hours worked, by individual; and a summary of the tasks accomplished.

Elm Grove will send the Final Report and the invoice to:

Andrew Kaminski, Project Manager
Milwaukee Metropolitan Sewerage District
260 West Seeboth Street
Milwaukee, Wisconsin 53204-1446

The District will not provide reimbursement until the Project is complete and the District has received all required deliverables.

6. Changes in the Project and Modifications to the Agreement

Any changes to the Project must be approved by the District in writing in advance. The District will not reimburse for work that is not described in the original project description unless Elm Grove obtains prior written approval from the District.

7. Modifications to this Agreement

Any modifications to this Agreement will be in writing and signed by both parties.

8. Permits, Certificates, and Licenses

Elm Grove is solely responsible for compliance with all federal, state, and local laws and any required permits, certificates, or licenses.

9. Public Bidding

Elm Grove must select professional service providers according to the ordinances and policies of Elm Grove.

10. Responsibility for Work, Insurance, and Indemnification

Elm Grove is solely responsible for project management, including the selection of and payment for consultants.

The District will not provide any insurance coverage of any kind for the Project or Elm Grove.

Elm Grove will defend, indemnify, and hold harmless the District and its Commissioners, employees, and agents against all damages, costs, liability, and expenses, including attorney's fees and related disbursements, arising from or connected with the planning, design, construction, operation, or maintenance of the Project.

11. Terminating this Agreement

The District may terminate this Agreement at any time before the commencement of work for the Project. After the commencement of work, the District may terminate this Agreement only for good cause, including, but not limited to, breach of this Agreement by Elm Grove. Elm Grove may terminate this Agreement at any time, but will not receive any payment from the District if Elm Grove does not complete the Project.

12. Exclusive Agreement

This Agreement is the entire agreement between Elm Grove and the District regarding the Project.

13. Severability

If a court holds any part of this Agreement unenforceable, then the remainder of the Agreement will continue in effect.

14. Applicable Law

The laws of the State of Wisconsin apply to this Agreement.

15. Resolving Disputes

If a dispute arises under this Agreement, then the parties will try to resolve the dispute with the help of a mutually acceptable mediator in Milwaukee County. The parties will equally share the costs and fees associated with the mediation, other than attorney's fees. If the dispute is not resolved within 30 days after the party's refer it to the mediator, then either party may take the matter to court.

16. Notices

All notices and other communications related to this Agreement will be in writing and will be considered given as follows:

- (a) when delivered personally to the recipient's address as stated on this Agreement; or
- (b) three days after being deposited in the United States mail, with postage prepaid to the recipient's address as stated on this Agreement.

17. Independence of the Parties

This Agreement does not create a partnership. Elm Grove does not have authority to make promises binding upon the District or otherwise have authority to contract on the District's behalf.

18. Assignment

Elm Grove may not assign any rights or obligations under this Agreement without the District's prior written approval.

19. Public Records

Elm Grove will produce any records in the possession of Elm Grove that are subject to disclosure by the District pursuant to the State of Wisconsin's Open Records Law, Wis. Stats. secs. 19.31 to 19.39. Elm Grove will indemnify the District against any claims, demands, or causes of action resulting from Elm Grove's failure to comply with this requirement.

**MILWAUKEE METROPOLITAN
SEWERAGE DISTRICT**

VILLAGE OF ELM GROVE

By: _____

Kevin L. Shafer, P.E.
Executive Director

By: _____

David De Angelis
Village Manager

Date: _____

Date: _____

Approved as to Form

By: _____

Attorney for the District

Underwood Creek Channel Reconstruction Design

Project Description

The Underwood Creek Channel Reconstruction Design Project will develop plans and specifications to provide both floodwater and stormwater management on Underwood Creek, a tributary of the Menomonee River. The existing conditions are shown in Figure 1. Proposed changes are in Figure 2. Potential elements under consideration include:

- The creation of 1,600 linear feet of a new two-stage bio-engineered channel (low-flow stream channel length of 1,900 feet including meanders) by relocating Underwood Creek from an enclosed culvert and channelized section of stream in downtown Elm Grove (Bio-engineered Channel).
- The conversion of 900 feet of enclosed culvert and open channel between Watertown Plank Road and Wall Street to an underground stormwater detention system to reduce stormwater quantity and increase stormwater quality (Underground Stormwater Detention). The conversion of 800 feet of the existing Underwood Creek channel from Wall Street to the railroad bridge to a backwater wetland for both stormwater and floodwater storage (Backwater Wetland).

