LOWER MINNESOTA RIVER
WATERSHED DISTRICT

Executive Summary for Action

Lower Minnesota River Watershed District Board of Managers Meeting
Wednesday, October 20, 2021

Agenda Item
Item 6. J. – Permits & Project Reviews

Prepared By
Linda Loomis, Administrator

Summary

i. **CSAH 61 Drainage Improvements (LMRWD Permit 2021-002)**
This is a project proposed by Carver County to address an issue at a box culvert under Flying Cloud Drive/CSAH 61.

Attachments
Technical Memorandum County State Aid Highway (CASH) 61 Drainage Ditch Improvements (LMRWD No. 2021-002) dated October 13, 2021

Recommended Action
Motion to approve CSAH 61 Drainage Ditch Improvements Project (LMRWD Permit No. 2021-002) and authorize staff to pursue larger erosion issues with Carver County, and the cities of Chanhassen and Eden Prairie

ii. **TH 13 & Lone Oak Signal Improvements (LMRWD Permit 2021-042)**
This is a MnDOT Project for traffic improvements at TH 13 and Lone Oak Boulevard. The project will construct improvements to the intersection to improve pedestrian access to the MN River Greenway Trailhead on the North side of the Intersection.

Attachments
Technical Memorandum Highway 13 and Lone Oak Signal (LMRWD No. 2021-042) dated October 13, 2021

Recommended Action
Motion to approve TH 13 & Lone Oak signal improvements (LMRWD Permit No. 2021-042)

iii. **Burnsville Cemetery Expansion (LMRWD Permit 2021-007)**
This is a proposal to increase the area of the Garden of Eden Islamic Cemetery in Burnsville.

Attachments
Technical Memorandum Burnsville Cemetery Expansion (LMRWD No. 2021-007) dated October 13, 2021

Recommended Action
Motion to conditionally approve Garden of Eden Cemetery expansion (LMRWD No. 2021-007) subject to receipt of a copy of the NPDES permit and the name of the contractor and contact information for the person responsible for the inspection and maintenance of all erosion and sediment control features.

iv. Quarry Lake Outlet (LMRWD Permit 2021-014)

The project is proposed by the City of Shakopee to manage water levels in Quarry Lake and control damage caused by excessively high-water levels.

Attachments
Technical Memorandum Quarry Lake Outlet (LMRWD No. 2021-014) dated October 14, 2021

Recommended Action
Motion to conditionally approve Quarry Lake Outlet (LMRWD No. 2021-014) subject to receipt of a copy of the NPDES permit and the name of the contractor and contact information for the person responsible for the inspection and maintenance of all erosion and sediment control features.

v. Dakota LP (LMRWD Permit 2021-046)

This proposed is for improvements to a gas pipeline that runs underneath the Minnesota River between Bloomington and Burnsville. Staff was planning this permit for the November 2021 LMRWD Board of Managers meeting, however, ERM, the consultant on this project for CenterPoint Energy has asked that the approval be expedited because providing natural gas for consumers is considered an essential service. This project involves open cuts on steep slopes.

At this time staff is reviewing the signed drawings and will have recommendations for the Board on Monday.

Attachments
Attachments to follow

Recommended Action
Recommendations to follow

Young Environmental Consulting Group, LLC

Technical Memorandum

To: Linda Loomis, Administrator
Lower Minnesota River Watershed District

From: Kaci Fisher, Environmental Scientist
Katy Thompson, PE, CFM

Date: October 13, 2021

Re: County State Aid Highway (CSAH) 61 Drainage Ditch Improvements (LMRWD No. 2021-002)

Carver County (County) has applied for an individual project permit from the Lower Minnesota River Watershed District (LMRWD or District) to maintain a drainage channel that crosses under Flying Cloud Drive (CSAH 61) and improve drainage through the culvert under the highway in the City of Chanhassen (City). The County has provided a grading plan of the proposed improvements along with the permit application for the CSAH 61 Drainage Ditch Improvements (Project).

The proposed Project consists of excavating a new channel to remove excess sediment buildup and improve the flow through the 4x16 foot box culvert under Flying Cloud Drive. Additionally, the Project intends to reestablish the historic channel for this drainageway so that water discharges south to the Minnesota River rather than west onto US Fish and Wildlife Service (USFS) property. The Project would disturb approximately 0.3 acres at Flying Cloud Drive (Figure 1). The Project is not located within the High Value Resource Area or Steep Slopes Overlay District, but it is located within the Minnesota River 100-year floodplain. Construction is proposed to commence November 2021.

Because the City does not have its municipal permit from the District, the Project requires an LMRWD individual permit and is, therefore, subject to an LMRWD permitting review.

Summary

Project Name:	CSAH 61 Drainage Ditch Improvements

Purpose:	Channel grading
Project Size:	Approximately 0.3 acres disturbed, no new impervious proposed
Location:	Adjacent to 285 Flying Cloud Drive, Chanhassen, MN
LMRWD Rules:	Rule C—Floodplain and Drainage Alteration
Recommended Board Action:	Approval

Discussion

The District has received the following documents for review:

- LMRWD online permit application; received February 2, 2021
- US Army Corps of Engineers permit to discharge into a wetland; dated February 1, 2021; received February 1, 2021
- Proposed channel grading; received February 2, 2021
- Redlined Wetland Delineation Figure by Hennepin County; dated March 17, 2016; received February 2, 2021
- Plans sheets for Bridge Number 10J43 by Hennepin County; dated November 2, 2016; received February 11, 2021
- CSAH 61: Pollutant Loading at all LMRWD Outlets memo by HZ United; dated October 27, 2016; received February 11, 2021, and August 26, 2021
- Current right-of-way aerial map; received February 11, 2021
- Historical aerial photos from 1969, 1979, and 1991 from Carver County; received February 11, 2021
- Stream calculations; received August 26, 2021
- Draft grading plans by Carver County; dated April 28, 2021; received August 26, 2021

The application was deemed complete on September 16, 2021, and the documents received provide the minimum information necessary for permit review.

Rule C—Floodplain and Drainage Alteration

The proposed Project is located within the Minnesota River floodplain, shown on the Carver County Flood Insurance Rate Map Panel 2709C0234D, dated December 21, 2018. The 100-year flood elevation at this location is approximately 720.7 feet (NAVD88).

The Project proposes excavating a new channel and stilling basin within County right-of-way and south of TH 101 to improve the channel hydraulics, prevent sediment buildup in the culvert, and prevent the continued westerly migration of the creek onto USFWS property. On the north side of CSAH 61, the Project proposes to straighten the drainageway as it enters the culvert. The 100-year floodplain is located only on the south side of CSAH 61, so the channel straightening and associated fill will not affect high water elevations on the Minnesota River. The County has provided hydraulic calculations demonstrating the new channel cross-section has the capacity to convey the flows as designed.

Additional Considerations

As part of the LMRWD 2020 Gully Inventory and Condition Assessment, the CSAH 61 culvert was surveyed and clearly presented with excessive sedimentation and evidence of the need for this project (Gully L199 Assessment). However, the Project is unlikely to solve the sedimentation problem at this location. The CSAH 61 culvert serves a 400-acre upstream watershed that includes High Priority Region 11 (Figure 2). The stream reach between High Priority Region 11 and CSAH 61 (Gully L197 Assessment) shows the extent of bank erosion and channel degradation occurring immediately upstream of the proposed project. Until this reach and the upstream High Priority Region are stabilized, the County is likely to continue to face sediment maintenance problems.

Recommendations

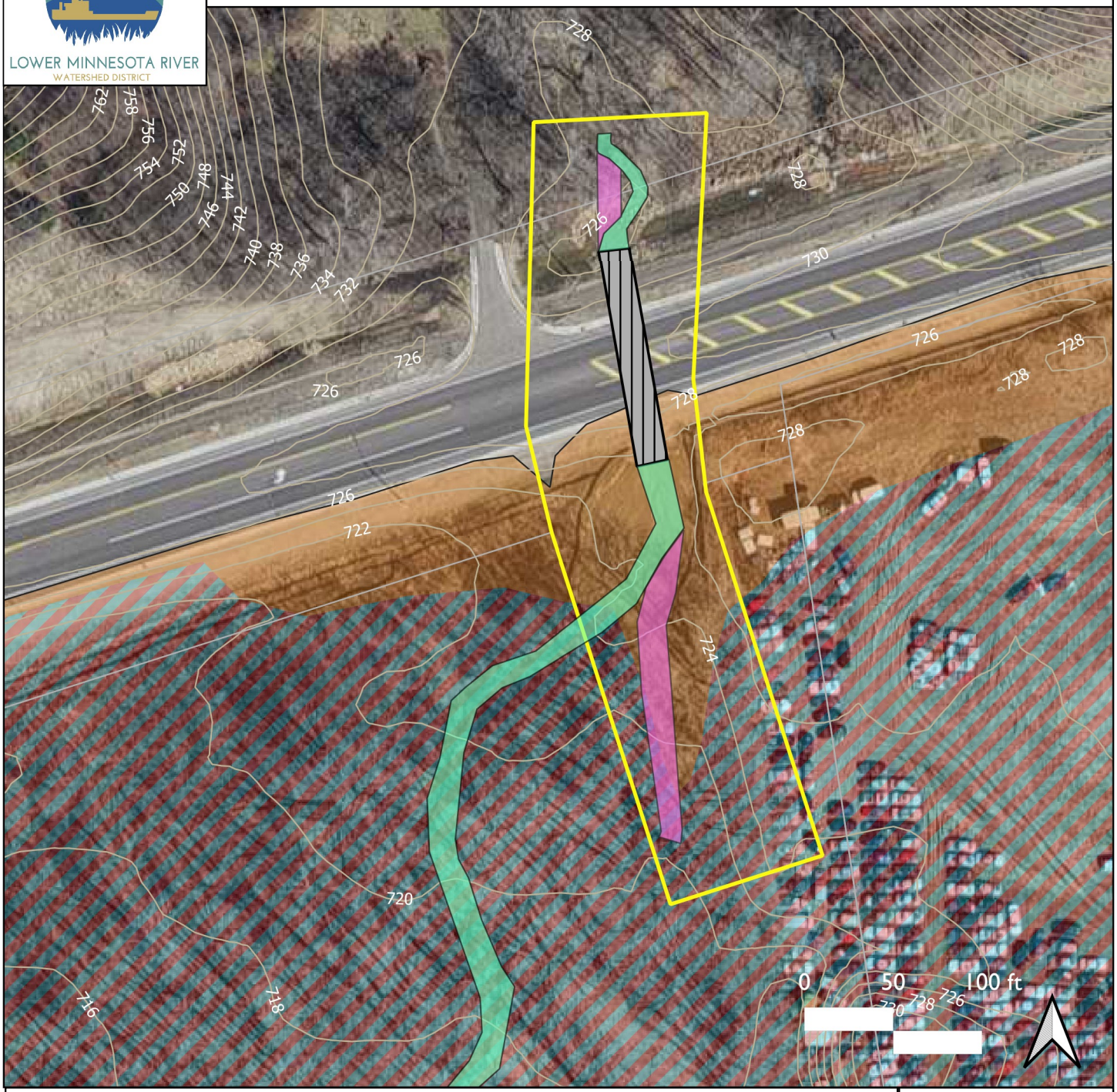
The staff recommends approval of the CSAH 61 Drainage Ditch Improvements Project. A follow-up meeting with the County and Cities of Chanhassen and Eden Prairie is recommended to discuss potential opportunities to address the larger erosion issue occurring upstream.

