Permit Application Review

Permit No. 2020-99
Received complete: August 26, 2020

Applicant:	Julie Long; City of Bloomington
Consultant:	
Project:	Jones Place Outfall Maintenance
Location:	2531 Jones Place: Bloomington
Rule(s):	2, 7 and 8
Reviewer(s):	LLH and BCO

General Background & Comments

The project proposes the construction of a new riprap channel at the storm sewer outfall that discharges into Nine Mile Creek west of 2531 Jones Place in Bloomington. The existing riprap channel at the outfall curves south approximately 40 feet in length and comes into contact with the bank of Nine Mile Creek. The City of Bloomington has identified silt accumulation resulting in an obstruction of the discharge from the 18-inch RCP outfall.

The project proposes construction of a new riprap channel at the pipe outlet to the bank of Nine Mile Creek, resulting in approximately 1,300 square feet of disturbance. No storm sewer modifications or improvements are proposed. The City has noted that a creek restoration project is scheduled for 2025-2026, therefore, this temporary outfall channel maintenance has been identified as the most prudent approach.

The District's Atlas 14 100-year frequency flood elevation of Nine Mile Creek at the project location is identified as elevation 799.9 M.S.L. Because the maintenance involves alteration of land below the 100-year floodplain elevation of the creek, the District's Floodplain Management and Drainage Alterations, Rule 2.0, applies. The project proposes to remove 40 cubic yards of in-place sediment build-up and replacement with granular filter material and fieldstone riprap. The area will be over excavated allowing the riprap and granular filter material to be placed at an elevation matching existing grade, resulting in no net impact and no net loss of floodplain volume.

The District's requirements for both stormwater management and erosion and sediment control do not apply to the project because less than 50 cubic yards of material will be disturbed and less than 5,000 square feet of surface area is altered, Rules 4.2.1 a and b and 5.2.1 a and b.

The District's Shoreline and Streambank Improvements Rule 7.0 applies to the project because of the improvement of the riprap channel to the creek.

The District's Sediment Removal Rule 8.0 applies to the project because the project will remove approximately 40 cubic yards of in-place soil for placement of the riprap.

Exhibits

1. Permit Application dated August 25, 2020.
2. Plans printed August 12, 2020 prepared by the City of Bloomington.
3. Permit Application Letter dated August 25, 2020 prepared by the City of Bloomington.
4. Email correspondence dated September 14, 2020 indicating information required for compliance with NMCWD floodplain management and drainage alterations rule.

The application with the submitted information is complete.

2.0 Floodplain Management and Drainage Alterations

As previously stated, 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 floodplain of Nine Mile Creek, Rule 2.2.1. The proposed project includes placement of riprap and granular filter within the floodplain.

As shown on the plans, the land-altering activities proposed below the District's Atlas 14 100-year frequency flood elevation, 799.9 M.S.L., of the creek will not result in net fill or net impact within the floodplain. The supporting materials demonstrate, and the NMCWD Engineer concurs, that 40 cubic yards of sediment will be removed below the creek's 100-year frequency floodplain elevation. Along the proposed riprap alignment, the area will be over excavated allowing 28 cubic yards of riprap and 12 cubic yards of granular filter material to be placed to pre-project elevations. Post-project conditions will result in no net impact and no net loss of floodplain volume.

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.

Regrading and placement of riprap at the outfall is proposed below the 100-year frequency floodplain of the creek. Disturbed area within the floodplain will be regraded and over excavated with material removed and hauled away, allowing the riprap and filter material to be placed at an elevation matching pre-project elevations. Approximately 40 cubic yards of in-place sediment will be removed (cut) and 40 cubic yards of granular filter and riprap will be placed (fill) below the District's floodplain elevation. Because existing elevations are to be matched, the post-project 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.

Because the applicant has demonstrated and the engineer concurs that the project will preserve the existing 100-year flood level, the project will not alter surface flows, complying with Rule 2.3.3. Land disturbance is not proposed within the channel of Nine Mile Creek. Since the project will not result in increased impervious surface at the site and pre-development drainage patterns will be maintained in post-project conditions, discharge rates from the site will not increase.

Based on the outfall riprap channel design and stabilization methods, the maintenance project is not reasonably likely to cause adverse effects to water quality, hydrology, or hydraulics, thus conforming to Rule 2.3.3. Stabilizing the erosion section will reduce the further introduction of sediment into the creek.

