



Memorandum

To: Bassett Creek Watershed Management Commission (BCWMC)
From: Barr Engineering Co. (Barr)
Subject: Item 4G: LEEF South – Minneapolis, MN
BCWMC March 19, 2020 Meeting Agenda
Date: March 12, 2020
Project: 23270051 2020 2211

4G LEEF South – Minneapolis, MN BCWMC 2020-06

Summary:

Proposed Work: Office building construction, second level parking deck, surface parking lot, and utilities including stormwater management

Basis for Review at Commission Meeting: Cut and fill in the floodplain

Impervious Surface Area: Increase 0.40 acres

Recommendation: Conditional Approval

General Project Information

The proposed project is in the Bassett Creek Main Stem subwatershed at 199 Irving Avenue North in Minneapolis. The proposed project includes construction of a six-story office building, a second level parking deck, a surface parking lot, a stormwater management system, and utility improvements resulting in 1.19 acres of grading (disturbance) on the parcel. The proposed project creates 1.14 acres of new and fully reconstructed impervious surfaces on the parcel including 0.74 acres of reconstructed impervious and an increase of 0.40 acres of impervious surfaces, from 0.74 acres (existing) to 1.14 acres (proposed). An additional 0.30 acres of work occurs in the right of way of adjacent streets (Irving Avenue North, Currie Avenue North, and James Avenue North) to facilitate utility, sidewalk, and curb work.

Floodplain

The proposed project includes work in the Bassett Creek 1% (base flood elevation, 100-year) floodplain. The October 2019 BCWMC Requirements for Improvements and Development Proposals (Requirements) document states that projects within the floodplain must maintain no net loss in floodplain storage and no increase in flood level at any point along the trunk system (managed to at least a precision of 0.00 feet). The 1% (base flood elevation, 100-year) floodplain elevation of Bassett Creek at this location is 811.3 feet NAVD88.

The proposed project will result in a net increase in floodplain storage of approximately 284 cubic yards and does not result in an increase in flood level at any point along the trunk system.

Wetlands

The proposed project does involve work in or adjacent to wetlands.

Rate Control

The October 2019 BCWMC Requirements document states that projects that create more than one (1) acre of new or fully reconstructed impervious area *must manage stormwater such that peak flow rates leaving the site are equal to or less than the existing rate leaving the site for the 2-, 10-, and 100-year events, based on Atlas 14 precipitation amounts and using a nested 24-hour rainfall distribution.*

In existing conditions, stormwater runoff generally leaves the site in two directions: to the north and east to the gutter line and storm sewer in Currie Avenue West and Irving Avenue North, respectively, and to the west to the gutter line and storm sewer in James Avenue North. The storm sewers eventually discharge to Bassett Creek to the south of the proposed development.

In proposed conditions, stormwater will continue to generally leave the site in two directions: to the north and east via both surface flows to the gutter line and storm sewer and proposed storm sewer to Irving Avenue North, and to the west to the gutter line and storm sewer in James Avenue North. An underground filtration system is proposed to provide rate control for a majority of the site runoff. The outlet for the underground filtration system routes flows to the storm sewer in Irving Avenue North, which eventually discharges to Bassett Creek to the south of the proposed development. Drainage area and runoff to James Avenue North will be reduced but remain untreated.

Table 1 summarizes the existing and proposed peak discharge rates for the proposed project.

Table 1: Existing and Proposed Peak Discharge Rates

Runoff Direction	Area (acres)		2-Year Peak (cfs)		10-Year Peak (cfs)		100-Year Peak (cfs)	
	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
To West	0.23	0.08	0.5	0.3	1.0	0.5	1.9	0.9
To East	1.24	1.38	3.9	1.1	6.2	1.9	11.5	7.2
Total ¹	1.46	1.46	4.5	1.4	7.1	2.0	13.4	8.0

¹ Total peak discharge rates may not be a direct sum of the peak discharge rates of inflows due to rounding or the timing of the peak discharge rates for each inflow.

Table 1 shows that the stormwater management system for the proposed project meets the BCWMC requirement for rate control.