Attachments

- Figure 1—CSAH 61 Project Location Map
- Figure 2—CSAH 61 Project Drainage Area Map
- 2020 Gully L199 Condition Assessment
- 2020 Gully L197 Condition Assessment
- Draft Permit No. 2021-002

LOWER MINNESOTA RIVER
WATERSHED DISTRICT

Figure 1: CSAH 61 Drainage Ditch Improvements



LEGEND

- Project Location
- CSAH 61 Drainage Project
- New Channel
- Existing Culvert
- Existing Channel
- 2-ft LiDAR Contours
- Steep Slopes Overlay District
- 100-yr Floodplain
- Floodway
- 500-yr Floodplain
- Parcel Boundaries
- LMRWD Boundary
- County Boundaries

LMRWD Watershed Location Map

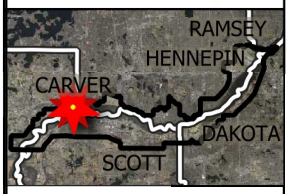


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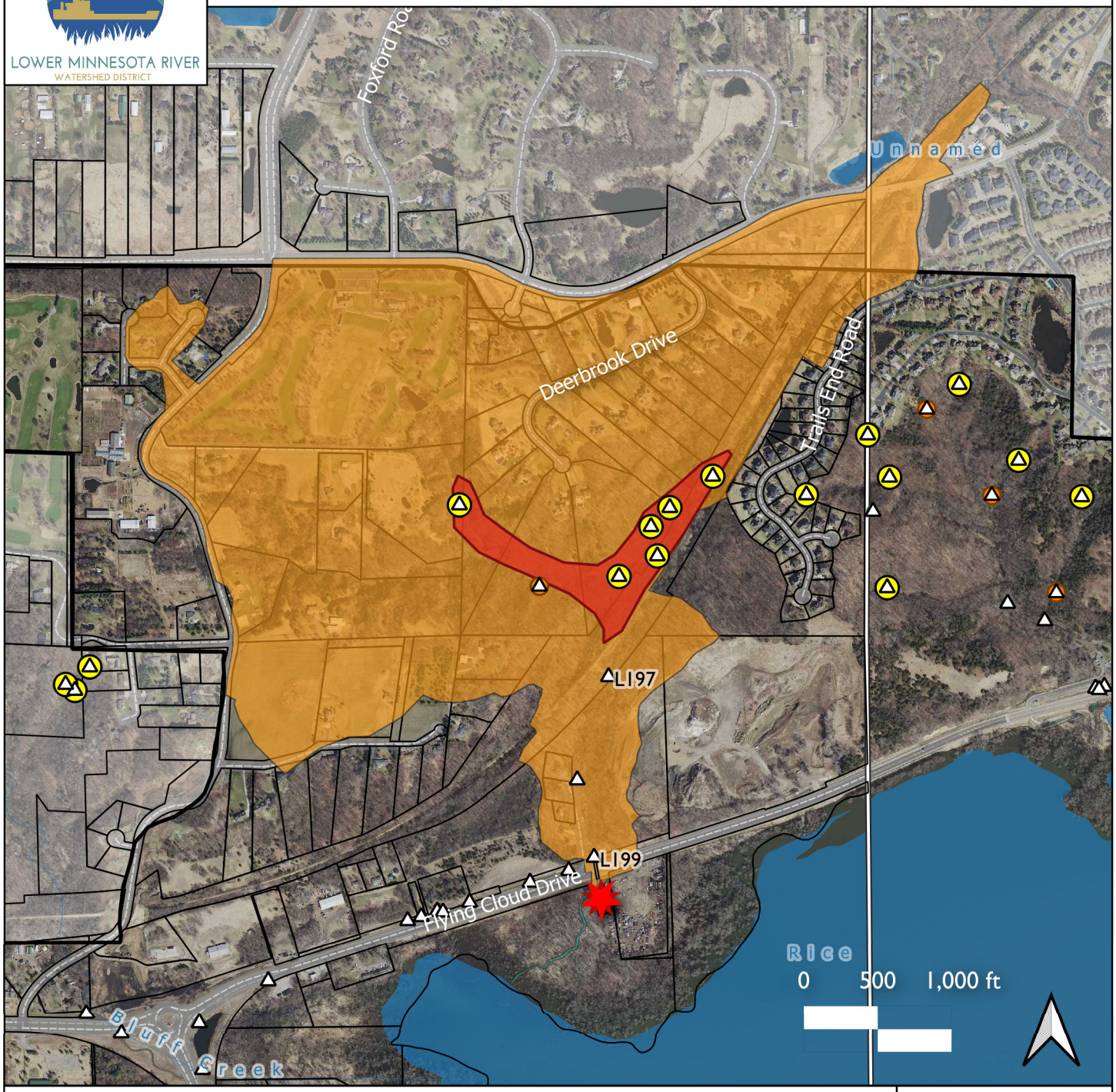
Figure 2: County Highway 61 Drainage Ditch Drainage Area



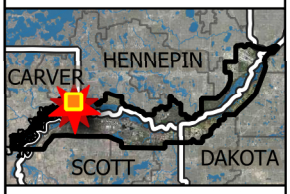
LEGEND

- Project Location
- 2020 Pipe Outfall Locations

2020 Gully Erosion Potential

- High Erosion Potential
- Moderate Erosion Potential
- Low Erosion Potential
- 2020 Gully Inventory High Priority Region
- CSAH 61 Culvert Drainage Area
- Carver Co. Parcel Data
- LMRWD Boundary
- County Boundaries
- Public Waters
- Public Waterbodies

LMRWD Watershed Location Map



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PIPE ID: L199	
PREVIOUS WAYPOINT ID: 1234	
SURVEY DATE: 07/16/2020 9:33 AM	
LOCATION: Chanhassen City	
TYPE OF SITE: Pipe Outfall	
SITE SUMMARY: Weather: Sunny Rainfall in previous 24 hours: No Access: Along a Road Note yes if pipe requires attention:	Pipe UTMs:

PIPE INFORMATION	
INTERIOR PIPE DIAMETER:	6"-24"
PIPE MATERIAL	Concrete
APRON CONDITION:	Yes, Fair
EROSION AREAS:	Inlet, Outlet
OUTLET CONDITION:	Erosion
ILLICIT DISCHARGE:	None
INVASIVE SPECIES:	None, None
PRESENCE OF WATER	Moderate, Fast

ADDITIONAL NOTES:
Pipe within a pipe: No
Debris? None
Concrete pipe from 2007 report looks to have been replaced with new square concrete culvert.
Erosion around inlet and outlet apron.

Looking d/s at concrete inlet pipe with riprap along the edges

Close up of inlet, some erosion around the apron

Looking u/s at stream feeding into culvert

Looking at frontal view of outlet culvert

Looking u/s at some erosion along the right apron of the outlet

PIPE ID: L197	
PREVIOUS WAYPOINT ID: 1232	
SURVEY DATE: 07/16/2020 10:05 AM	
LOCATION: Chanhassen City	
TYPE OF SITE: Pipe Outfall	
SITE SUMMARY: Weather: Sunny Rainfall in previous 24 hours: No Access: Walked through a Stream Note yes if pipe requires attention:	Pipe UTMs:

PIPE INFORMATION	
INTERIOR PIPE DIAMETER:	>48"
PIPE MATERIAL	Corrugated Metal
APRON CONDITION:	No, Unable to assess/N/A
EROSION AREAS:	Outlet
OUTLET CONDITION:	Erosion
ILLICIT DISCHARGE:	None
INVASIVE SPECIES:	None, None
PRESENCE OF WATER	Moderate, Fast

ADDITIONAL NOTES:
Pipe within a pipe: No
Debris? None
Outlet pipe routes the stream under the walking trail, looks stabilized with concrete wall. The left side of the stream bank is stabilized with riprap, but along the right bank and further d/s, significant slumps were observed.

Frontal view of outlet pipe

Riprap stabilization along the left bank

Slumping along the right bank d/s from the outlet

Looking d/s at stream channel

Looking d/s at a large slump with overhang on the left bank

Looking u/s towards pipe outfall, manmade knickpoints visible

LOWER MINNESOTA RIVER WATERSHED DISTRICT

Permit Number
2021-002

Individual Project Permit

Pursuant to Minnesota Statutes, Chapter 103B, 103D, and 103F consistent with the rules of the Lower Minnesota River Watershed District (LMRWD), and on the basis of statements and information contained in the permit application, plans and supporting information provided by the applicant, all of which are made part hereof by reference, **permission is hereby granted** to the applicant to perform actions as authorized below.

By granting this permit, the LMRWD does not direct the activity authorized herein or warrant the soundness of the applicant's design or methods in any respect. The LMRWD waives no immunity or protection applicable to itself, an officer, an agent or an employee pursuant to this approval.

Project Name	Project Location	
CSAH 61 Drainage Ditch	10398 Erie Lane, Chaska, MN	
Type of Development	**City**	**County**
Maintenance work, channel grading	Chaska	Carver
Permittee/Property Owner's Name	**Permittee Mailing Address**	
Lyndon Robjent, Carver County	11360 Highway 212, Ste 1, Cologne, MN 55322	
Authorized Agent Name	**Agent Email Address**	**Agent Phone Number**
Shelby Sovell, Carver County	ssovell@co.carver.mn.us	(507) 340-8780
Purpose of Permit	**Authorized Action(s)**	
Realign the existing drainage ditch to its historic channel	Alteration of land below the 100-year flood elevation	
Affected Rule(s): Rule C—Floodplain and Drainage Alterations		
Board Approval	**Expiration Date**	**Issued Date**
October 20, 2021	**October 20, 2022**	
Authorized Issuer Name and Title	**Email Address**	**Phone Number**
Linda Loomis, LMRWD Administrator	permit@lowermnriverwd.org	(763) 545-4659

This permit is granted **subject to** the following **general conditions**:

NPDES Permit: Submit a copy of the NPDES construction stormwater general permit to the LMRWD before construction begins. All erosion and sediment control measures must be effectively installed and maintained according to LMRWD guidelines and MPCA NPDES Permit guidelines as laid out by current District Rules and Policies until all disturbed soils have been permanently stabilized.