Proposed activities will correct an erosion problem associated with the obstructed outfall and destabilization of the existing riprap channel. The existing channel configuration has the potential to introduce sediment into the creek and if not corrected will continue to erode. The project will not result in a rise of the District's management elevation for the creek since there will be no reduction in the available flood volume compared with existing conditions. The project will provide for the stability of both the channel, at the storm sewer outlet, and the creek bank. The project will not affect the groundwater hydrology or stream base flow conditions. The project will improve the water quality of the creek by the stabilization of an erosion problem and will restore any aquatic or riparian habitat that may have existed, upon completion of the project.

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

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.

7.0 Shoreline and Streambank Improvements

Rule 7.0 states that it is the District's policy to prevent erosion of shorelines and streambanks and to foster the use of natural materials and bioengineering for the maintenance and restoration of shorelines.

Rule 7.0 applies to the project, under paragraph 7.2, because the project will involve installation and stabilization of the outfall riprap channel at the location previously identified. The project will provide stabilization techniques, including fieldstone riprap and native vegetation.

Rule 7.3.1 states, *An applicant for a shoreline alteration permit must demonstrate a need to prevent shoreline erosion or restore eroded shoreline:*

The applicant states the storm sewer outfall, just downstream of West 98th Street, has silted in and is not draining properly. The project proposes a new riprap channel along the same alignment as the existing pipe. In light of the potential creek restoration project scheduled for 2025-2026, the City has identified this maintenance as a temporary stabilization approach prior to the scheduled creek restoration project.

The project as stated is to correct an erosion problem associated with the obstructed of flow at the existing storm sewer outfall and destabilized riprap channel. The existing configuration has the potential to introduce sediment into the creek and if not corrected will continue to erode. In addition, if not corrected, the storm sewer outfall will continue to be obstructed and be susceptible to damage during subsequent high flow events.

Rule 7.3.2 states, *An applicant must first consider maintenance or restoration of a shoreline using bioengineering. If bioengineering cannot provide a stable shoreline, a combination of riprap and bioengineering may be used to restore or maintain shoreline. If a combination of riprap and bioengineering cannot provide a stable shoreline within a reasonable period, riprap may be used to restore or maintain shoreline*.

As previously stated, the project proposes construction of a new stabilized riprap channel along the alignment of the existing pipe outfall extending west to the bank of Nine Mile Creek, resulting in approximately 1,300 square feet of disturbance.

At the location of the proposed outfall channel, the area will be over excavated allowing 28 cubic yards of riprap and 12 cubic yards of granular filter material to be placed at an elevation that matches the pre-project grade.

The creek bank will be stabilized by filling in the eroded section of the bank with granular fill and providing riprap protection on the slope of the bank. The new channel configuration extending west to the bank will provide a solution for minimizing the risk of the same erosion problem developing again in the future. Native grasses will be seeded above the riprap to blend into the adjacent banks. The native seed mix will be installed with the project to both revegetate the failed slope and provide native vegetation bank protection.

Rule 7.3.2a states, *Live plantings incorporated in shoreline bioengineering must be native aquatic vegetation and/or native upland plants:*

The rock stabilization will provide the foundation of the stabilization proposed. A native seed mixture will be used for the restoration above the rip-rap.

Rule 7.3.2b states: *Riprap to be used in shoreline erosion protection must be sized appropriately in relation to the erosion potential of the wave or current action of the particular water body, but in no case shall the riprap rock average less than six inches in diameter or more than 30 inches in diameter. Riprap shall be durable, natural stone and of a gradation that will result in a stable shoreline embankment. Stone, granular filter and geotextile material shall conform to standard Minnesota Department of Transportation specifications, except that neither limestone nor dolomite shall be used for shoreline or stream bank riprap but may be used at stormwater outfalls. All materials used must be free from organic material, soil, clay, debris, trash or any other material that may cause siltation or pollution:*

The project proposes the use of Class III fieldstone riprap, which has an average diameter size of 30-inches. The objective is to maintain the natural characteristics of the creek system yet provide for a stable slope that forms the creek bank.

Rule 7.3.2c states: *Riprap shall be placed to conform to the natural alignment of the shoreline.*

The stabilization will restore the previous alignment of the creek bank, but it will not move, alter or change the location of the creek channel from its current location.

