Exhibit B

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North
St. Paul, MN 55155-4194

Implementation Grants for Stormwater Resilience

Application

FY 2024

Doc Type: Grant Application

Instructions: Read the complete *Request for Proposal (RFP)* and other associated documents before submitting this application. Section 1, Project information affects project eligibility. Unanswered questions may result in disqualification.

Check the SWIFT Supplier Portal and the Minnesota Pollution Control Agency (MPCA) Implementation Grants for Stormwater Resilience webpage for the most recent updates.

Applications are due no later than 4:00 p.m. Central Standard Time (CST) on Thursday, April 11, 2023.

Submit application, workplan and budget (as Microsoft Word and Excel documents) per the instructions listed in Section 7 and 8 of the RFP.

1. Project information

Organization name: City of Duluth

Organization address: 411 West First Street

City: Duluth State: MN Zip code: 55802 County: St. Louis

Contact name: Ryan Granlund Title: Utility Programs Coordinator

Phone: 218-730-4088 Email address: rgranlund@duluthmn.gov

Organization type:

☐ Tribal government

☐ Local/Regional government (plus select one below)
- ☒ City
- ☐ County
- ☐ Town/Township
- ☐ Soil and Water Conservation District
- ☐ Water Management Organization
- ☐ Watershed District
- ☐ Regional Development Commission
- ☐ Metropolitan Planning Organization

Grant requested: $2,226,710.93 + Matching funds: $ 242,469.75 = Total project cost: $ 2,469,180.68

Project Title: *32nd Ave W Creek Watershed Stormwater Resilience Improvements*			
		Yes	**No**
1.	Is applicant the sole source of matching funds for this project?	☒	☐
	If **no,** explain:		

Exhibit B

		Yes	No
2.	Is applicant in compliance with Minnesota's tax and environmental regulatory requirements?	☒	☐
	If **no,** explain:		
3.	Does the proposed project consist of new or upgraded green and/or gray infrastructure intended to address water quantity issues, reduce the risk of localized flooding, and ***increase resilience*** to the impacts of Minnesota's changing climate?	☒	☐
4.	Will project follow all applicable local, state, and federal rules and obtain all necessary permits?	☒	☐
	List permits or other approvals necessary for this project, including wetland permits as applicable, and note whether they have been secured or are anticipated: *City of Duluth Erosion and Sediment Control Permit, MPCA Construction Stormwater Permit, Utility Easement at 3227 Restormel St Location*		
5.	Is the applicant the current landowner?	☒	☐
	If no, attach a letter that includes permission, interest, and commitment from the property owner for the work being completed on the property. A signature from the individual who has the power to grant permission for the proposed activities is required on the letter. Ultimate project ownership (check one of the following): ☐ On public land within applicant boundaries ☐ On private property within applicant boundaries ☐ Other (explain):		
6.	Will an organization involved in the project be responsible for long-term annual operation and maintenance?	☒	☐
	If yes, what organization/department: *City of Duluth Public Works and Utilities* **If no,** explain:		
7.	Has the applicant attached:	**Yes**	**No**
	a. plans and specifications including:	☒	☐
	☒ Site plans ☒ Technical drawings/cross sections ☐ Soil borings and/or soil infiltration testing results (if applicable) ☒ Stormwater management calculations and/or model outputs		
	b. budget (including engineer's estimate of cost and non-construction costs)	☒	☐
	c. climate vulnerability assessments (or equivalent planning document) identifying the need for proposed project, and if applicable, feasibility study for proposed project	☒	☐
	d. land use permission letter (if applicable)	☐	☒
	e. map (or maps) showing:	☒	☐
	☒ Drainage area (acres) ☒ Impervious area (acres) ☒ Existing stormwater conveyance system (including green infrastructure) ☒ EJ areas- project area and the areas directly benefitting from the project ☒ Structures/infrastructure protected (if applicable)		

Exhibit B

2. Project details

1. Provide a brief narrative description of the project. Describe the identified need for this project and severity of the problem. Include project goal(s) and final deliverable(s). [limit of 500 words]:

   The City of Duluth, rich with water resources, is traced with over 240 miles of streams and lies perched along the shorelines of Lake Superior and the St. Louis River Estuary. Many of these streams wind their way over shallow bedrock and clayey soils, down Duluth's steep hill-scape, intersecting with numerous roads and utility crossings while they flow under and through diverse neighborhoods. The utility infrastructure that connects drainage to these streams and allows them to flow unimpeded through Duluth neighborhoods is critically important, given the rapid and erosive nature of its watersheds. However, Duluth's utility and road infrastructure are aging. Rapid industrialization in the early 20th century helped spur development and construction of much of the infrastructure Duluth still relies on today.