Grading and excavating must not begin until the applicant has been noticed that a permit has been issued and required erosion control measures are in place. Working without a permit where required is in violation of LMRWD Rules and is a misdemeanor subject to penalty by law.

Applicable federal, state, or local regulations: The permittee is responsible for the action(s) of their representative, contractor and employees and compliance with all rules, regulations, requirements, or standards of any applicable federal, state, or local agencies; including, but not limited to, the U.S. Army Corps of Engineers, Board of Water and Soil Resources, MN Pollution Control Agency, watershed districts, water management organizations, county, city and township zoning.

Site access: In accepting this permit, the owner recognizes and agrees that LMRWD representatives may enter the site at reasonable times to inspect the activities authorized hereunder and compliance with the requirements of this permit, the LMRWD Rules and applicable statutes. This includes routine site inspections as well as inspections during or immediately following installation of best management practices, following storms/critical events, prior to seeding deadlines, for the purpose of permit closeout, or on report of issue or complaint. This right of access is in addition to the access authority of the LMRWD under existing law.

Completion date: Construction work authorized under this permit shall be completed on or before the date specified above. No construction is authorized beyond the expiration date. The permittee may request an extension of the time to complete the project by submitting a written request, stating the reason thereof, to the LMRWD, no later than two weeks before this permit expiration.

Written consent: In all cases where the permittee by performing the work authorized by this permit shall involve the taking, using, or damaging of any property rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the permittee, before proceeding, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights, and interests needed for the work.

Not assignable: This permit is not assignable nor transferable by the permittee except with the written consent of the LMRWD.

No changes: The permittee shall make no changes, without written permission or amendment previously obtained from the LMRWD, in the dimensions, capacity or location of any items of work authorized hereunder.

Permission only/no liability: This permit is permissive only. No liability shall be imposed by the LMRWD or any of its officers, agents or employees, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person other than the state against the permittee, its agents, employees, or contractors, for any damage or injury resulting from any such act or omission, or as estopping or limiting any legal claim or right of action of the state against the permittee, its agents, employees, or contractors for violation of or failure to comply with the permit or applicable conditions.

Contractor responsibility: The permittee shall ensure the contractor has received and thoroughly understands all conditions of this permit.

Termination: This permit may be terminated by the LMRWD at any time deemed necessary for the conservation of water resources, or in the interest of public health and welfare, or for violation of any of the conditions or applicable laws, unless otherwise provided in the permit.

Young Environmental Consulting Group, LLC

Technical Memorandum

To: Linda Loomis, Administrator
Lower Minnesota River Watershed District

From: Kaci Fisher, Environmental Scientist
Katy Thompson, PE, CFM

Date: October 13, 2021

Re: Highway 13 and Lone Oak Signal (LMRWD No. 2021-042)

Minnesota Department of Transportation (MnDOT, applicant) has applied for an individual project permit from the Lower Minnesota River Watershed District (LMRWD or District) to install a traffic signal and to construct Americans with Disability Act (ADA) and drainage improvements at the intersection of Lone Oak Road and Highway 13 in the City of Eagan (City), as shown in **Figure 1**. The applicant has provided site plans for the Highway 13 and Lone Oak Signal (Project) along with the permit application.

The proposed Project would disturb approximately 0.12 acres, create 0.06 acres of new impervious surfaces, and excavate 180 cubic yards within the High Value Resource Area (HVRA). It is not within the Steep Slopes Overlay District nor the 100-year floodplain.

The City has received a LMRWD municipal permit; however, the City does not have the authority to permit MnDOT projects. As such, the Project requires an LMRWD individual permit and is subject to an LMRWD permitting review for the portion of the Project within its jurisdiction.

Summary

Project Name:	Highway 13 and Lone Oak Signal
Purpose:	Traffic signal and ADA and drainage improvements
Project Size:	0.12 acres disturbed; 0.05 acres existing impervious;

	0.06 acres proposed impervious
Location:	Intersection of Highway 13 and Lone Oak Road, Eagan, MN
LMRWD Rules:	Rule B—Erosion and Sediment Control
Recommended Board Action:	Approval

Discussion

The District received the following documents for review:

- LMRWD online permit application; received August 27, 2021
- Project Map; received August 27, 2021
- Construction plans by MnDOT; dated August 24, 2021; received August 27, 2021

The application was deemed complete on September 16, 2021, and the documents received provide the minimum information necessary for permit review.

Rule B – Erosion and Sediment Control

The District regulates land-disturbing activities that involve the excavation of 50 cubic yards or more within the HVRA. The HVRA occurs on the west side of Trunk Highway (TH) 13. The Earthwork Tabulation sheet shows 180 cubic yards will be excavated for TH 13. The applicant has provided an erosion and sediment control plan and a Stormwater Pollution Prevention Plan. The proposed grading does not substantially change the existing topography or drainage patterns, and because the Project disturbs less than one acre, a copy of the NPDES permit is not needed. The Project complies with Rule B.

Recommendations

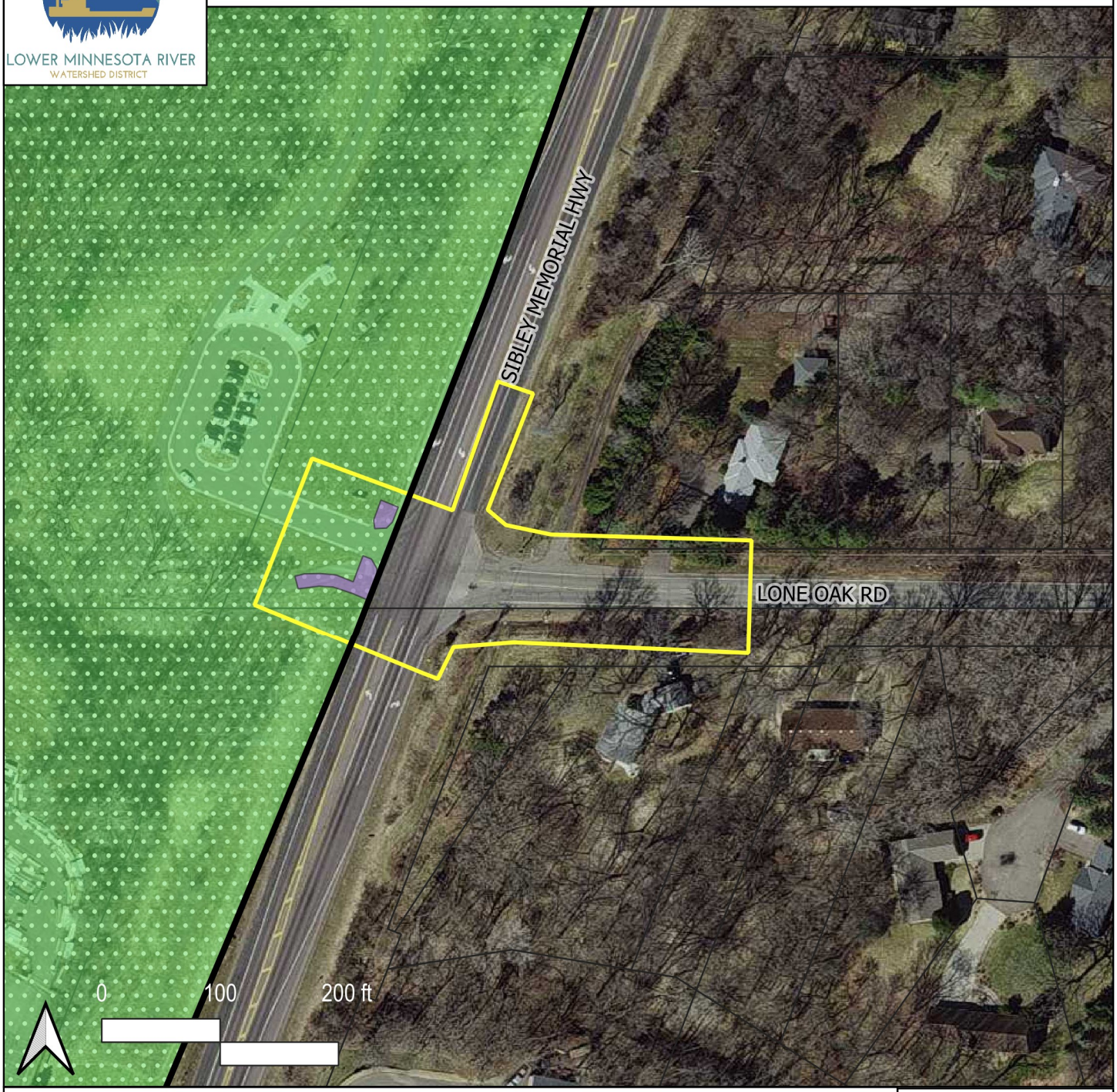
Staff recommends approval of the Project.

Attachments

- Figure 1 – Highway 13 and Lone Oak Signal Project Location Map
- Draft Permit No. 2021-042

LOWER MINNESOTA RIVER
WATERSHED DISTRICT

Figure 1: Hwy 13 & Lone Oak Signal Project Location



LEGEND

- Project Location
- Hwy 13 & Lone Oak
- Improvement Areas
- Public Waterways
- Public Waters
- Calcareous Fens
- High Value Resource Area
- Steep Slopes Overlay District
- Trout Streams
- 100-yr Floodplain
- Floodway
- LMRWD Boundary
- County Boundaries
- Parcels Boundaries

LMRWD Watershed Location Map

Young Environmental Consulting Group, LLC

LOWER MINNESOTA RIVER
WATERSHED DISTRICT

Permit Number
2021-042

Individual Project Permit

Pursuant to Minnesota Statutes, Chapter 103B, 103D, and 103F consistent with the rules of the Lower Minnesota River Watershed District (LMRWD), and on the basis of statements and information contained in the permit application, plans and supporting information provided by the applicant, all of which are made part hereof by reference, **permission is hereby granted** to the applicant to perform actions as authorized below.

By granting this permit, the LMRWD does not direct the activity authorized herein or warrant the soundness of the applicant's design or methods in any respect. The LMRWD waives no immunity or protection applicable to itself, an officer, an agent or an employee pursuant to this approval.