Rule 7.3.2d states: *A transitional layer consisting of graded gravel, at least six inches deep, and an appropriate geotextile filter fabric shall be placed between the existing shoreline and any riprap. The thickness of riprap layers should be at least 1.25 times the maximum stone diameter. Toe boulders, if used, must be at least 50 percent buried.*

Filter material used will be 9-inches in depth. Toe boulders will not be used.

Rule 7.3.2e states: *Riprap must not cover emergent vegetation unless authorized by a Department of Natural Resources permit.*

The riprap to be installed will not cover emergent vegetation.

Rule 7.3.2f states: *Riprap shall extend no higher than the top of bank or two feet above the 100-year high water elevation, whichever is lower.*

The District's Atlas 14 100-year high water elevation at this location is 799.9 M.S.L., approximately the top of the bank. The riprap will extend to the storm sewer outfall, approximately 797 M.S.L.

Rule 7.3.3 states: *The finished slope of any shoreline shall not be steeper than 3:1 (horizontal to vertical).*

The plans show that existing grades will be matched.

Rule 7.3.4 states: *Horizontal encroachment from a shoreline shall be the minimal amount necessary to permanently stabilize the shoreline and shall not unduly interfere with water flow or navigation. No riprap or filter material shall be placed more than six feet waterward of the OHW. Streambank riprap shall not reduce the cross-sectional area of the channel or result in a stage increase of more than 0.01 feet at or upstream of the treatment.*

The channel cross-sectional area will not be changed by the project. Navigation within this reach of the creek is not applicable.

Rule 7.3.5 states: *The design of any shoreline erosion protection shall reflect the engineering properties of the underlying soils and any soil corrections or reinforcements necessary. The design shall conform to engineering principles for dispersion of wave energy and resistance to deformation from ice pressures and movement, considering prevailing winds, fetch and other factors that induce wave energy.*

The stabilization methods have been sized to provide a stable condition with the creek in its current location thereby minimizing further disturbance that would result from the project. Ice loading and wave energy is not applicable for stream channel stabilization.

Rule 7.3.6 states: *Placement of rip-rap for merely cosmetic purposes is prohibited.*

The project is to provide a stable creek section and is not for cosmetic purposes

Rule 7.3.7 states: *Retaining walls extending below the OHW of a water body are prohibited except where:*

a. There is a demonstrable need for a retaining wall in a public improvement project and

b. The design of the retaining wall has been certified by a registered engineer.

This rule does not apply in this instance.

8.0 Sediment Removal

The project proposes the removal of a total of approximately 40 cubic yards of sediment within and directly adjacent to the bank of Nine Mile Creek, triggering NMCWD Rule 8.0.

Rule 8.3 Criteria states, Removal of accumulated sediment at storm sewer outfalls may be permitted upon submittal of an application meeting the following criteria:

8.3.1 Removal of sediment must not alter the original alignment, slope or cross-section of the beds, banks or shores of any public water.

The supporting materials demonstrate, and the NMCWD Engineer concurs, that 40 cubic yards of sediment will be removed below the creek's 100-year frequency floodplain elevation, 799.9 M.S.L. At the location of the proposed riprap, the area will be over excavated allowing 28 cubic yards of riprap and 12 cubic yards of granular filter material to be placed at an elevation that matches the pre-project grades. Since post-project conditions will result in no net impact and no net loss of floodplain volume, removal of the sediment will not alter the original alignment, slope, or cross-section of the bank of the creek.

8.3.2 Any excavated materials storage or disposal sites must be identified and shown to be:

a) *Not below the OHW of a public water, public water wetland or wetland subject to the Wetland Conservation Act*

b) *Not in the floodplain; or*

c) *Not subject to erosion or likely to cause redeposition of the sediment to an adjacent water body, storm water facility or storm sewer.*

See Section 2.0 Floodplain Management and Alterations of this report.

8.3.3 Degradation or erosion of the banks or bed of the subject water body by entry of equipment must be avoided.

The areas disturbed will be restored with erosion control blanket and seeding. The proposed riprap channel will match existing grades.

8.3.4 Where determined necessary by the District to protect water quality, a flotation silt curtain shall be placed around the sediment removal site and maintained for the duration of the project.

The erosion control to be installed during construction will be based on flow conditions within the creek – either silt fence or floatation silt curtain. The areas disturbed will be restored with erosion control blanket and seeding.

8.3.5 No activity affecting the bed of a protected water maybe conducted between March 15 and June 15 on watercourses, or between April 1 and June 30 on all other public water bodies, to minimize impacts of fish spawning and migration.