The Backwater Wetland and Bio-Engineered Channel would provide primary flood storage for the 2, 10, and 100-year flood events. The Backwater Wetland and Underground Stormwater Detention would provide stormwater storage, reducing local runoff peak flows and minimal flood storage.

Project details will evolve with the progression of design.

This project is part of millions of dollars of infrastructure investment by Elm Grove and numerous stakeholders that have greatly improved the flood management, water quality, ecology, community appeal, and overall attractiveness of Underwood Creek. Construction of this project is a high priority within the Wisconsin Department of Natural Resources (WDNR) and was made a part of a Memorandum of Understanding between Elm Grove and WDNR.

Floodwater Management

The flood management components of the project would provide flood storage in the Bio-engineered Channel, the Backwater Wetland, and the Underground Stormwater Detention.

The primary flood storage volume would be obtained through the Backwater Wetland and Bio-Engineered Channel. The enhanced flood storage and wetland construction and restoration in the Backwater Wetland would act as a habitat area connected to Underwood Creek and provide flood water storage (up to 6.6 acre feet of storage for 100-year design flood) and enhance runoff reduction of the existing and future stormwater flows from the downtown area of Elm Grove.

The relocated Bioengineered Channel would provide an estimated 8 acre feet of online flood water storage. Also, the channel would provide flood storage for the 2 and 10-year storms, reducing scouring and bank erosion downstream. The combination of the primary flood storage components would substantially increase storage for the 100-year design flood. See Table 1 for an estimated breakdown of the flood storage capacity of the existing conditions and proposed conditions within the project area.

The floodwater storage quantities and benefits presented here are based on conceptual analysis. A more precise volume of storage will be determined when preliminary and final engineering is completed, including detailed HEC-RAS modeling and other hydrologic and hydraulic modeling. This modeling will also provide detailed information for determining the final design of the control structure at the downstream end of the backwater storage where it reconnects with Underwood Creek.

Stormwater Management

To provide stormwater storage and treatment, the existing 700-foot enclosed culvert and 200 feet of concrete open channel would be converted to the Underground Stormwater Detention described above, after the new Bio-Engineered Channel is constructed. This system would be created by filling the existing culvert and open channel north of Wall Street with stone and a perforated pipe that will drain to the constructed Backwater Wetland downstream of Wall Street.

Preliminary drainage basin mapping shows that up to 58 acres of developed land would drain to this stormwater system. This drainage basin contains an estimated 25 acres of impervious surface. Currently, stormwater from this drainage area discharges directly into Underwood Creek without any substantial quantity reduction or water quality treatment.

Using the Backwater Wetland and Underground Stormwater Storage, controlling 2-year stormwater outflow from this area to MMSD Chapter 13 requirements may be possible. With the construction of a hydraulic control structure near the downstream confluence with the Bio-Engineered Channel Underwood Creek corridor for the Backwater Wetland, an estimated 3.5 – 4.5 acre-feet of stormwater storage would be created. Conceptual hydrologic modeling indicates that this storage could reduce the 2-year runoff outflow from the 58-acre drainage area to 8.5 cfs, which is equivalent to the MMSD Chapter 13 release rate of 0.15 cfs per acre or lower. In contrast, the existing 2-year peak runoff rate from this area is estimated at 48 cfs. The area could also provide significant stormwater storage for the 100-year event. The specific amount of storage for the 100-year event will be dependent upon the design of the control structure and the optimization of local stormwater runoff storage versus Backwater Wetland storage.