Project Name	Project Location	
Highway 13 and Lone Oak Signal	Intersection of Highway 13 & Lone Oak Road	
Type of Development	**City**	**County**
Highway improvements	Eagan	Dakota
Permittee/Property Owner's Name	**Permittee Mailing Address**	
Steve Gebauer, Minnesota Department of Transportation	1500 County Road B2, Roseville, MN 55113	
Authorized Agent Name	**Agent Email Address**	**Agent Phone Number**
Greg Asche, Minnesota Department of Transportation	greg.asche@state.mn.us	(651) 366-5904
Purpose of Permit	**Authorized Action(s)**	
The addition of a traffic signal and ADA and drainage improvements	Site grading and improvements, erosion and sediment control	
Affected Rule(s): Rule B—Erosion and Sediment Control		

Board Approval	Expiration Date	Issued Date
October 20, 2021	**October 20, 2022**	

Authorized Issuer Name and Title	Email Address	Phone Number
Linda Loomis, LMRWD Administrator	permit@lowermnriverwd.org	(763) 545-4659

This permit is granted **subject to** the following **general conditions**:

NPDES Permit: Submit a copy of the NPDES construction stormwater general permit to the LMRWD before construction begins. All erosion and sediment control measures must be effectively installed and maintained according to LMRWD guidelines and MPCA NPDES Permit guidelines as laid out by current District Rules and Policies until all disturbed soils have been permanently stabilized.

Grading and excavating must not begin until the applicant has been noticed that a permit has been issued and required erosion control measures are in place. Working without a permit where required is in violation of LMRWD Rules and is a misdemeanor subject to penalty by law.

Applicable federal, state, or local regulations: The permittee is responsible for the action(s) of their representative, contractor and employees and compliance with all rules, regulations, requirements, or standards of any applicable federal, state, or local agencies; including, but not limited to, the U.S. Army Corps of Engineers, Board of Water and Soil Resources, MN Pollution Control Agency, watershed districts, water management organizations, county, city and township zoning.

Site access: In accepting this permit, the owner recognizes and agrees that LMRWD representatives may enter the site at reasonable times to inspect the activities authorized hereunder and compliance with the requirements of this permit, the LMRWD Rules and applicable statutes. This includes routine site inspections as well as inspections during or immediately following installation of best management practices, following storms/critical events, prior to seeding deadlines, for the purpose of permit closeout, or on report of issue or complaint. This right of access is in addition to the access authority of the LMRWD under existing law.

Completion date: Construction work authorized under this permit shall be completed on or before the date specified above. No construction is authorized beyond the expiration date. The permittee may request an extension of the time to complete the project by submitting a written request, stating the reason thereof, to the LMRWD, no later than two weeks before this permit expiration.

Written consent: In all cases where the permittee by performing the work authorized by this permit shall involve the taking, using, or damaging of any property rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the permittee, before proceeding, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights, and interests needed for the work.

Not assignable: This permit is not assignable nor transferable by the permittee except with the written consent of the LMRWD.

No changes: The permittee shall make no changes, without written permission or amendment previously obtained from the LMRWD, in the dimensions, capacity or location of any items of work authorized hereunder.

Permission only/no liability: This permit is permissive only. No liability shall be imposed by the LMRWD or any of its officers, agents or employees, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person other than the state against the permittee, its agents, employees, or contractors, for any damage or injury resulting from any such act or omission, or as estopping or limiting any legal claim or right of action of the state against the permittee, its agents, employees, or contractors for violation of or failure to comply with the permit or applicable conditions.

Contractor responsibility: The permittee shall ensure the contractor has received and thoroughly understands all conditions of this permit.

Termination: This permit may be terminated by the LMRWD at any time deemed necessary for the conservation of water resources, or in the interest of public health and welfare, or for violation of any of the conditions or applicable laws, unless otherwise provided in the permit.

Young Environmental Consulting Group, LLC

Technical Memorandum

To: Linda Loomis, Administrator
Lower Minnesota River Watershed District

From: Kaci Fisher, Environmental Scientist
Katy Thompson, PE, CFM

Date: October 13, 2021

Re: Burnsville Cemetery Expansion (LMRWD No. 2021-007)

BKBM Engineers (the applicant) has applied for an individual project permit from the Lower Minnesota River Watershed District (LMRWD or District) to expand the existing Garden of Eden Islamic Cemetery in Pleasantview Memorial Gardens in the City of Burnsville (City), as shown in **Figure 1**. The applicant has provided the conceptual grading and erosion control plans of the proposed expansion along with the permit application for the Burnsville Cemetery Expansion (Project).

The Project would disturb approximately 3.2 acres, and no new impervious surface areas are proposed. The Project location is not mapped within the High Value Resource Area, Steep Slope Overlay District (SSOD), or the 100-year floodplain. However, further discussion on the SSOD is included in the Additional Considerations section.

The City does not have its LMRWD municipal permit, so this Project requires an LMRWD individual permit and is subject to an LMRWD permitting review.

Summary

Project Name:	Burnsville Cemetery Expansion
Purpose:	Expansion of existing cemetery (additional burial plots)
Project Size:	Approximately 9 acres; 3.2 acres disturbed and no impervious surface area

Location:	400 State Highway 13 E, Burnsville, MN
LMRWD Rules:	Rule B—Erosion and Sediment Control
Recommended Board Action:	Conditional Approval

Discussion

The District has received the following documents for review:

- Online permit application; received March 19, 2021
- LMRWD permit review fee of $750; received September 7, 2021
- City submittal plan sheets by BKBM Engineers; dated June 18, 2021; received September 2, 2021
- Narrative for the Pleasant View Memorial Garden Cemetery Expansion Memo by BKBM Engineers; dated August 31, 2021; received September 2, 2021
- Conditional Use Permit Amendment—Minnesota Cemeteries Corporation public comment memo by Moss & Barnett; dated August 26, 2021; received September 2, 2021
- Email Re: Burnsville Cemetery Expansion by BKBM Engineers; dated September 17, 2021; received September 17, 2021
- Revised grading plan by BKBM Engineers; received October 6, 2021

The application was deemed complete on September 27, 2021, and the documents received provide the minimum information necessary for permit review.

Rule B—Erosion and Sediment Control

The District regulates land-disturbing activities that affect one or more acres under Rule B. The proposed Project would disturb approximately 3.2 acres within the LMRWD assessed land. The applicant has provided an erosion and sediment control plan and a Stormwater Pollution Prevention Plan.

The Project generally complies with Rule B; however, we offer the following comments that must be addressed before the LMRWD can issue a permit and construction may begin:

- A copy of the NPDES permit
- The contact information for the contractor
- The contact information for the person(s) responsible for the inspection and maintenance of all erosion and sediment control features

Additional Considerations

The proposed Project is located in a unique area of Burnsville; the District's special overlay districts have not been delineated due to a mapping error. However, it is reasonable to assume the High Value Resource Area does not apply in this case. The Project is adjacent to several portions of the SSOD, and while it is likely that steep slopes exist on the proposed Project site, these areas have not been delineated. Due to the nature of the steep slopes in the area, it is highly recommended that the applicant take caution when conducting grading activities near the existing ravine and near steep slopes to prevent erosion.

Additionally, the Project has received a public comment regarding stormwater draining onto neighboring properties. The area in question is within the Project's delineated Drainage Area 4 in the southwest corner of the site. The applicant sent an email to LMRWD on September 17, 2021, stating the southwest drainage area grading will be left alone until they can work with the Minnesota Department of Transportation to mitigate Highway 13 drainage ditch overflow that comes into the area to avoid upsetting the neighbors. This review will not incorporate the area of Drainage Area 4, so a separate permit for this area may be needed in the future.

Recommendations

Staff recommends conditional approval of the Project, pending receipt of the following:

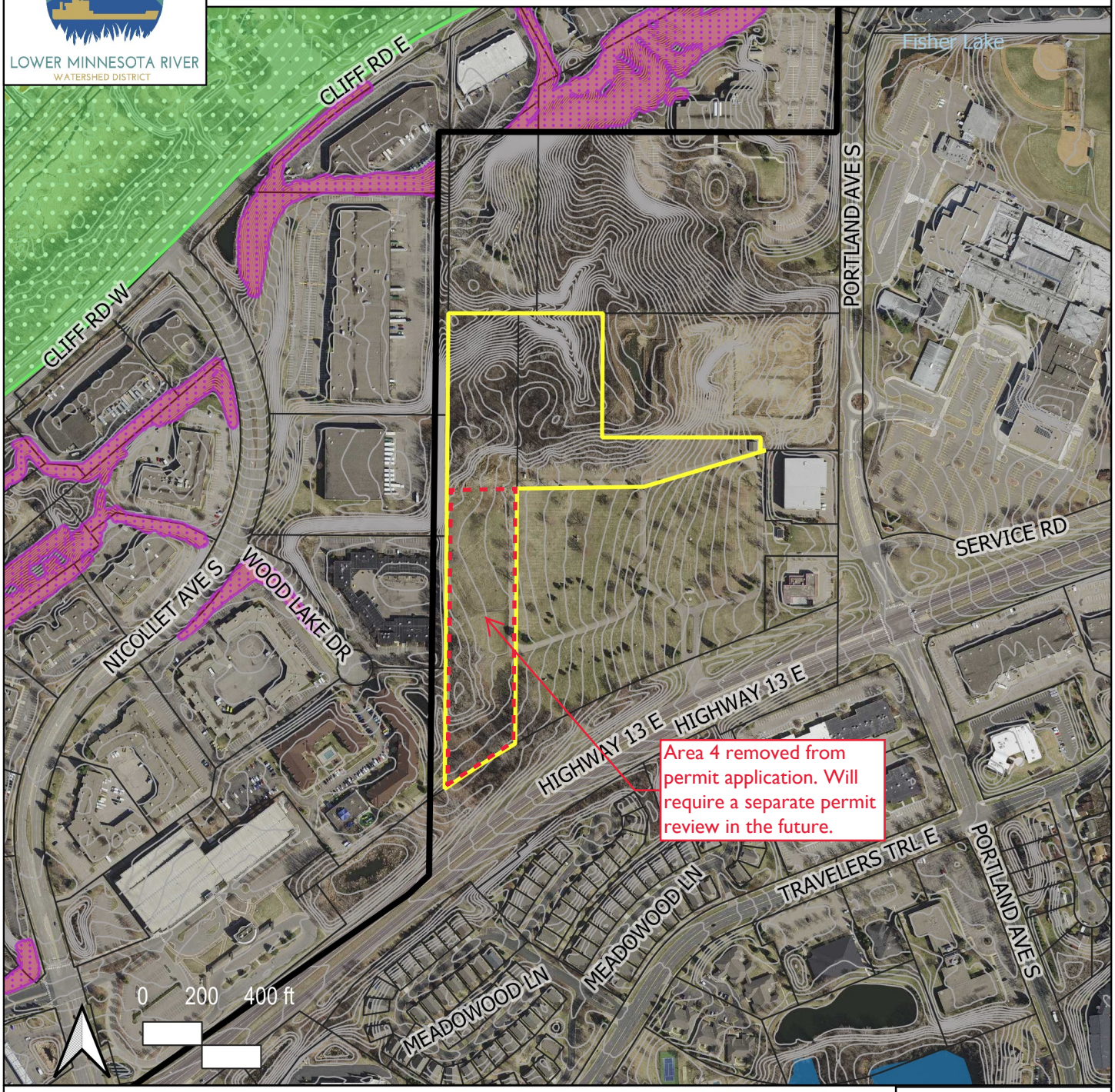
1) A copy of the NPDES permit
2) Contact information for the contractor
3) Contact information for the person(s) responsible for inspection and maintenance of all erosion and sediment control features

