Item 5C.
BCWMC 5-17-18

resourceful. naturally.
engineering and environmental consultants

BARR

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5C – Minneapolis Impound Lot Facility Improvements – Minneapolis, MN
BCWMC May 17, 2018 Meeting Agenda
Date: May 9, 2017
Project: 23270051 2017 2144

5C Minneapolis Impound Lot Facility Improvements – Minneapolis, MN BCWMC 2017-37

Summary:

Proposed Work: Temporary surcharge for new access road from Van White Memorial Blvd

Basis for Review at Commission Meeting: Variance request for temporary fill in the floodplain

Impervious Surface Area: N/A

Recommendation: Consider approval of variance request for temporary fill in floodplain

General Background & Comments

The proposed project is located in the Bassett Creek Main Stem subwatershed at 51 Colfax Avenue North in Minneapolis, MN. The project includes demolition of existing buildings, construction of a new building, parking lot improvements, stormwater management improvements, and other site improvements, resulting in 18.8 acres of disturbance (grading). The project creates 4.91 acres of reconstructed impervious surfaces, and results in a 0.77-acre decrease of impervious surfaces from 8.96 acres (existing conditions) to 8.19 acres (proposed conditions).

The Commission conditionally approved the proposed project at their November 16, 2017 meeting. A condition of that approval was that "revised Drawings and a revised Stormwater Management Report must be provided to the BCWMC Engineer for final review and approval." On April 27, 2018, the applicant submitted revised plans to the BCWMC Engineer for review. The applicant's resubmittal included a variance request for temporary fill in the floodplain for one year. Blue italicized text in this memo is information regarding the variance request or information which has been revised or added since the original review memo.

Floodplain

The proposed project includes work in the Bassett Creek floodplain. The August 2017 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 floodplain elevation of Bassett Creek at the project site is 810.9 feet NAVD88. A portion of the northwest corner of

the site is within the BCWMC floodplain, requiring the creation of compensatory storage for any proposed fill within the floodplain.

For the proposed project, a surcharge, or temporary soil loading, is proposed to limit future settling of the proposed Van White Memorial Boulevard access road. The temporary surcharge will be located approximately 150 feet from Bassett Creek and partially within the BCWMC floodplain. The original submittal indicated that surcharge material would be sourced from the proposed filtration basin area to prevent a temporary floodplain fill condition. However, the geotechnical engineer's slope stability analysis of the surcharge dictates that no excavation may occur within 100 feet of the toe (base of the surcharge fill). This excavation exclusion is required to provide an adequate factor of safety against slope failure of the surcharge. The 100-foot excavation exclusion zone significantly encompasses the area proposed for mitigation of floodplain fill. The applicant has indicated that compensatory storage cannot be created onsite during the period in which the surcharge is in place without significant impacts to construction staging, interim property use, potential disturbance and disposal of additional contaminated soil, and construction costs.

The final site condition, once the temporary surcharge is complete, will result in a net increase in floodplain storage of 186 cubic yards, from 4,667 cubic yards (existing conditions) to 4,853 cubic yards (proposed conditions). The compensatory floodplain storage is proposed by floodplain cuts to construct the filtration basin and swales in the floodplain.

Variance Request

The city of Minneapolis requested a variance to Section 5.10 of the BCWMC Requirements document for the period in which the surcharge is in place (anticipated to be one year). The proposed temporary fill will result in 467 cubic yards of temporary floodplain fill and approximately 0.01 feet of increase in the 1% (base flood elevation, 100-year flood) floodplain from the project site to upstream of the Van White Memorial Boulevard bridge.

Section 3.3 of the BCWMC Requirements document indicates that in granting variances, the Commission shall make a finding showing that all of the following conditions exist. A memo from the city's consultant, which addresses these conditions, is attached.

1. *There are special circumstances or conditions affecting the property such that the strict application of the provisions of these standards and criteria would deprive the applicant of the reasonable use of the applicant's land.*
2. *The variance is necessary for the preservation and enjoyment of a substantial property right of the applicant.*
3. *The granting of the variance will not be detrimental to the public welfare or injurious to the other property in the territory in which the property is situated.*
4. *In applications relating to a use in the 1% (base flood elevation, 100-year flood) floodplain set forth in Table 2-9 of the Plan, the variance shall not allow a lower degree of flood protection than the current flood protection.*
5. *The granting of the variance will not be contrary to the intent of taking all reasonable and practical steps to improve water quality within the watershed.*

The memo from the city's consultant (attached) indicates that structures exist within the 100-year floodplain upstream of the Van White Memorial Boulevard bridge and to the north of the old tunnel entrance. Barr's flood inundation mapping, based on the Phase 2 XPSWMM model, indicates that approximately 20 structures are within the 100-year floodplain. Additionally, a portion of the Commission's Bassett Creek Main Stem Stabilization Project (BCWMC CIP 2017CR-M) is located within this reach of Bassett Creek. If a 100-year flood occurs during the variance period, the structures and CIP project could be impacted by the 0.01-foot increase in floodplain elevation. It should be noted, however, that this level of additional impact is minimal and within a reasonable margin of error for the modeled 100-year floodplain delineation.

