Permit No. 2021-025 Received complete: April 23, 2021

Applicant: Sarah Schweiger; City of Minnetonka

Consultant: Adam Pawelk; Hansen Thorp Pellinen Olson, Inc. (HTPO)

Project: Wing Lake Outlet Improvements at Excelsior Blvd (CSAH 3)

Location: Wing Lake Dr to Whited Ave along Excelsior Blvd: Minnetonka

Rule(s): 2, 4, 5, 6

Reviewer(s): LLH and BCO

# **General Background & Comments**

The City of Minnetonka is proposing storm sewer and outlet improvements for Wing Lake (Lake) along Excelsior Blvd from Wing Lake Dr to Whited Ave. The City has identified storm sewer pipe deterioration within the project corridor, and is proposing the following storm sewer improvements:

- In-place abandonment of the westerly culvert in the project area, an existing 18-inch
  corrugated metal pipe (CMP) culvert beneath Excelsior Blvd. The existing 18-inch CMP
  culvert conveys stormwater from the south side of Excelsior Blvd discharging into the
  Lake. The upstream end of the culvert is located near 15417 Excelsior Blvd. Fill
  (flowable sand and bulkhead) is proposed at each culvert end as part of the in-place
  abandonment.
- Removal of the easterly culvert in the project area, an existing 24-inch CMP beneath Excelsior Blvd, located approximately 100 feet west of the Excelsior Blvd and Whited Ave intersection.
- Removal of the existing Wing Lake outlet control structure located approximately 100 feet west of the Excelsior Blvd and Whited Ave intersection.
- Installation of 12-inch and 15-inch storm sewer along Excelsior Blvd. The proposed system will capture and convey roadway runoff from the location of the existing westerly culvert (proposed to be abandoned) to its outlet into the Lake.
- Installation of a sump manhole including sediment removal baffles to capture sediment prior to discharging into the Lake.
- Installation of a new outlet control structure and outlet pipe for the Lake. The proposed outlet control structure will match existing elevations, including the inlet and outlet pipes and the 3-inch orifice. The outlet pipe is proposed to be upsized from an 18-inch CMP to a 24-inch RCP. A metal plate will be provided within the system to restrict the outflow discharge from the Lake. The plate will restrict the proposed 24-inch pipe capacity to an equivalent capacity of the 18-inch pipe. The oversizing of the downstream pipe system is to provide additional runoff capacity in the future.

The District's Floodplain Management and Drainage Alterations Rule 2.0 applies to the project as a result of land-altering activities proposed below the 100-year frequency flood elevation of Wing Lake, Public Water Basin #27-91.

The District's requirements for both stormwater management and erosion and sediment control apply to the project because more than 50 cubic yards of material will be disturbed and 5,000 square feet or more of surface area is altered, Rules 4.2.1a and b and 5.2.1a and b. The project is considered a linear project as stated in Rule 4.2.4. For linear projects creating less than one (1) acre of new or additional impervious area (zero (0) acres of net new impervious area is proposed to be created), the stormwater requirements of Rule 4.3.1 or 4.3.2 do not apply.

The District's Waterbody Crossings and Structures Rule 6.0 applies to the project as a result of stormwater infrastructure improvements along the bank of Wing Lake.

#### **Exhibits**

- 1. Completed Permit Application dated March 17, 2021, received March 18, 2021.
- 2. Wing Lake Outlet Drainage Area Maps dated February 4, 2021, prepared by HTPO.
- 3. Storm Sewer Improvements Narrative dated March 25, 2021, prepared by HTPO.
- 4. MNDNR Permitting and Reporting System (MPARS) Application dated February 17, 2021, prepared by HTPO.
- 5. Plans dated March 18, 2021, revised April 1, 2021 and April 23, 2021, prepared by HTPO.
- 6. Email correspondence dated March 23, 2021, indicating five items required to be submitted for the application to be considered complete.
- 7. Email correspondence dated April 19, 2021, indicating two items required to be submitted for the application to be considered complete.

The application with the submitted information is complete.