Attachments

- Figure 1—Burnsville Cemetery Expansion Project Location Map

LOWER MINNESOTA RIVER
WATERSHED DISTRICT

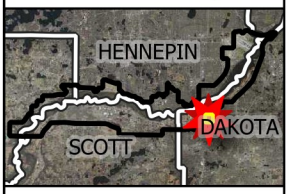
Figure 1: Burnsville Cemetery Project Location



LEGEND

- Project Location
- Burnsville Cemetery
- High Value Resource Area
- Steep Slopes Overlay District
- Calcareous Fens
- Public Waterbodies
- Public Waterways
- Parcel Boundaries
- County Boundaries
- LMRWD Boundary

LMRWD Watershed Location Map



Young Environmental Consulting Group, LLC

Young Environmental Consulting Group, LLC

Technical Memorandum

To: Linda Loomis, Administrator
Lower Minnesota River Watershed District

From: Katy Thompson, PE, CFM
Della Schall Young, CPESC, PMP

Date: October 14, 2021

Re: Quarry Lake Outlet (LMRWD No. 2021-014)

The City of Shakopee (City) has applied for an individual project permit from the Lower Minnesota River Watershed District (LMRWD) to construct a gravity outlet structure between Quarry Lake and the Prior Lake Outlet Channel (PLOC) and to stabilize two erosion locations, shown in Figure 1. In Quarry Lake, an artificial and landlocked lake, water levels rise and fall with changes in precipitation. In 2019, because of above-average precipitation, the lake levels were high for a prolonged period during the summer; this excessive rainfall caused $55,000 in damages to the inundated public infrastructure and required emergency pumping to draw down the lake. To prevent this from reoccurring, the City is proposing this project.

We reviewed this project in October 2020 and in May 2021 (see attached memos) and provided comments to the City and its consultant, WSB. Since that time, the City has finalized the construction plans and issued them for bid. Because the City does not have its LMRWD municipal LGU permit, this project requires an LMRWD individual project permit and, as such, is subject to a LMRWD permitting review. As presented, the project will trigger LMRWD Rules B and C.

Summary

Project Name:	Quarry Lake Outlet
Purpose:	Regulate high water levels in Quarry Lake
Project Size:	1.25 acres disturbed; 0.5 acres existing impervious; 0.5 acres proposed impervious; 0 acres net change in

	impervious
Location:	Quarry Lake Park, Shakopee (Scott Co. Parcel ID 279020202)
LMRWD Rules:	Rule B—Erosion and Sediment Control Rule C—Floodplain and Drainage Alteration
Recommended Board Action:	Conditional approval

Discussion

The District received the following documents for review:

- LMRWD online permit application; received April 9, 2021
- 60 Percent Construction Plans by WSB; dated March 30, 2021; received April 9, 2021
- Stormwater Pollution Prevention Plan (SWPPP) narrative by WSB; dated April 8, 2021; received April 9, 2021
- Geotechnical Report by WSB; dated November 13, 2020; received May 6, 2021
- MnDNR public waters permit comment request; received April 23, 2021
- Quarry Lake Water Level Management Plan by WSB; dated April 29, 2020; received September 16, 2021
- Response Memo to LMRWD and DNR Comments on Quarry Lake by WSB; dated September 16, 2021; received September 16, 2021
- Volume Report by WSB dated August 25, 2021; received September 16, 2021
- Quarry Lake Outlet Project Plan Set by WSB; dated September 10, 2021; received September 16, 2021
- Quarry Lake Outlet Project Bid Plans by WSB; dated October 7, 2021; received October 12, 2021

The application was deemed complete on September 16, 2021, and the documents received provide the information necessary for permit review.

Rule B—Erosion and Sediment Control

The District regulates land-disturbing activities that affect one acre or more under Rule B. The proposed project would disturb approximately 1.25 acres within the LMRWD boundary. The City has provided an erosion and sediment control plan and a SWPPP, and, within those documents, has provided redundant perimeter controls to protect Quarry Lake during construction.

The project generally complies with Rule B; however, both a copy of the NPDES permit and contact information for the contractor and/or person(s) responsible for inspection

and maintenance of all erosion and sediment control features are needed to issue the final LMRWD permit.

Rule C—Floodplain and Drainage Alteration

Although the project is not located within a mapped floodplain and proposes a net cut of 150 cubic yards below the existing high-water elevation of Quarry Lake, the project proposes to provide an outlet where none previously existed, altering the existing drainage and triggering Rule C. The City has provided documentation that the project will produce a net reduction in floodplain fill and reduce the 100-year flood elevation on the lake from Elevation 738.0 to 727.1 without adversely impacting the existing trout fishery and the Prior Lake Outlet Channel (PLOC). The existing trout fishery will be protected by a backflow preventer and a 1,000-micron filter screen incorporated into the new outlet structure. The proposed combination of the backflow preventor and filter will prevent water from the PLOC from entering Quarry Lake. It will also prevent anything larger than 1,000 microns from passing between Quarry Lake and the PLOC. Additionally, the backflow preventer will keep Quarry Lake outflows from affecting the capacity of the PLOC by holding back discharges from Quarry Lake when the PLOC channel is full.

It should be noted that the filter screen may require the dewatering of Quarry Lake for installation; if so, per the bid plans, the contractor is required to develop a dewatering plan, obtain all necessary permits, and submit a copy of the dewatering plan to all applicable regulatory agencies, including the LMRWD.

Recommendations

The City has addressed our previous comments, and we recommend conditional approval of the project pending receipt of the following:

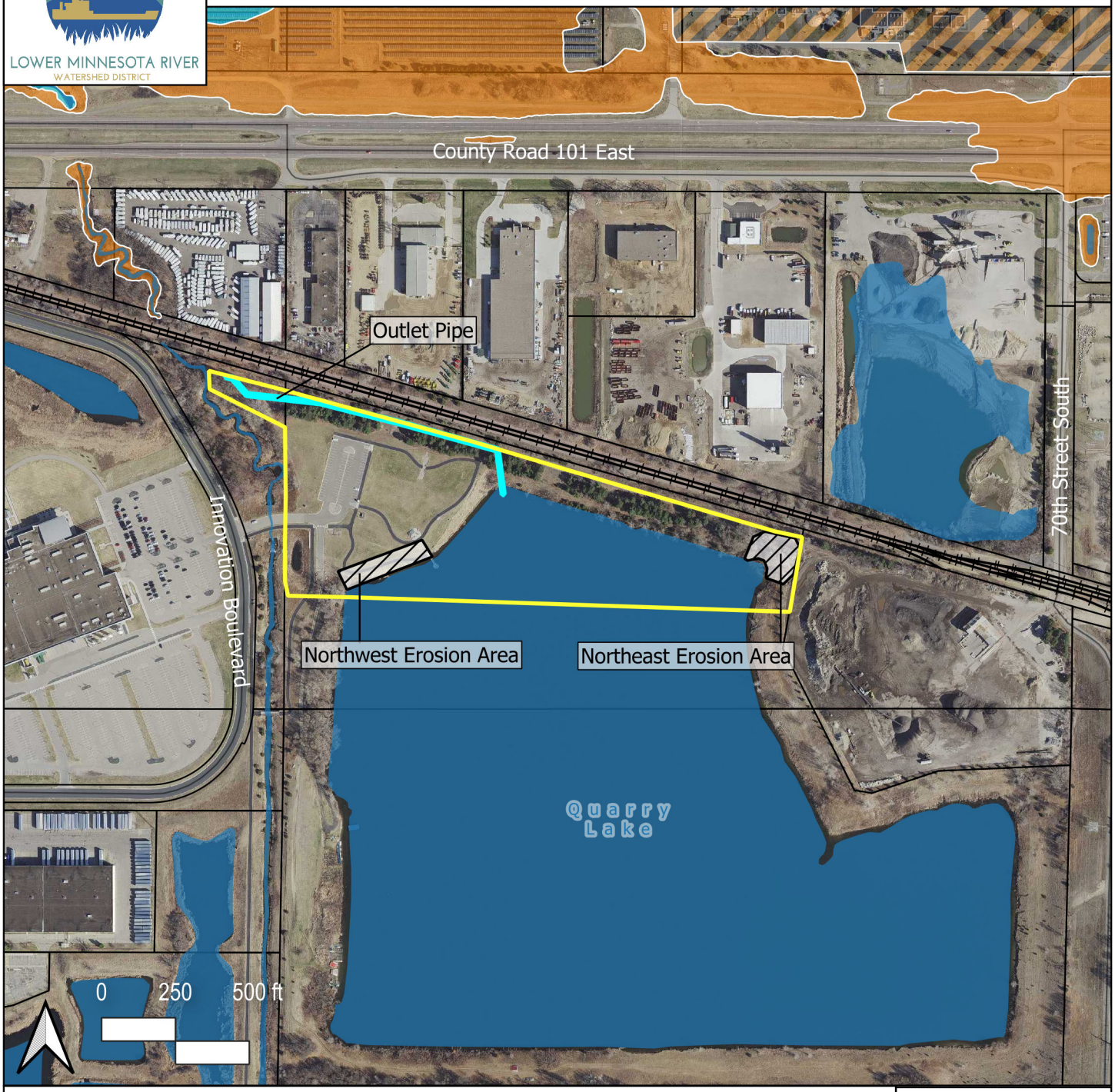
- A copy of the NPDES permit.
- Contact information for the contractor(s) and/or the person(s) responsible for inspection and maintenance of all erosion and sediment control features.

Additionally, a stipulation will be added to the final permit requiring the City to provide the LMRWD advanced warning of dewatering activities on Quarry Lake and a copy of the proposed dewatering plan for comment.