Water Quality

The BCWMC Requirements document states that projects on sites without restrictions *that create one or more acres of new and/or fully reconstructed impervious surfaces shall capture and retain on-site 1.1 inches of runoff from the new and/or fully reconstructed impervious surfaces.* If the applicant is unable to achieve the performance goals due to site restrictions, the MIDS flexible treatment options approach shall be used following the MIDS design sequence flow chart.

The proposed project creates 1.14 acres of new and fully reconstructed impervious area on the parcel. Flexible Treatment Option (FTO) #2 was selected for the proposed project due to the presence of tight clay soils, potential for contamination, and potential for high groundwater, which makes infiltration infeasible. FTO #2 requires that the project provide 60% removal of total phosphorus (TP). An

underground filtration system is proposed to provide stormwater treatment. The underground filtration system will collect runoff from the majority of the parcel, with the exception of a small area that leaves the site through the east parking lot access. Table 2 summarizes the annual TP loading and TP removals provided by the applicant, as well as estimated annual TP loading and TP removals estimated by Barr using typical sand filtration. We have requested additional information from the applicant to confirm the removal efficiencies applied in the water quality modeling of the underground filtration system. The 0.30 acres of work in the street rights of way is not included in the water quality analysis. Disconnected sidewalks are exempt from water quality treatment, and the utility connections and street improvements are considered linear work and do not trigger water quality treatment because there is less than one acre of net new impervious area in the streets.

Table 2: Summary of TP Loading, TP Removals, and TP Removal Efficiency for Proposed BMP

Drainage Area / BMP	Area (acres)	TP Loading (lbs/year)	TP Removal (lbs/year)	Percent Removal (%)
Project Parcel / Underground Filtration	1.14	2.1	1.7 ¹ (1.3 ²)	79.8% ¹ (62.2% ²)

¹ Provided by applicant.

² Estimated by Barr based on typical sand filtration.

Erosion and Sediment Control

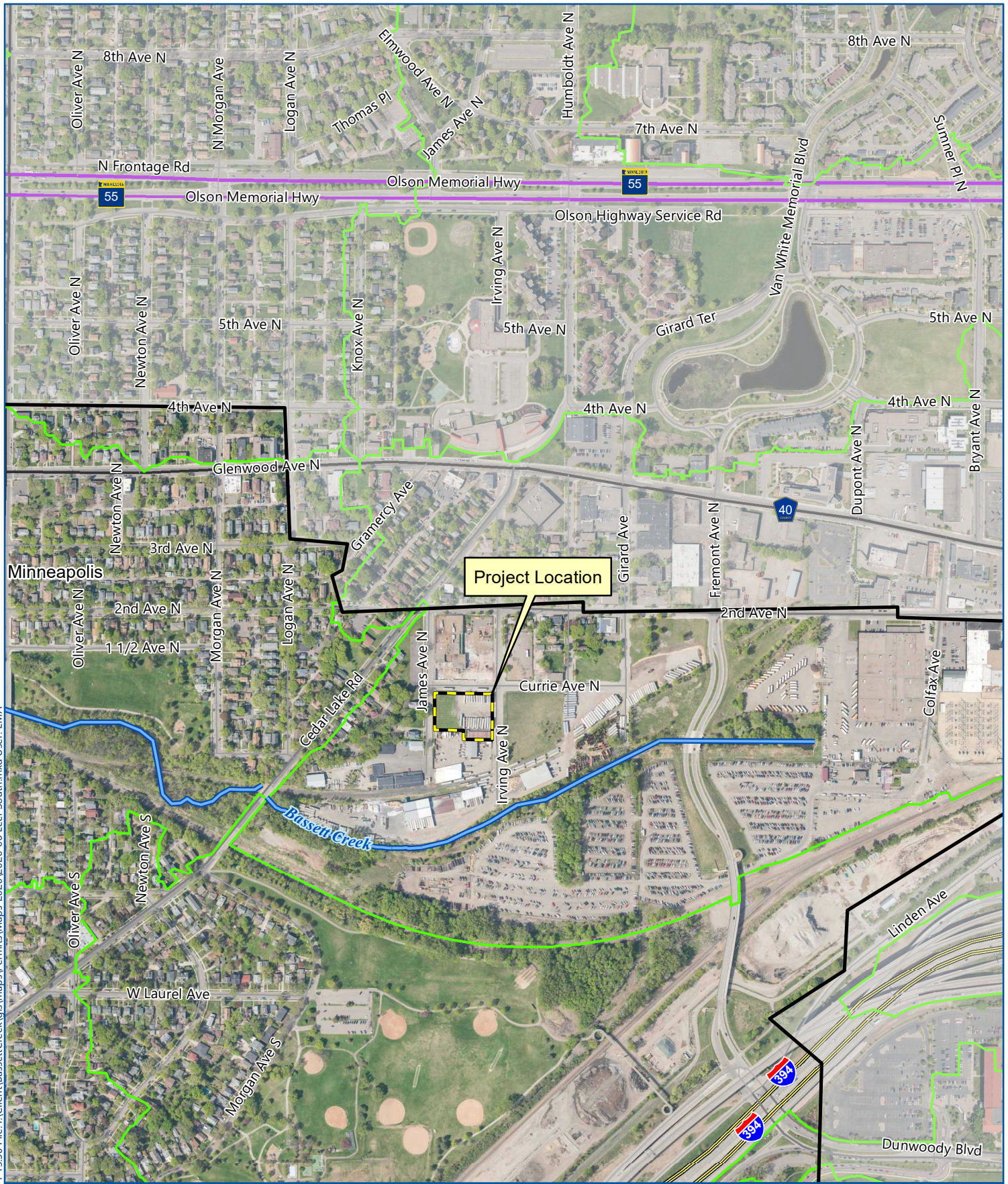
The proposed project results in more than 10,000 square feet of land disturbance; therefore, the proposed project must meet the BCWMC erosion and sediment control requirements. Proposed temporary erosion and sediment control features include a rock construction entrance, silt fence, biologs, and inlet protection. Permanent erosion and sediment control features include erosion control blanket and stabilization with sod or seed and mulch.