The specific available volume of stormwater storage and the detailed hydrologic performance of this system will be determined when preliminary and final modeling and engineering design is completed. Also, this engineering will provide detailed information for determining the final configuration and performance of the control structure at the downstream end of the backwater storage where it reconnects with Underwood Creek, which will influence how the available volume is used for stormwater storage vs. floodwater storage. Even if the 2-year flow from this already-developed area cannot be entirely reduced to the Chapter 13 management level, the improvements will noticeably reduce 2-year peak runoff contributions from this area.

Additional features of upland stormwater storage, such as green infrastructure implementation in parking lots, are anticipated when the business area is redeveloped to take advantage of the relocation of the stream and the expanded area available for new development. The Village anticipates that the redevelopment will incorporate additional stormwater management practices in keeping with the Village goals for sustainable and resilient development that will improve the water resources within the village limits.

Project Goals

The project has five primary goals: 1) increased and improved flood and stormwater storage and management within downtown Elm Grove, 2) improved stream hydraulics through the management of the channel forming discharge through the elimination of the culvert and channelized reaches of Underwood Creek, 3) improved recreational value and community interaction with Underwood Creek, 4) improved water quality in Underwood Creek, and 5) economic development in downtown Elm Grove.

Schedule

Elm Grove will complete the final plans and specifications by December 31, 2017.

Expected Outcomes and Impacts

If constructed, then the project would have significant impacts in the following areas. Floodwater elevations would be reduced by the construction of additional storage that will be provided by the Bio-Engineered Channel, removal of the box culvert and the restoration and reconstruction of the channelized reach downstream of Wall Street (Backwater Wetland). The flood storage estimated for this project would result in peak flow reduction. See Table 1 for an estimated breakdown of the flood storage capacity of the existing conditions and proposed conditions within the project area. The existing underground and channelized creek system will be converted to Underground Stormwater Storage, which would provide a substantial reduction in local runoff flows. Conceptual hydrologic analysis indicates that 2-year design storm runoff from a 58-acre drainage area, which currently flows uncontrolled into Underwood Creek, can potentially be reduced from 48 cfs to 8.5 cfs. This reduction would be equivalent to meeting the MMSD Chapter 13 stormwater discharge requirements for this area for the 2-year event. Storage will also be provided for the 100-year event as noted in Table 1.

This project would complete the work started with the design and construction of the Elm Grove Flood Management Project. This project was a major public works project with multiple large components including the creation of a large-scale retention pond in the Village Park, the installation of a large diversion storm sewer, the demolition of various buildings located within the floodway and the restoration of natural land within the floodway. Stormwater management for water quality and quantity will benefit from the increased natural floodplain wetland connections that will replace the existing culvert and channelized sections of Underwood Creek. The Village hopes that this investment in the restoration of natural resources, improved aesthetics, and community access will revive community and economic interest in the downtown business district similar to the community interest after completion of the first project in Village Park.

Table 1
UNDERWOOD CREEK CHANNEL RECONSTRUCTION PROJECT
FLOODWATER STORAGE VOLUME (ALL VALUES IN ACRE-FEET)

Project Features	Existing Conditions	Proposed Conditions, Bio-Engineered Channel Only	Proposed Conditions, All Three Project Components
		2-year Flood Event	
CP RR bridge to Wall St bridge	1.3	1.4	2.7
Wall St bridge to downstream end of underground culvert	0.5		
Underground culvert in parking lot, to Watertown Plank bridge	0.4	1.2	1.5
Total	2.2	2.6	4.2
		10-year Flood Event	
CP RR bridge to Wall St bridge	2.3	2.4	4.7
Wall St bridge to downstream end of underground culvert	0.8		
Underground culvert in parking lot, to Watertown Plank Bridge	0.7	2.2	2.5
Total	3.8	4.6	7.2
		100-Year Flood Event	
CP RR bridge to Wall St bridge	6.6	3.8	10.4
Wall St bridge to downstream end of underground culvert	1.3		
Underground culvert in parking lot, to Watertown Plank Bridge	1.4	3.9	4.2
Total	9.3	7.7	14.6

Note: Storage volumes for proposed conditions do not include maximized storage volume in the old channel area that could be obtained through the design of a hydraulic control structure at its downstream end