Attachments

- Figure 1—Quarry Lake Outlet Project Location Map
- September 16, 2021, WSB Responses to LMRWD and DNR Comments Memo
- May 22, 2021, Quarry Lake Outlet Project Review

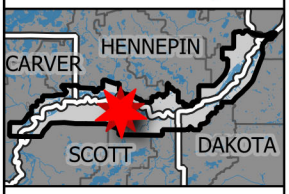
Figure 1: Quarry Lake Outlet Project Location



LEGEND

- Project Location
- Quarry Lake Outlet Project
- Erosion Areas
- Outlet Pipe
- Scott Co. Floodplain
- 100-yr Floodplain
- Floodway
- 500-yr Floodplain
- Public Waterways
- Public Waters
- LMRWD Boundary
- County Boundaries

LMRWD Watershed Location Map



Young Environmental Consulting Group, LLC

Memorandum

To: Linda Loomis – Lower Minnesota River Watershed District (LMRWD)
Taylor Huinker – Minnesota Department of Natural Resources (DNR)
Katy Thompson, PE, CFM – Young Environmental Consulting Group, LLC
Della Schall Young, CPESC, PMP - Young Environmental Consulting Group, LLC

Cc: Kirby Templin, PE – City of Shakopee

From: Jeff Sandberg, PE – WSB
Joey Abramson, PE – WSB
Roxy Robertson – WSB
Meghan Litsey, CPESC – WSB

Date: September 16, 2021

Re: Quarry Lake Outlet Project – Responses to LMRWD and DNR Comments
City Project No. STORM-20-001
WSB Project No. 016863-000

In a memorandum dated May 22, 2021, the DNR and LMRWD submitted comments on the 60% plans for the Quarry Lake Outlet Project for the City of Shakopee. The following is a list of each of the comments received with our responses below in red text.

- *The applicant has provided the necessary information for Rule B, but the following required information for Rule C is still outstanding:*
  - *Computation by a professional engineer of the cut, fill, and change in water storage capacity and conveyance resulting from the proposed work in Quarry Lake and the PLOC*
    - The project proposes a net cut of 150 CY below the existing HWL. See volume report attached.

- *Quarry Lake is a State of Minnesota-designated trout water.*
  - *Redundant perimeter controls should be placed to protect this area of environmental sensitivity.*
    - The attached plans have been revised to address this comment.
  - *The SWPPP should acknowledge that designation, and appropriate erosion and sediment control measures must be incorporated to protect the fishery.*
    - The attached plans have been revised to address this comment.
  - *The floating silt curtain does not satisfy the MPCA's NPDES requirement for down-gradient perimeter control because it is not designed to prevent sediment from entering the surface water. See https://www.pca.state.mn.us/sites/default/files/wq-strm2-26.pdf for further details.*
    - The attached plans have been revised to address this comment. Bio logs have been added as perimeter control.
  - *The 60 percent plans (sheet 4) show regrading and removal of the concrete slab near the pier, but there were no notes about the pier itself. What is the City's plan for the existing pier?*

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- The existing pier will be moved by the City to a new location.

- *We understand the concerns the City has with managing fluctuating lake levels but need more information about the following statement made on the LMRWD permit application: "[I]ncreasing water levels will result in flooding of adjacent properties within a few years." Additionally, it is unclear whether the 2019 high water levels (HWLs) were the effects of a historically wet year or part of a larger trend. Please clarify which properties are at risk and when it is expected that Quarry Lake would flood these properties under present conditions.*
  - The adjacent Aggregate Industries property and Quarry Lake Park stand to have flooding impacts within the next few years if an outlet is not provided. The feasibility study is attached for more information.

- *As shown in Table 1, there are several discrepancies in the normal water level (NWL) and HWL elevations provided to the LMRWD for both existing and proposed conditions; please clarify whether this is intentional or potentially a vertical datum issue.*

Table 1. Quarry Lake NWL and HWL Elevation Summary (vertical datum not provided)

	Existing NWL	Proposed NWL	Existing HWL	Proposed HWL
MPARS Application	Not provided	727.08	Not provided	Not provided
60 Percent Quarry Lake Outlet Plans	723.7	726.2	727.1–740	727.1
2020 Quarry Lake Water Level Management Plan	724.4	725.9	739.9	726.4

  - The high water level reported in the 2020 Water Level Management Plan was based on 10 years of rainfall data and not a 100-year storm event. The report noted that without an outlet, the lake would continue to rise until overtopping the railroad at approximately elevation 741. Upon further review, the overtopping elevation is closer to elevation 738, at which point the lake would begin to flow west across the park and into the PLOC.
  - The NWL of 723.7 as noted in the plans was the surveyed water elevation in November 2020. Since the water level fluctuates based on groundwater influence and seasonal rainfall variations, this elevation is not a normal water level but rather a reference elevation. The proposed NWL is 725.92, which is controlled by the invert of the outlet pipe. The existing HWL is variable as it depends on seasonal precipitation and groundwater flows. The HWL ranges from 727.1 to approximately 739.
  - The attached plans have been revised to address this comment.

- *Per the MPARS application, the project proposes 1,000 cubic yards of*

permanent fill and will raise Quarry Lake's NWL. However, neither compensatory storage nor the no-rise certification required by LMRWD Rule C was provided. Additional information is required, as follows:
The project proposes a net cut of 117 CY below the existing HWL.The MPARS application has been amended to reflect this.

- *Please clarify whether the HWL provided is also the 100-year flood elevation.*
  - The existing HWL range represents the estimated range of the HWL of Quarry Lake without an outlet as it exists today. In existing conditions, the 100-year event causes the lake to rise to 727.1 within one day and will continue to rise until reaching the EOF, due to groundwater inflow, as described in the feasibility report. The proposed HWL of 727.1 is the 100-year flood elevation.

- *Please clarify whether the proposed fill would be placed below the 100- year flood elevation of Quarry Lake.*
  - The project proposes a net cut below the existing HWL.

- *If the outlet project is proposed to alleviate HWL elevations on Quarry Lake and project-adjacent properties from imminent flooding, will the proposed NWL increase of 2.6 feet also increase the flood risk to these properties under a 100-year flood event?*
  - The proposed project is designed to limit the HWL from approximately 739 to 727.1, which will alleviate the future flooding. The NWL needed to be raised to enable a gravity outlet as proposed.

- *What effects will raising the NWL elevation have on the 100-year flood elevation of Quarry Lake?*
  - The 100-year flood elevation will be lower due to the presence of an outlet.

- *What effects will raising the NWL have on the erosion potential of the adjacent Quarry Lake shoreline?*
  - Over the last number of years, Quarry Lake has experienced severe fluctuations in water levels. These fluctuations have led to increased erosion of the shoreline. This project will stabilize and establish a normal water level and will result in dramatically less fluctuation in water levels. A stable water level will allow shoreline vegetation to establish and take root, and reduce the erosion potential of the shoreline long-term.

- *MPARS application question 15 may have been answered incorrectly. When asked, "Will work at this site result in the draining of any water*

resources?" the applicant's response was "No." However, because this is a landlocked system, adding an outlet allows Quarry Lake to drain, and the response should be revised.

- The MPARS application has been revised to reflect that the project proposes draining of a water resource.

- *Below are several comments on how the proposed Quarry Lake outlet will function with the PLOC, given the water level in the channel is 730.82 feet, approximately 4.9 feet above the proposed outlet elevation.*
  - *Per information provided with the MPARS application, the proposed Quarry Lake Outlet project will not affect the PLOC; however, it does not state what design events were considered to make this determination.*
    - The 2-, 10-, and 100-year events were considered in the included modeling.
  - *We noted the proposed backflow preventor on the PLOC side of the outlet, but how will the Quarry Lake outlet function if the PLOC elevation is higher than the Quarry Lake elevation?*
    - Quarry Lake will not discharge when the water level in the PLOC exceeds the invert of the oufall. Based on survey data collected in 2020, the baseflow elevation of the PLOC at the outfall location of the lake outlet is approximately 724.8.
  - *Please provide evidence of what type of flows are anticipated to enter the PLOC from the proposed Quarry Lake outlet, how these additional flows will affect the PLOC's existing capacity, and whether the outlet protections proposed are adequate to prevent scour and erosion.Quarry Lake supports both brook and rainbow trout fisheries; we are concerned that the following effects of this project have not taken this into consideration:*
    - The following table summarizes the existing and proposed peak discharge rates in the PLOC downstream of the proposed lake outlet. The flows in the table are from the existing and proposed XP SWMM models and represent the flow through the box culvert underneath the railroad. Quarry Lake does not discharge during the peak flows in the PLOC, so the Quarry Lake outlet does not impact the peak flows in the PLOC. This is because the water level in the PLOC during peak flows is greater than the Quarry Lake water level.

	Peak Flow in PLOC for the Specified Storm Return Period (MSE 3, Atlas 14) [cfs]		
	2-year	10-year	100-year
Existing Conditions	83.5	221.5	680.9
Proposed Conditions	83.5	221.5	680.9

- *How will the outlet project affect the existing trout fisheries and management?*

  - Given that there will be a backflow preventer and also a 1000 micron filter incorporated into the lake outlet, nothing larger than 1000 micron will pass between the PLOC and the lake. Therefore, this project is not anticipated to have any significant effects on trout fisheries and management.

- *Will the increased NWL elevation affect the existing trout fisheries and management?*
  - There are no anticipated impacts to trout fisheries and management due to this project. Given that the lake is landlocked, the project does not increase any NWL since the current water level is constantly changing and was modeled to continue to rise without an outlet.

- *Will the filtration technology proposed at the inlet to prevent Eurasian watermilfoil from escaping Quarry Lake into the PLOC also protect Quarry Lake from invasive species entering from the PLOC?*
  - The project includes a backflow preventer to reduce occurrence of flows entering from the PLOC. But if flows did enter from the PLOC, the 1000 micron filter would provide protection from Eurasian watermilfoil from entering into Quarry Lake. The 1000 micron filter also prevents Eurasian watermilfoil from escaping Quarry Lake.

- *What effects will raising the NWL elevation have on the existing wetlands surrounding Quarry Lake?*
  - Natural fringe wetlands do not exist along Quarry Lake, so there will be no wetland impacts from raising the NWL.

Attachments:

- Quarry Lake Outlet Project Plan Set
- 2020 Water Level Management Plan for Quarry Lake (feasibility report)
- Volume Report for Quarry Lake Outlet Project
- Existing and Proposed XPSWMM Models

Young Environmental Consulting Group, LLC

Technical Memorandum

To: Linda Loomis, Administrator
Lower Minnesota River Watershed District

Cc: Taylor Huinker
Minnesota Department of Natural Resources

From: Katy Thompson, PE, CFM
Della Schall Young, CPESC, PMP

Date: May 22, 2021

Re: Quarry Lake Outlet (LMRWD No. 2021-014)

The City of Shakopee (City) has applied for an individual project permit from the Lower Minnesota River Watershed District (LMRWD) to construct a gravity outlet structure between Quarry Lake and the Prior Lake Outlet Channel (PLOC) and to stabilize two erosion locations, shown in Figure 1. In Quarry Lake, an artificial and landlocked lake, water levels rise and fall with changes in precipitation. In 2019, because of above-average precipitation, the lake levels were high for a prolonged period during that summer; this excessive rainfall caused $55,000 in damages to inundated public infrastructure and required emergency pumping to draw down the lake. To prevent this from recurring, the City is proposing this project.