Recommendation

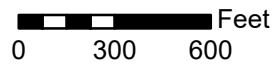
Conditional approval based on the following comments:

1. The HydroCAD models must be revised as follows to demonstrate that the proposed project meets BCWMC rate control requirements:
 - a. For the proposed underground filtration system, calculations or documentation must be provided to confirm the custom stage storage values.
 - b. Documentation must be provided that the proposed underground filtration system draws down within 48 hours.
2. The P8 model must be revised as follows to demonstrate that the proposed project meets BCWMC water quality goals (or flexible treatment options).
 - a. Calculations or documentation must be provided to confirm the stage storage and stage discharge values used for Device ADS MC-3500.
 - b. Watershed DA-2 must be updated to match the percent impervious in the HydroCAD model and proposed drainage map.

- c. Additional information must be provided to support pollutant removal efficiencies assumed in the water quality modeling for the underground filtration system. Alternatively, the particle filtration efficiency must be modified to align with established values in the Minnesota Stormwater Manual for sand filtration, which are 85% removal for particulate particle fractions and 0% removal for dissolved particle fractions. (Note: Iron-enhanced sand filtration provides 40% removal for dissolved particle fractions but iron-enhanced sand filtration is generally not recommended for use in subsurface filtration due to the requirement for oxygenation of the iron enhanced sand filter media between rainfall events. If the applicant wishes to revise the design to include iron-enhanced sand filtration, it must be specified on the plans and the applicant must provide documentation indicating that the system is properly designed to provide oxygenation of the iron between rainfall events.)
 - d. The small area within the parcel that leaves the site through the east parking lot access and is not routed to the underground filtration system must be included in the loading calculation for TP and the total TP removal efficiency.
3. Sheet C-801: the sediment control rock entrance detail must be modified to include a minimum wash-off berm height of 2 feet above the adjacent roadway, with maximum side slopes of 4:1, to intercept sediment-laden runoff.
4. The proposed filtration system must be modified to provide a minimum thickness of filtration media per guidance in the Minnesota Stormwater Manual. See underground sand filter guidance here: https://stormwater.pca.state.mn.us/index.php?title=Types_of_filtration
5. Revised plans (paper copy and final electronic files) must be provided to the BCWMC Engineer for final review and approval.



-  Project Location
-  Municipality
-  BCWMC
-  Legal Boundary
-  Major Subwatershed
-  Bassett Creek



BCWMC #2020-06
LEEF SOUTH
Minneapolis, MN

LOCATION MAP