# 2.0 Floodplain Management and Drainage Alterations

The District's Floodplain Management and Drainage Alterations Rule 2.0 applies to the project as a result of land-altering activities proposed below the 100-year frequency flood elevation of Wing Lake, Rule 2.2.1.

The draft Atlas 14 100-year frequency flood elevation of Wing Lake is 945.6 M.S.L. As shown on the plans, the land-altering activities proposed below the 100-year frequency flood elevation will not result in net fill or net impacts within the floodplain. Proposed work below the 100-year frequency flood elevation of the Lake includes storm sewer improvements and placement of riprap at elevations and alignment similar to existing conditions. No permanent floodplain impacts are proposed as part of this project.

Work below the 100-year flood elevation of the Lake includes the removal and replacement of the Lake's outlet control structure, and the culvert located approximately 100 feet west of the Excelsior Blvd and Whited Ave intersection. The existing 24-inch CMP culvert will be replaced with a 15-inch RCP culvert. Installation of the culvert will involve placement of riprap within the floodplain at the outlet, FES #1 identified on the plans. The proposed outlet control structure and culvert outlet invert elevations will be replaced at elevations similar to existing conditions.

At the location of the proposed riprap, the area will be over excavated allowing the riprap and filter material to be placed at an elevation that matches existing grade. The area disturbed within the floodplain will be regraded and seeded with a native seed mixture. Grading proposed as part of this project will not result in a reduction of floodplain volume.

The paragraphs of Rule 2 state:

2.3.1: The low floor elevation of all new and reconstructed structures must be constructed in accordance with the NMCWD Stormwater Rule, subsection 4.3.3

This section of the rule does not apply to the proposed project.

- 2.3.2: Placement of fill below the 100-year flood elevation is prohibited unless fully compensatory storage is provided within the floodplain and:
  - a. at the same elevation +/- 1 foot for fill in the floodplain and:
  - b. at or below the same elevation for fill in the floodplain of a water basin or constructed stormwater facility.

Work associated with storm sewer improvements and the removal and replacement of the Lake's outlet control structure is proposed below the 100-year frequency flood elevation of the Lake. In addition, regrading and placement of riprap at culvert outlets are proposed within the floodplain. Disturbed area within the floodplain will be regraded and over excavated with material removed, hauled away, allowing the riprap and filter material to be placed at elevations matching existing grades. Because existing elevations of the replacement systems are to be matched, the post-development conditions will result in no net reduction in the existing floodplain storage. The project conforms to Rule 2.3.2

2.3.3. The District will issue a permit to alter surface flows only if it finds that the alteration will not have an adverse impact on any upstream or downstream landowner and will not adversely affect flood risk, basin or channel stability, groundwater hydrology, stream base-flow, water quality or aquatic or riparian habitat.

Proposed storm sewer outfall design includes a flared end section and placement of riprap at the outlet prior to discharging into the Lake, thus reducing the velocity of the stormwater discharge and thereby reducing anticipated impact on the stability of the surrounding area from existing conditions.

The Lake's reconstructed outlet control structure is proposed to match existing elevations, including the grate, the 3-inch orifice, and the pipe invert elevation. The pipe system downstream of the outlet control structure is proposed to be upsized from an 18-inch CMP to a 24-inch RCP to provide the City with flexibility in the future if it is determined that additional capacity is needed in the system. A metal plate will be provided within the system to restrict the outflow discharge from the Lake. The plate will restrict the proposed 24-inch pipe capacity to an equivalent capacity of the 18-inch pipe. By restricting the outflow discharge, the proposed improvements will not result in changes to the existing outlet capacity of the system or increase conveyance from the Lake.

As the proposed project will not result in an increase in impervious surface, stormwater runoff volume discharging to the Lake is to be maintained to existing conditions.

Furthermore, reconstruction activities will correct a hydraulic problem associated with the deteriorated pipes in the corridor.

Proposed improvements will include installation of a sump manhole including sediment removal baffles to capture sediment, thereby improving stormwater pollutant removal efficiencies prior discharging into the Lake.

Proposed work may have a temporary impact on riparian habitat during construction activities. Once the proposed work is completed and temporary impacts are eliminated, the riparian habitat will be restored to its natural state. Temporary impacts cannot be avoided with any project that involves construction activities.