In addition to our review of the LMRWD individual project permit application, the Minnesota Department of Natural Resources (MnDNR) has requested comments on the project through its MPARS system. This memo addresses both reviews.

Background

In June 2020, the City provided LMRWD with a copy of the *Quarry Lake Water Level Management Plan,* which evaluates options to manage the long-term lake levels in Quarry Lake. Multiple Quarry Lake project reviews occurred over the summer and fall of 2020, and final comments on the management plan were provided to the City in October 2020 and resubmitted on May 11, 2021. Young Environmental asked several

questions and requested more information from the City and its engineer, WSB & Associates (WSB; see the attached memo from October 14, 2020).

The proposed project disturbs 1.25 acres and does not create new impervious surface. Quarry Lake is not a State of Minnesota-recognized public water; nonetheless, it is a state-designated trout water that the MnDNR stocks annually with brook and rainbow trout. Although not mapped in the District's High Value Resource Area (HVRA) overlay district, it falls under the District's definition of an HVRA within the LMRWD.

Because the City does not have its LMRWD municipal LGU permit, this project requires an LMRWD individual project permit and, as such, is subject to an LMRWD permitting review. As presented, the project will trigger LMRWD Rules B and C.

Summary

Project Name:	Quarry Lake Outlet
Purpose:	Regulate high water levels in Quarry Lake
Project Size:	1.25 acres disturbed; 0 acres existing impervious; 0 acres proposed impervious
Location:	Quarry Lake Park, Shakopee (Scott Co. Parcel ID 279020202)
LMRWD Rules:	Rule B—Erosion and Sediment Control Rule C—Floodplain and Drainage Alteration
Recommended Board Action:	None, information only

Discussion

The District received the following documents for review:

- LMRWD online permit application; received April 9, 2021
- 60 Percent Construction Plans by WSB, dated March 30, 2021; received April 9, 2021
- Stormwater Pollution Prevention Plan (SWPPP) narrative by WSB, dated April 8, 2021; received April 9, 2021
- Geotechnical Report by WSB, dated November 13, 2020; received May 6, 2021
- MnDNR public waters permit comment request; received April 23, 2021

The applicant has provided the necessary information for Rule B, but the following required information for Rule C is still outstanding:

- Computation by a professional engineer of the cut, fill, and change in water storage capacity and conveyance resulting from the proposed work in Quarry

Lake and the PLOC

Rule B—Erosion and Sediment Control

The District regulates land-disturbing activities that affect one acre or more under Rule B. The proposed project would disturb approximately 1.25 acres within the LMRWD boundary. The City provided an erosion and sediment control plan and an SWPPP. The application is substantially complete for Rule B, and we offer the following comments on the proposed design:

1. Quarry Lake is a State of Minnesota-designated trout water.
    a. Redundant perimeter controls should be placed to protect this area of environmental sensitivity.
    b. The SWPPP should acknowledge that designation, and appropriate erosion and sediment control measures must be incorporated to protect the fishery.
    c. The floating silt curtain does not satisfy the MPCA's NPDES requirement for down-gradient perimeter control because it is not designed to prevent sediment from entering the surface water. See https://www.pca.state.mn.us/sites/default/files/wq-strm2-26.pdf for further details.
2. The 60 percent plans (sheet 4) show regrading and removal of the concrete slab near the pier, but there were no notes about the pier itself. What is the City's plan for the existing pier?

Rule C—Floodplain and Drainage Alteration

The project is not located within a mapped floodplain. However, it appears to propose fill below the 100-year flood elevation of Quarry Lake (elevation 740 feet, per the *2020 Quarry Lake Water Level Management Plan*) and provides an outlet where none previously existed, triggering Rule C. The information provided does not address the District's Rule C requirements, and thus the application is incomplete.

Below are questions and comments for consideration.

1. We understand the concerns the City has with managing fluctuating lake levels but need more information about the following statement made on the LMRWD permit application: "[I]ncreasing water levels will result in flooding of adjacent properties within a few years." Additionally, it is unclear whether the 2019 high water levels (HWLs) were the effects of a historically wet year or part of a larger trend. Please clarify which properties are at risk and when it is expected that Quarry Lake would flood these properties under present conditions.
2. As shown in Table 1, there are several discrepancies in the normal water level (NWL) and HWL elevations provided to the LMRWD for both existing and

proposed conditions; please clarify whether this is intentional or potentially a vertical datum issue.

Table 1. Quarry Lake NWL and HWL Elevation Summary (vertical datum not provided)

	Existing NWL	Proposed NWL	Existing HWL	Proposed HWL
MPARS Application	Not provided	727.08	Not provided	Not provided
60 Percent Quarry Lake Outlet Plans	723.7	726.2	727.1–740	727.1
2020 Quarry Lake Water Level Management Plan	724.4	725.9	739.9	726.4

3. Per the MPARS application, the project proposes 1,000 cubic yards of permanent fill and will raise Quarry Lake's NWL. However, neither compensatory storage nor the no-rise certification required by LMRWD Rule C was provided. Additional information is required, as follows:
    a. Please clarify whether the HWL provided is also the 100-year flood elevation.
    b. Please clarify whether the proposed fill would be placed below the 100-year flood elevation of Quarry Lake.
    c. If the outlet project is proposed to alleviate HWL elevations on Quarry Lake and project-adjacent properties from imminent flooding, will the proposed NWL increase of 2.6 feet also increase the flood risk to these properties under a 100-year flood event?
    d. What effects will raising the NWL elevation have on the 100-year flood elevation of Quarry Lake?
    e. What effects will raising the NWL have on the erosion potential of the adjacent Quarry Lake shoreline?
    f. MPARS application question 15 may have been answered incorrectly. When asked, "Will work at this site result in the draining of any water resources?" the applicant's response was "No." However, because this is a landlocked system, adding an outlet allows Quarry Lake to drain, and the response should be revised.
4. Below are several comments on how the proposed Quarry Lake outlet will function with the PLOC, given the water level in the channel is 730.82 feet, approximately 4.9 feet above the proposed outlet elevation.
    a. Per information provided with the MPARS application, the proposed Quarry Lake Outlet project will not affect the PLOC; however, it does not state what design events were considered to make this determination.
    b. We noted the proposed backflow preventor on the PLOC side of the outlet, but how will the Quarry Lake outlet function if the PLOC elevation is higher than the Quarry Lake elevation?

c. Please provide evidence of what type of flows are anticipated to enter the PLOC from the proposed Quarry Lake outlet, how these additional flows will affect the PLOC's existing capacity, and whether the outlet protections proposed are adequate to prevent scour and erosion.

Additional Considerations

Quarry Lake supports both brook and rainbow trout fisheries; we are concerned that the following effects of this project have not taken this into consideration:

1. How will the outlet project affect the existing trout fisheries and management?
2. Will the increased NWL elevation affect the existing trout fisheries and management?
3. Will the filtration technology proposed at the inlet to prevent Eurasian watermilfoil from escaping Quarry Lake into the PLOC also protect Quarry Lake from invasive species entering from the PLOC?
4. What effects will raising the NWL elevation have on the existing wetlands surrounding Quarry Lake?

Recommendations

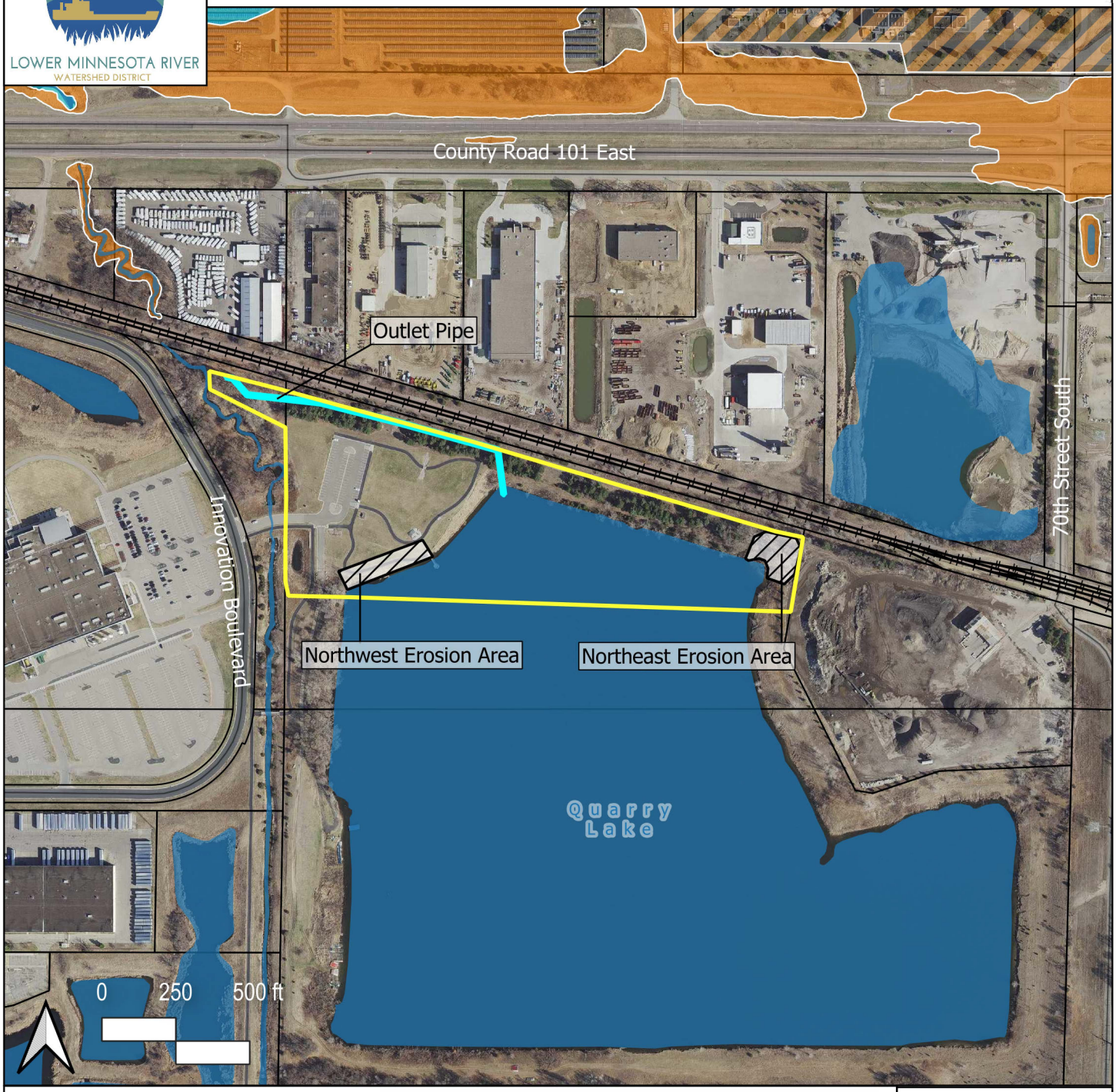
Given the questions, comments, and outstanding items discussed above, the LMRWD individual project permit application is incomplete. Until these issues are resolved, specifically the protection of the state-designated trout water and the placement of floodplain fill, we do not recommend the MnDNR approve the Public Waters Work Permit application for the Quarry Lake Outlet project. Alternatively, we request the MnDNR approval be contingent on the applicant resolving the LMRWD's requirements for Rules B and C.