   During the development of the 2023 Duluth Stormwater Management Plan (Plan), funded by the MPCA Planning Grants for Community Stormwater Resilience, Duluth Engineering learned that there are areas of Duluth particularly vulnerable to the damaging effects of climate change. The Plan identified multiple concern areas within the 32nd Ave W Creek watershed which lies within a portion of the Lincoln Park Neighborhood, an Environmental Justice community. Duluth stormwater professionals have used the outcomes of the Plan, input from residents within the watershed and institutional knowledge to help prioritize this project.

   Duluth Engineering will implement various drainage improvements in the 32nd Ave W Creek watershed. These include modifications and additions to existing storm sewer pipes, catch basins, culvert crossings and inlets. They vary in scope and nature, while responding directly to the identified need in each location within the project area. The Plan identified a lack of storm sewer inlets on various road sections. Most streets in the study area lacked curb and gutter or sufficient curb height for the road to provide an effective conveyance to the next inlet. This exists, in part, due to a longstanding lack of investment into public infrastructure in this neighborhood. This project will correct that through the installation of additional catch basins in areas, along with flanking inlets in areas where additional capacity is needed. An outcome of this work includes a decrease in localized flooding and erosion by keeping stormwater flows in the conveyance system and out of private properties.

   Other improvements include replacing and modifying a culvert crossing on Wellington St, along with modified inlets on Pacific and Anson Avenues. These improvements will address previous stormwater break- out flows that damage downgradient property. These modifications will provide redundancy, which in turn increases resilience of these critical inlet locations.

   Duluth Engineering will construct new public storm sewer infrastructure at Wellington St and the Wicklow and Wellington St alleys. These improvements will provide a connection between the upgradient and downgradient public systems. Currently, these stormwater flows are conveyed through privately owned storm sewer on private property before connecting back into the public system. These improvements would alleviate localized flooding, reduce risk to the public storm sewer conveyance, and increase resilience for the residences on private property.

2. Identify the following:
   a. type of stormwater management practice:
      Increase stormwater inlet capacity, provide inlet redundancy and re-direct stormwater coneyances onto public right-of-way
   b. expected resilience improvement(s) (include quantitative benefits such as storage volume added, inundation depth reduction, pipe capacity increase, rate control improvements etc): *resilience improvements in four areas to provide additional high flow inlets or capacity in the event of debris blockage at critical inlet locations at*

Exhibit B

Wellington St crossing, Pacific Avenue and Exeter St and two locations on Restormel St , 40 additional inlet locations to provide extra drainage capacity at road intersections, 27 modified inlets to adjust for modified design, approximately 330 LF of private storm sewer abandoned and 140LF of private stormwater ditch abandoned. Wellington St crossing will be upsized from a 36" storm sewer to 48" storm sewer to eliminate street flooding.

c. acres in drainage area:
Approximately 68 acres of catchment area through various site improvements

d. description of the watershed:
32nd Ave W Creek watershed is a small watershed with a steep topography that lies within a heavily developed disadvantaged neighborhood (as defined by meeting criteria in Housing, Health, Water and Wastewater, and Work Force categories in the Climate and Economic Justice Screening Tool: https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5) There are three tributaries that converge within the project boundary: the natural drainages now flow across areas of open and exposed bedrock outcroppings.

e. description of current stormwater conveyance system (if existent) in the project area, including relevant existing green infrastructure:
The existing storm sewer conveyance is aged, with the majority dating back to construction at the turn of the 20th Century. Catch basins are either brick construction or retro-fit precast structures that replaced previous failures. Manholes are primarily original brick construction and many of the storm sewer pipes are vitrified clay pipe of varying diameter. Trunk storm sewer lines are concrete pipe or brick arch pipe that trace the original 32nd Ave W Creek stream path. The Plan identified the built street infrastructure as ineffective to convey runoff to the existing storm sewer infrastructure due to lack of curb height and inadequate number of inlets at street intersections.

f. project alternatives considered:
The 2023 Duluth Stormwater Management Plan identified many areas of improvement that are best paired with future street improvement projects that replace existing street surface and utilities at the time of undertaking. Duluth Engineering professionals agree with this conclusion and will incorporate Plan improvements into future street improvement reviews. This project implements solutions that will quickly and cost-effectively improve the inlet capacity of the conveyance system and reduce break out flows that damage down gradient infrastructure and lead to localized flooding and drainage issues. While green infrastructure was promoted throughout the Plan, the 32nd Ave W Creek was not recommended due to shallow bedrock, shallow groundwater and clay soils.