Based on the proposed similar outlet elevations, outfall energy dissipation design, riprap construction and proposed stabilization methods, the storm sewer improvements below the 100-year frequency flood elevation of the Lake are not reasonably likely to cause adverse effects to water quality, hydrology, hydraulics or basin stability. The project conforms to Rule 2.3.3.

- 2.3.4 No structure may be placed, constructed or reconstructed and no surface may be paved within 50 feet of the centerline of any water course, except that this provision does not apply to:
- a. Bridges, culverts, and other structures and associated impervious surface regulated under Rule 6.0:
  - b. Trails 10 feet wide or less, designed primarily for nonmotorized use.

This section of the rule does not apply to the proposed project.

The proposed project conforms to the floodplain management and drainage alteration requirements of Rule 2.0.

# **4.0 Stormwater Management**

The District's requirements for both stormwater management and erosion and sediment control apply to the project because more than 50 cubic yards of material will be disturbed and 5,000 square feet or more of surface area is altered, Rules 4.2.1a and b and 5.2.1a and b. The project is considered a linear project as stated in Rule 4.2.4. For linear projects creating less than one (1) acre of new or additional impervious area (zero (0) acres of net new impervious area is proposed to be created), the stormwater requirements of Rule 4.3.1 or 4.3.2 do not apply.

#### **5.0 Erosion and Sediment Control**

Silt fence, floating silt fence, storm drain inlet protection, and a rock construction entrance will be provided for erosion prevention and sediment control measures within the project corridor. Native seed mixtures, turf reinforcement mat and erosion control blanket will be installed for final stabilization measures.

The project contact is Sarah Schweiger, City of Eden Prairie.

### **6.0 Waterbody Crossings and Structures**

The District's Waterbody Crossings and Structures Rule 6.0 applies to the project because of stormwater infrastructure improvements along the bank of the Lake, Rule 6.2. Thus, conformance with Rule 6.3.1 is required.

Work along the bank of the Lake includes stormwater infrastructure improvements, site regrading, and installation of associated erosion control measures.

Rule 6.3.1 states construction, improvement, repair or removal of a waterbody crossing in contact with the bed or bank of a waterbody:

a) Shall retain adequate hydraulic capacity and assure no net increase in the flood stage of the pertinent waterbody:

Since the project is a linear project and the stormwater requirements of Rule 4.3.1 or 4.3.2 do not apply, a detailed hydrologic model was not provided for the project.

As previously stated, work along the bank of the Lake includes the in-place abandonment of the westerly culvert in the project area, removal and replacement of the easterly culvert, and removal and replacement of the Lake's outlet control structure and downstream pipe system.

The proposed outlet control structure elevations will match existing elevations, including the grate, the 3-inch orifice, the downstream pipe. The outlet pipe is proposed to be upsized from an 18-inch CMP to a 24-inch RCP to provide the City with flexibility in the future if it is determined that additional system capacity is needed. A metal plate will be provided within the structure for maintaining the outflow discharge from the Lake. The plate will reduce the proposed 24-inch pipe capacity to the equivalent capacity of the 18-inch pipe. By restricting the outflow, the proposed improvements will not result in changes to the capacity of the existing system.

An increase in impervious surface within the project area is not proposed, therefore, stormwater runoff volume discharging to the Lake from the disturbed area will be maintained. Because the proposed outlet control structure and outlet pipe hydraulic configuration will remain similar to existing conditions, the Lake shall retain adequate hydraulic capacity with no net reduction in flood storage volume or increase in flood stage. Rule 6.3.1a is met.

b) Shall retain adequate navigational capacity pursuant to any requirements of the waterbody's classification by the District:

The waterbody is not used for navigational purposes.

c) Shall not adversely affect water quality, change the existing flowline/gradient, or cause increased scour, erosion or sedimentation:

As stated in item (a), the hydraulic capacity of the existing storm sewer system within the project corridor will be maintained, as the outlet control structure and downstream pipe system will be replaced in-kind. Any change in the water quality of Wing Lake or the downstream waterbodies will be temporary during construction. Erosion control measures including silt fence and floating silt curtain will be installed to minimize water quality impacts (sedimentation).