Proposed activities will not occur between March 15 and June 15 at the creek.

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: $0

Findings

1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
2. Rule 8 is met. Compliance with Rules 2 and 7 will be determined on review of the plans to be submitted following conditions outlined below.

Recommendation

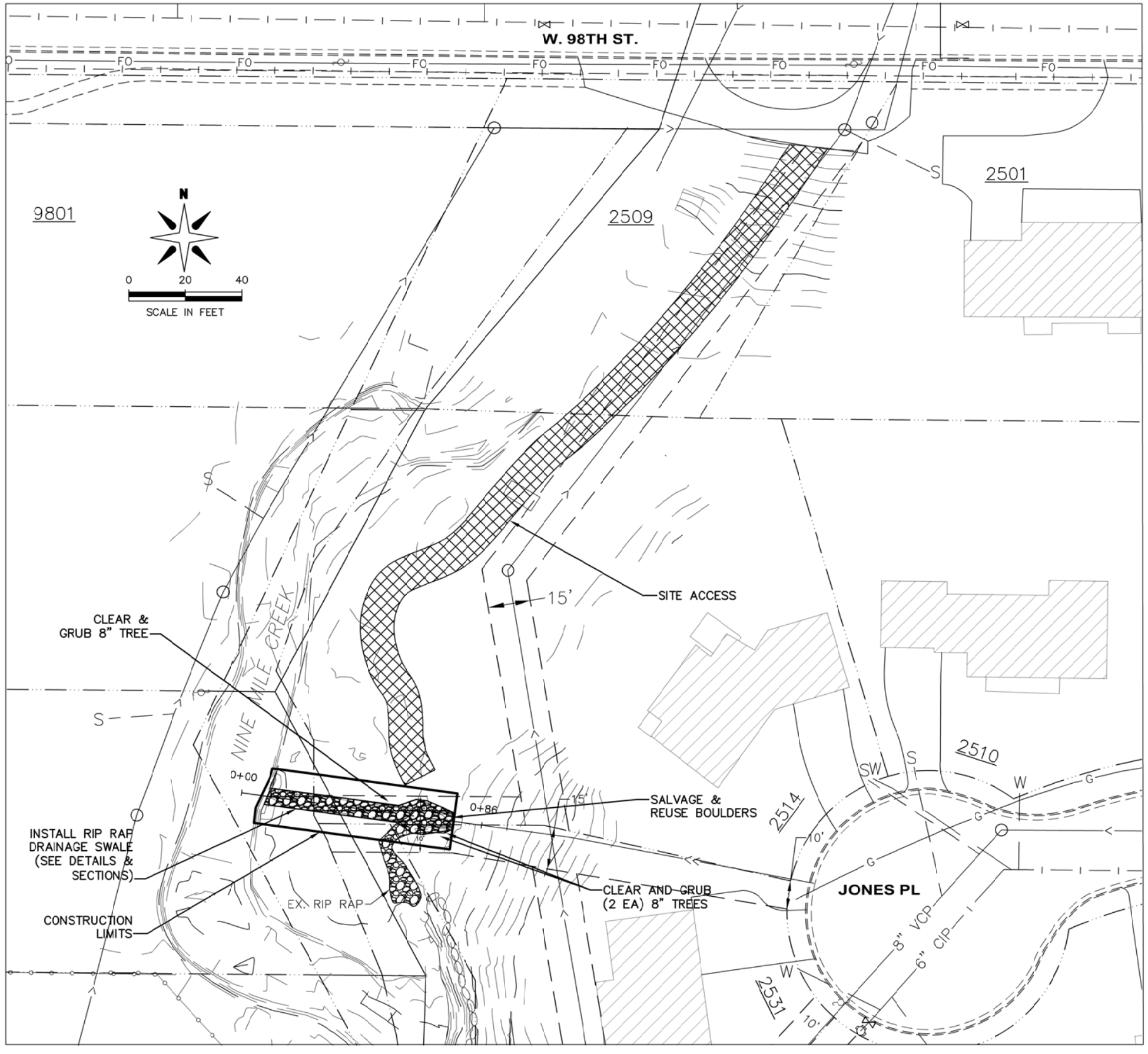
Approval, contingent upon:

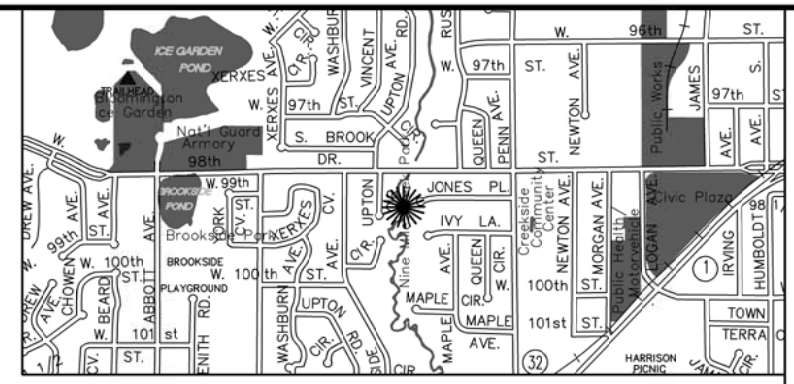
1. General Conditions
2. Per Rules 2.4.1 and 2.4.2, site plans identifying existing and proposed elevation contours of the work area, and the District's Atlas 14 100-year frequency floodplain elevation for Nine Mile Creek on the site, elevation 799.9 M.S.L.
3. Per Rules 7.3.2b and d, plans showing an appropriate geotextile filter fabric must be placed and conform to standard Minnesota Department of Transportation specifications.
4. Per Rule 7.3.3, plans identifying the finished slope of the shoreline, which must not be steeper than 3:1 (horizontal to vertical).
5. Per Rule 7.4.2b, plans identifying materials to be used, including the size (thickness) of riprap to be used.

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

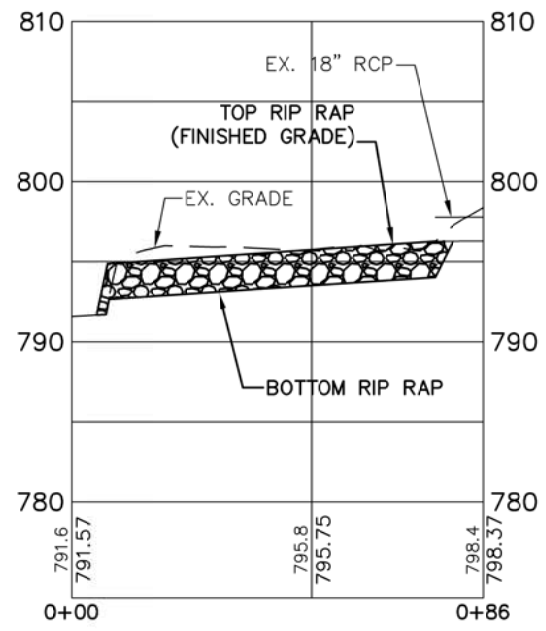
1. Per Rule 4.5.6, an as-built drawing of the floodplain mitigation areas conforming to the design specifications as approved by the District.
2. Per Rule 8.3.5, no activity affecting the bed of a protected watercourse may be conducted between March 15 and June 15.

2531 JONES PLACE



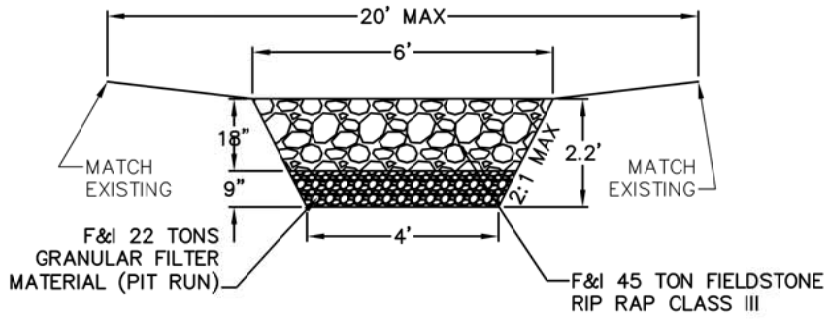


RIP RAP SWALE – PROFILE



RIP RAP SWALE – DETAIL

NO SCALE



2531 JONES PLACE

SITE PLAN

CITY OF BLOOMINGTON MINNESOTA
1700 W 98TH ST.
BLOOMINGTON MN 55431
PHONE (952) 563-8700

ENGINEERING DIVISION
PUBLIC WORKS DEPARTMENT
IN-HOUSE MAINTENANCE PROJECT

REVISIONS

DATE	DESCRIPTION	BY

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE
LIC.

DRAWN: DAC
CHECKED: ####
APPROVED: ####

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1 OF 2

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