3. Is the project intended to provide future climate resilience and reduce existing localized flooding? Or is it designed to address only future climate resilience?
This project contributes to Goal 2.4 of Duluth's Climate Action Work Plan to "Develop a stormwater management plan that integrates resilience" and to "prioritize improvements in high-risk neighborhoods with vulnerable populations." The project will reduce existing localized flooding in an array of locations within the Lincoln Park neighborhood. This is achieved through additional stormwater inlets and redundant/resilient infrastructure improvements in targeted locations. This project provides continuity to the public storm sewer system, which will effectively eliminate public reliance on outdated and vulnerable private storm sewer conveyances. This work inherently increases climate resiliency through the increase in inlet capacity and pipe diameter leaving those inlets. The redundant inlets allow high flows to enter the conveyance system more effectively during a flood event when capacity of the primarily inlet is decreased by debris blockage. The Plan identified that the project area can expect a 20% increase in precipitation on average and that storm sewer piping needs upgrades to handle high flow events.

4. Number of structures and infrastructure that will be protected (i.e., reduced flood risk) by the proposed project:
a. Number and type of residential structures (e.g., single family, small multifamily, large multifamily):
Considering a projected 20% increase in precipitation during the 100 yr event, improvements will protect at least 138 residential structures, primarily single family and small multifamily.

b. Number and type of commercial structures (e.g., small commercial, manufacturing facility, warehouse, etc.):
Drainage improvements are primarily upgradient of commercial structures and would provide in-direct benefits from a marginal decrease in localized flooding in commercial zoning districts

c. Number and type of public facilities:
2 - Harrison Park Community Center and Lincoln Park Middle School

d. Number and type of critical infrastructure:
Improvements to capacity and resilience on 4 critical inlet locations. Wellington St crossing improvements preserve community connectivity to Lincoln Park Middle School. Exeter/Pacific St inlet improvements provide outstanding immediate and future mitigation for break out flows that effect 3 square blocks of residential properties. Improvements at critical inlets at Restormel St locations will provide redundant protection from flood flows and protect road intersections and residential properties adjacent to the roadway.

e. In what ways will the project improve public safety (alleviate flooded roads/intersections, protect bridges from failure due to heavy rain events, etc)?
These improvements will effectively convey rain event flows to stormwater infrastructure, decreasing break-out flows onto private property, protecting critical storm sewer crossings and inlets on which public road infrastructure relies, and preserving safe access across the community.

f. Is there potential for negative downstream impacts? How was this determined?
The location of these improvements was targeted in part because of their modeled inlet capacity issues. The watershed model, completed for the Plan, showed the majority of downstream pipe infrastructure to have capacity to convey flows without outsized flooding impacts. Break-out flows upgradient were modeled as part of pipe diameter issues near Grand Forks Ave and 3rd St and will not re-direct new stormwater flow into the downgradient system.

5. Describe how resilience to climate change was accounted for in project design. How were projected precipitation events used to size the proposed project (e.g., does the project consider future precipitation, including projected scenarios for climate change at end of estimated project life)? To what extent will the project reduce predicted frequency of localized flooding? Attach any relevant model outputs or vulnerability assessments. [limit of 400 words]:
The project locations were chosen based on precipitation increase due to projected climate scenarios. University of Minnesota information regarding Atlas-14 data includes downscaled climate change projections that were used in conjunction with a XPSWMM model for the 32nd Ave W Creek Watershed. The project utilized the outcomes of this model to inform Engineering staff of feasibly locations for improvements under the 100 yr event with a projected 20% increase in precipitation. The 20% increase was identified as a most feasible increase for the Duluth region, considering UMN data for middle and end of century moderate and high emissions scenarios.
Most catch basin storm sewer leads within the project area are 10-inch diameter vitrified clay pipe. This will be increased to 12-inch diameter re-enforced concrete pipe and with additional inlets to effectively capture and convey any increase of flows. The Wellington St storm sewer crossing will be updated from 36-inch concrete pipe installed in 1923 to 48-inch re-enforced concrete pipe of modern construction. Modeled results for the 36-inch pipe and capacity of the downgradient stream channel combined with increased headwall height at Pacific Ave justifies the increased pipe size, in conjunction with headwall modifications.
Critical inlet areas described in this project will receive redundant inlets to increase resiliency during heavy flows that carry flood debris.
The combined improvements will decrease localized flooding across a broad range of areas and prevent future drainage issues and break-out flows identified using modeling and public testimony.