The potential of increased scour, erosion or sedimentation will not increase because of the culvert replacement and culvert abandonment along the bank of the Lake. The proposed culvert replacement along the easterly side of the project corridor will be replaced at approximately the same elevations as existing conditions. Waterbody characteristics including elevations, contours, and substrate will be restored to preproject conditions within 90 days of the commencement of construction.

Reconstruction activities will correct a hydraulic problem associated with the deteriorated pipes within the project corridor. These existing pipes are not effectively handling stormwater runoff and functioning as designed due to deterioration. The identified deterioration may prevent normal flow through the pipe, which may introduce sediment into the waterbody over time and exacerbate erosion along the pipe alignment.

The proposed design is not reasonably likely to cause adverse effects to water quality and the physical or biological character of the waterbody because of the similar-kind replacement. Rule 6.3.1c is met.

d) Shall preserve existing wildlife passage along each bank and riparian area:

The project will not permanently change conditions that will deter wildlife from using the area adjacent to the Lake along Excelsior Blvd once the project is complete. Construction activities may temporarily displace wildlife until the area is restored to preproject conditions. Rule 6.3.1d is met.

e) Shall represent the "minimal impact" solution to a specific need with respect to all other reasonable alternatives:

Alternative options investigated for the storm sewer improvements and reconstruction included, 1) no-build alternative, and 2) altering the design of the culvert. A "do nothing" alternative would not correct the existing hydraulic problem resulting from the deteriorated pipe. An alternate design of the culvert may alter the waterbody baseflows and hydraulic characteristics. For the reasons noted above, both alternative designs were rejected.

As previously stated, the pipe is not functioning as designed, and proposed activities will correct a hydraulic problem associated with the deteriorated pipes. The identified deterioration may prevent normal flow through the pipe, introduce sediment into the Lake, and exacerbate erosion along the pipe alignment. Thus, the proposed storm sewer improvements meet Rule 6.3.1e criteria and represent the minimal impact solution.

Rule 6.3.2 with criteria involving projects with directional boring or horizontal drilling does not apply to the project.

Rule 6.3.3 states, removal of structures or other waterway obstructions:

a) Shall maintain the original cross-section and bed conditions to the greatest extent practicable:

Areas along the bank of the waterbody impacted by storm sewer improvements and the outlet control structure reconstruction will be restored to pre-project natural

- conditions, including elevations, contours, and substrate. Disturbed areas will be graded such that no net reduction in floodplain storage volume will occur.
- b) Shall achieve complete removal of the structure, including any footings or pilings that impede navigation:

This rule does not apply to the project.

c) Shall not involve the removal of a water level control device:

This rule does not apply to the project.

Rule 6.3.4 states, No activity affecting the bed of a protected water may be conducted between April 1 and June 30 on public waterbodies:

The work will not be undertaken between April 1 and June 30.

### 11.0 Fees

Because the property owner is a public entity, no fees are charged.

Rules 2.0-6.0 ......\$0

#### 12.0 Financial Assurances

Because the property owner is a public entity, the District's financial assurance requirements do not apply.

Sureties for the project are:

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#### **Findings**

- 1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
- 2. Rules 2, 4, 5 and 6 are met.

# **Recommendation**

Approval, contingent upon:

1. General Conditions

By accepting the permit, when issued, the applicant agrees to the following stipulations:

- An as-built drawing along the easterly outlet pipe alignment within the project corridor conforming to the design specifications as approved by the District must be submitted identifying no net reduction in floodplain storage volume at Wing Lake results from the project.
- 2. Per Rule 6.3.4, no activity affecting the bed of a protected waterbody may be conducted between April 1 and June 30.
- 3. As identified in the plans dated April 1, 2021 prepared by HTPO, a metal plate will be provided within the outlet control structure system to restrict the outflow discharge from Wing Lake. The plate will restrict the proposed 24-inch pipe capacity to an equivalent capacity of the existing 18-inch pipe. The oversizing of the downstream pipe system is to

provide additional runoff capacity in the future. Should the plate be removed in the future, updated permit application materials are required to be provided to the District for review.