We will submit this memo and comments to the MnDNR as part of the MPARS comment period. We will also contact the City to schedule a permitting meeting with LMRWD staff to discuss the project, our questions and comments, and the outstanding items.

Attachments

- Figure 1—Quarry Lake Outlet Project Location Map
- October 14, 2020, Quarry Lake Outlet Project Review

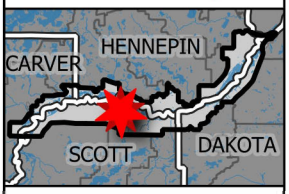
Figure 1: Quarry Lake Outlet Project Location



LEGEND

- Project Location
- Quarry Lake Outlet Project
- Erosion Areas
- Outlet Pipe
- Scott Co. Floodplain
- 100-yr Floodplain
- Floodway
- 500-yr Floodplain
- Public Waterways
- Open Water
- LMRWD Boundary
- County Boundaries

LMRWD Watershed Location Map



Young Environmental Consulting Group, LLC

Young Environmental Consulting Group, LLC

Technical Memorandum

To: Linda Loomis, Administrator
Lower Minnesota River Watershed District

From: Katy Thompson, PE, CFM
Della Schall Young, CPESC, PMP

Date: October 14, 2020

Re: Quarry Lake Outlet Project Review (LMRWD No. 2020-114)

The City of Shakopee (the City) has submitted the Quarry Lake Water Level Management Plan (the Plan) to the Lower Minnesota River Watershed District (LMRWD or the District) for review through its consultant WSB & Associates (WSB). Young Environmental Consulting Group, LLC (Young Environmental), the district engineer, has reviewed the Plan and offers the following comments to the City.

Background

Quarry Lake is an artificial lake, which resulted from past quarry operations breaching the Prairie du Chien bedrock confinement layer, and primarily fed by groundwater springs. It is landlocked and has no normal outlet, causing water levels to rise and fall with changes in precipitation. It has an emergency overflow to the Prior Lake Outlet Channel (PLOC), which runs along the western boundary of the lake at elevation 738 to the north over the railroad tracks at elevation 739.9, and discharges into the Minnesota River (see **Figure 1**).

In 2019, the water levels in Quarry Lake rose high enough to inundate some of the infrastructure within the park. The City installed emergency pumps to draw down the lake levels two feet over a two-month period in 2019. As a result of the cost of the pumping operations, the City has developed a feasibility study to analyze groundwater influences and outlet options for Quarry Lake to control lake levels.

The City is also currently undertaking several capital improvement projects at Quarry

Lake Park. The Quarry Lake Park Improvements Project, a municipal roadway and park improvement project, was presented to the District in July 2020 for an individual project permit. At the time, the proposal included the construction of a new boat launch at Quarry Lake, a roadway to provide access to the boat launch, and a driveway to provide access to the adjacent Xcel Energy facility. On August 27, 2020, the District received a new plan set and a request from the applicant that the proposed permit application be amended to include a mountain-bike park on the south side of the parcel. On September 8, 2020, the District was notified by the applicant that the park and roadway improvements were on hold; the only construction project moving forward would be the construction of the mountain-bike trails. No new impervious surfaces would be constructed as part of the mountain-bike trails at this time. At the September 16, 2020, board meeting, the managers conditionally approved the trail project, pending receipt of their NPDES permit.

While Quarry Lake is not a public water of the state, it is state-designated trout water and stocked. It was missed during the District's high-value resource area (HVRA) overlay of area delineations and designations, but it falls under the definition of the HVRA within the LMRWD. The District will work with the City to define the HVRA around Quarry Lake. An additional review completed by Young Environmental determined that the project area is neither in the FEMA floodplain nor within the District's Steep Slope Overlay District.

The Minnesota Well Index indicates there are many wells in the area. One 1955 well record indicates the groundwater elevation may have been around 724. The more recent 2011 Scott County LiDAR data indicate the lake elevation may have been as low as 718, while 2016 aerial images show lake levels back up to 724. This brief analysis, as well as the nature of a landlocked lake, suggests that the lake has likely experienced frequent lake-level fluctuations since its creation. The draft *Sustainable Lake Management Plan* for Quarry Lake further confirms this, as does the City's *Local Surface Water Management Plan*, which states that varying lake levels are an issue of concern for the City and that there is a desire to coordinate with LMRWD to evaluate the need for a Quarry Lake outlet to prevent further shoreline erosion. The *Sustainable Lake Management Plan* also recommends installing a staff gage to measure lake levels and better assess how the lake surface elevation relates to the elevation of other nearby waters, including groundwater.

Although Young Environmental's review encompasses the evaluation of the outlet and creation of a normal water elevation, it focuses on the District's Floodplain and Drainage Alteration Rule C.4.d, which requires that "no person shall . . . drain surface water . . . without demonstrating the activity has no adverse impact on upstream or downstream landowners or water quality, habitat, or fisheries." Below is a summary of our findings and comments/questions for the City to address.

Lake Level Management Plan Summary

WSB developed the Plan using the city-wide XPSWMM model to simulate stormwater runoff conditions and create a water budget for the lake from 2014 to 2019. Lake level data from 2014 and 2019 were used to match the starting and end elevations in the model. The modeling indicates the lake levels fluctuated between 721 and 724.5 during this time period and are increasing overall due to groundwater inflows. Future conditions modeling predicts this increasing trend will continue with a peak elevation of 730 by year 2030.

The Plan proposed three alternatives to managing lake levels, which are summarized in **Table 1**.

Table 1. Quarry Lake Outlet Alternatives

Alternative	High Water Elevation	Construction and O&M Costs	Estimated Infrastructure Impacts
1. No Build	740.0	$0	$1,400,000
2. Gravity Outlet	726.4	$287,000	$56,000
3. Pumped Outlet	724.4	$482,000	$22,000

Option 2, a gravity outlet, was recommended because of its lower construction costs and maintenance needs. The no-build alternative was not considered because the modeling predicted that water levels would continue to rise, detrimentally affecting the existing parking lot, fishing pier, trails, and trees within Quarry Lake Park. To calculate these infrastructure impacts, the no-build alternative presumed a "probable equilibrium elevation" in Quarry Lake of 740 based on the railroad overflow elevation.

Questions for the City

After reviewing the Plan, we have several points of clarification we would like to discuss with the City.

1. Lake Levels

- We acknowledge the City's concerns with shoreline erosion and potential infrastructure damage from the fluctuating lake levels on Quarry Lake. Recognizing that 2019 was one of the wettest years on record, what is the likelihood of the lake experiencing levels similar to 2019 in the future?
- The Plan mentions that the PLOC has overtopped into Quarry Lake during high-flow events and "has the possibility to create even greater HWLs in Quarry Lake." Does the gravity outlet option include a means for controlling the overtopping of the PLOC in the future?

2. Modeling

- We generally use the Chanhassen weather station or the MSP International Airport for modeling in this area; however, we have noticed that the St. Paul Downtown Airport rainfall record was used. What is the rationale for using the rainfall record from that location?
- We understand groundwater monitoring data were not readily available for the study. Given the assumptions made in the water balance, what is your confidence in the groundwater inflows used in the XPSWMM modeling?
- We typically calibrate models using a stage hydrograph. Can you elaborate on your calibration and validation process used for the XPSWMM model to confirm the predicted water surface elevations?
- What are the anticipated discharge rates and effects of the proposed gravity outfall on the PLOC?

3. Invasive Species

- The Plan and the *Sustainable Lake Management Plan* for Quarry Lake state the lake is infested with Eurasian milfoil and will provide a filtering component to the outfall to prevent it from moving downstream. What about other species entering the lake if there is a gravity connection, such as zebra mussels or invasive carp?
- How frequently do the PLOC and/or Quarry Lake overtop? If they do not, then the gravity outfall would be directly connecting infested water.
- We have not previously seen the proposed filtering box screen device. Please provide more information on its details and effectiveness.

Additionally, as we reviewed the City's official controls, we found the following items from the City's 2019 draft *Local Surface Water Management Plan* that should be addressed as part of the outlet design:

- It is in conformance with the approved Water Resource Management Plan and City's design criteria;
- It does not cause downstream flooding;
- It provides sufficient dead storage to retain back-to-back 100-year, 24-hour rainfalls;
- It will not affect the stability of downstream water resources; and
- It has been demonstrated that volume control practices alone will not address the problem.

Recommendation

The District has not received a project permit application at this time; however, a permit for the proposed outfall is required under Rule C, and the project would need to meet those requirements, including specifically addressing how the proposed outlet would prevent adverse impacts on Quarry Lake, the PLOC, and the Minnesota River for landowners, water quality, habitat, or fisheries. We recommend close coordination with the City to determine whether the need for an outlet exists and additional monitoring data are warranted to determine if 2019 represented an extreme year.

Attachments:

- Figure 1. Quarry Lake Outlet Location Map

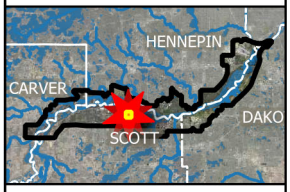
LOWER MINNESOTA RIVER
WATERSHED DISTRICT

Figure 1: Quarry Lake Proposed Outlet

LEGEND

- Proposed Outlet Location
- Proposed Gravity Outlet Alignment
- LMRWD Boundary
- Scott Co. 2-ft Contours
- Public Streams
- Public Waters
- Railroads

LMRWD Watershed Location Map



Young Environmental Consulting Group, LLC

Note: 2016 aerial shown indicates a lake level elevation of approximately 722.