a. Design storm:
Most infrastructure is sized to the Atlas-14 10-year event and the improvements will allow for a more effective conveyance system during higher precipitation events. The improvements will produce a resilient system that is better equipped to handle the increased stress of heavy rain events.

b. Climate projection methodology:

Exhibit B

UMN Atlas-14 Considering Down-Scaled Climate Projections

c. Proposed infrastructure lifespan:
50 years, middle to end of century

6. Using the MPCA's criteria and interactive mapping tool (recently updated on the MPCA website), will the proposed project or the direct benefit from the project be located in one or more MPCA identified environmental justice (EJ) areas of concern? ☒**Yes** ☐**No**

If yes:

a. On a map, show the project location and the area directly benefitting from the project within an EJ area(s).

b. Were EJ communities consulted during planning? ☒**Yes** ☐**No**
If yes, describe; if no, explain why not:
Community engagement during Plan development included 1,103 invitations to individual residents and property owners within the 32nd Ave W Creek watershed to attend a public stormwater resiliency workshop. 17 residents attended along with community stakeholders and partners. Meeting notice flyers were sent to community organizations, non-profits and business groups along with a City of Duluth press release. Project locations were chosen specifically because of feedback received from community members during the workshop.

c. Is the project primarily intended to serve EJ communities? ☒**Yes** ☐**No**
If yes, how will these communities be kept informed of construction progress, etc.?
Residents will be informed of construction timelines and potential impacts to property access along with duration and expected environmental interruptions during the project period. This process and communication is typical of Duluth Engineering outreach during all Duluth projects.

7. Describe any co-benefits of the project:

a. storage and reuse/drought protection: *This method of stormwater management was ruled out due to constraints within the work area related to bedrock and locations to provide cost effective storage.*

b. infiltration: *This stormwater management techniques were unfortunately deemed unfeasible due to geological limitations within the work area.*

c. groundwater recharge: *Duluth is known for its type D soils and shallow bedrock which unfortunately prohibit infiltration*

d. new community amenity: *The community will benefit from improved drainage at a number of locations and a more resilience community.*

e. pollutant treatment: *four sump manhole structures that will improve downstream water quality through capture of sediment, trash and sediment bound nutrients. Currently estimated approximately 24 tons of sediment will be captured annually by these systems along with trash and other pollutants typical in an urban setting.*

f. impervious surface/heat island reduction: *The scope of the project unfortunately provides little opportunity for impervious surface reduction.*

g. increased tree canopy: *The project proposes to minimize tree removals in this neighborhood, which has a canopy of large old growth silver maples.*

8. Provide quantitative justification of how the project is cost-effective, as applicable:

a. Will the project leverage other funding to provide a greater match (e.g., self funding, federal, nonprofit, or philanthropic grant)?:
The project match is self-funded through the use of stormwater utility user fees and staff time as in-kind match.

b. Are future savings anticipated to result from the proposed project (describe how, and how much)?:
The project will result in cost savings from resilience improvements, which protect downgradient infrastructure from damage during heavy rains. Considering typical street repair or replacement during these damaging events, the reduction of un-needed repair costs is anticipated to be high.

c. Will funding be used for water quantity project costs (e.g., stormwater pipe upsizing) paired with concurrent stormwater/drinking water/ wastewater project(s) receiving SRF funding where climate resiliency costs are ineligible? If applicable, describe: *No*
d. Will project be paired with concurrent Capital Improvement Project to include resilient stormwater improvements? If applicable, describe:
The City is actively engaged in a street preservation program and this work will benefit future street preservation projects by providing necessary utility infrastructure to pair with pavement restoration projects.
e. Other:
The project areas were chosen specifically based on community need to provide efficient and effective improvements to the stormwater conveyance system prior to planned major street/stormwater reconstruction. The project will includes "in-house" construction administration and inspection completed by Duluth Engineering staff and decreases third party consultant fees.

9. How old is the relevant existing infrastructure that is being repaired, replaced, or supplemented (if applicable)? Is it beyond its expected lifespan? Is the project a necessary upgrade or replacement of outdated and/or failing infrastructure?
Most of the infrastructure being replaced and improved was built between 1915 and 1929 and is well beyond its design life of 30-50 years. The project includes upgrading and supplementing much of this aged system with modern improvements and modern pipe materials and diameters.

10. Describe the estimated timeline for this project and what the applicant has done to ensure the project is viable (e.g., overall— how ready is the project for construction, how complete are the plans, what planning, or site investigation work has been completed already, what else is needed before construction can begin, how long are those things anticipated to take, how much time is needed for completion of construction, etc.). Attach feasibility study if applicable.
The project is will begin construction in 2025. Design plans are 90% complete at time of application, subject to final refinement during the summer of 2024. Site investigation and survey is completed as part of the construction design phase. The previously identified permits and easement will be secured after project award during 2024, prior to project start. This process will be completed by March of 2025. A Request for Bid (RFB) will be advertised on the final project design. The successful bidder will be chosen in accordance with City of Duluth Purchasing Department policy. The RFB will advertise a start date to be determined in Spring of 2025. Construction will be completed over a 6-month period in the Spring/Summer of 2025. The project will be inspected full time by Duluth Engineering, and As-Built drawings will update City of Duluth utility mapping in Winter of 2025/2026 for accurate locating and maintenance planning for the built infrastructure.

3. Experience and qualifications

1. List the individuals from your organization who will be involved in the proposed project, including their job titles and specific roles and qualifications:

Brad Scott, Senior Engineer, Public Works and Utilities, Engineering Division, City of Duluth:
Brad Scott, P.E., is a licensed engineer in Minnesota with over 25 years of experience in construction and engineering, specializing in site design, transportation, and utility projects. He is well-versed in all phases of project delivery, from initial scoping to final design and construction. Brad has a successful track record of managing complex, interdisciplinary projects, with demonstrated success in project management, agency coordination, and fostering effective stakeholder relationships.

Jacob Oetterer, Senior Engineering Technician, Public Works and Utilities, Engineering Division, City of Duluth:
Jacob Oetterer is the team's CADD designer. During construction he will be the project inspector. Jacob has an A.S. in engineering and has been an Engineering Technician for 14 years. His earlier years were spent with St. Louis County as a surveyor and bridge safety and construction inspector. Later, he joined Northland Consulting Engineers where his primary focus was designing using Autodesk's Civil 3D. His involvement there was heavy in roadway, utility, stormwater, and private development where his skills were honed in overcoming design obstacles and coordinating with various engineering disciplines. Some of Jacob's design projects include a 52-acre campus design for the City of Mora's school district, State Aid designs for the City of Silver Bay and the City of Hermantown, and many more various projects in size within Duluth and the surrounding area.

Tom Johnson, Senior Engineer, Public Works and Utilities, Engineering Division, City of Duluth:
Tom's engineering focus is on the stormwater utility and his duties include FEMA flood plain management, permitting all stormwater management requirements for all development in the City and planning and implementing infrastructure projects. Tom will serve as the technical expert and will serve as a core member of the City of Duluth Engineering Team on this project. He brings 12 years of experience working on stormwater infrastructure in the City, including establishment of the City's stormwater utility. Before the City, he spent 10 years at LHB on stormwater design.

Ryan Granlund, Utility Programs Coordinator, Public Works and Utilities, Engineering, City of Duluth:
Ryan's role offers critical knowledge in the administration and reporting needs of grant funded programs. Ryan will serve as the main contact for program related needs and will perform project and grant administration to ensure project success. He also brings 6 years of field knowledge in stormwater issues in the City, as he is the main liaison to all reported stormwater incidents and problems. He manages the City of Duluth Stormwater Permit, including heavy emphasis on all things related to stormwater pollution prevention, public engagement and utility resilience.

2. Will anyone outside your organization be responsible for work performed? ☒**Yes** ☐**No**

   If yes, provide name of organization(s) and contact information, brief description of their relevant experience and qualifications related to the proposed project, and describe the role(s) of the outside organization(s) in the project: *The RFB process will result in the selection of a licensed and bonded contractor who retains the necessary experience and qualifications to perform work within the City of Duluth.*