Wetlands

The proposed project appears to involve work in or adjacent to wetlands. The City of Minneapolis is the local governing unit (LGU) responsible for administering the Wetland Conservation Act, therefore BCWMC wetland review is not required.

Stormwater Management

The BCWMC Requirements document states that projects that contain 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.

Under existing conditions, stormwater runoff from the majority of the site flows to Bassett Creek, either overland or through a stormwater pond and storm sewer under or adjacent to Van White Memorial Blvd. Additionally, stormwater runoff from a portion of the east side of the site is collected in a storm sewer and is routed to the Bassett Creek Tunnel, stormwater runoff from a portion of the southwest corner of the site flows offsite to a parcel to the west, and stormwater runoff from a portion of the southeast corner of the site flows offsite along the railroad right of way (ROW).

The proposed stormwater management system includes a filtration basin, swales with permanent rock ditch checks, and a Rain Guardian pretreatment feature. Stormwater runoff from the majority of the site will be routed through the swales (or Rain Guardian) and the filtration basin and continue on to Bassett Creek. Stormwater runoff from the same portion of the east side of the site is collected into a storm sewer and routed to the Bassett Creek Tunnel, and stormwater runoff from the same portion of the southeast corner of the site will flow offsite along the railroad ROW. Stormwater runoff from a smaller portion of the southwest corner of the site will flow offsite to a parcel to the west, although less runoff is produced than in existing conditions due to the proposed grading. The following table summarizes the existing and proposed peak discharges from the project area to Bassett Creek.

Discharge Point	**Existing (cfs)**			**Proposed (cfs)**		
	2-Year	10-Year	100-Year	2-Year	10-Year	100-Year
Bassett Creek	16.4	26.2	74.2	*12.2*	*21.0*	*33.8*
Bassett Creek Tunnel	8.9	13.6	23.8	*9.1*	*13.8*	*23.9*
West Parcel	2.3	3.8	7.1	0.5	0.8	1.4
Railroad ROW	0.1	0.1	0.2	0.1	0.1	0.2

Minor modifications to the plans, since the original submittal, resulted in changes to the proposed runoff flow rates to Bassett Creek and the Bassett Creek Tunnel, as shown by the blue italicized text. Due to the

increase in runoff flow rates to the Bassett Creek Tunnel from existing to proposed conditions, Condition B.2 was added as part of the conditional approval.

Water Quality Management

The BCWMC Requirements document states that redevelopment projects that create more than one (1) acre of new or fully reconstructed impervious area must treat stormwater in accordance with the BCWMC water quality standards performance goals. If the BCWMC performance goal is not feasible and/or is not allowed for a proposed project, then the applicant must implement flexible treatment options.

The proposed project results in 4.91 acres of new/fully reconstructed impervious surfaces. Due to soil contamination, no infiltration practices are allowed, and Flexible Treatment Option (FTO) #2 was selected for the proposed project. FTO #2 requires that the project provide 60% removal of total phosphorus (TP). The proposed stormwater management system was modeled with the Minimal Impact Design Standards (MIDS) calculator.

The following table summarizes the proposed TP removal rates for the proposed BMPs.

BMP	TP Load From Direct Watershed	TP Load From Upstream BMPs	TP Retained	Outflow Load	% Retained
	(lbs/year)	(lbs/year)	(lbs/year)	(lbs/year)	(%)
East Swale	*2.84*	0.00	*1.14*	*1.70*	40%
West Swale	*6.40*	0.00	*2.57*	*3.82*	40%
Filtration Basin[1]	*1.68*	*5.53*	*3.00*	*4.21*	*42%*
Total	*10.92*		*6.71*	*4.21*	*61%*

[1]Filtration Basin receives outflow from East Swale and West Swale

Minor modifications to the plans and revisions to the MIDS calculator file resulted in revised TP removals for the proposed stormwater management system, as shown in the blue italicized text. The revised results meet the BCWMC requirements for water quality management.

Erosion and Sediment Control

The BCWMC Requirements document states that proposed projects that involves more than 200 cubic yards of cut/fill or more than 10,000 square feet of land disturbance must meet the BCWMC erosion and sediment control requirements. Proposed temporary erosion and sediment control features include silt fence, a rock construction entrance, and inlet protection. Permanent erosion and sediment control features include riprap, permanent ditch checks, and stabilization through seeding and sod.

Recommendation

A) Consider approval of the City of Minneapolis' variance request for temporary fill in the floodplain. We recommend a variance period of 12 months to allow adequate time for the proposed surcharge but limit the longevity of the temporary increase in flood risk.

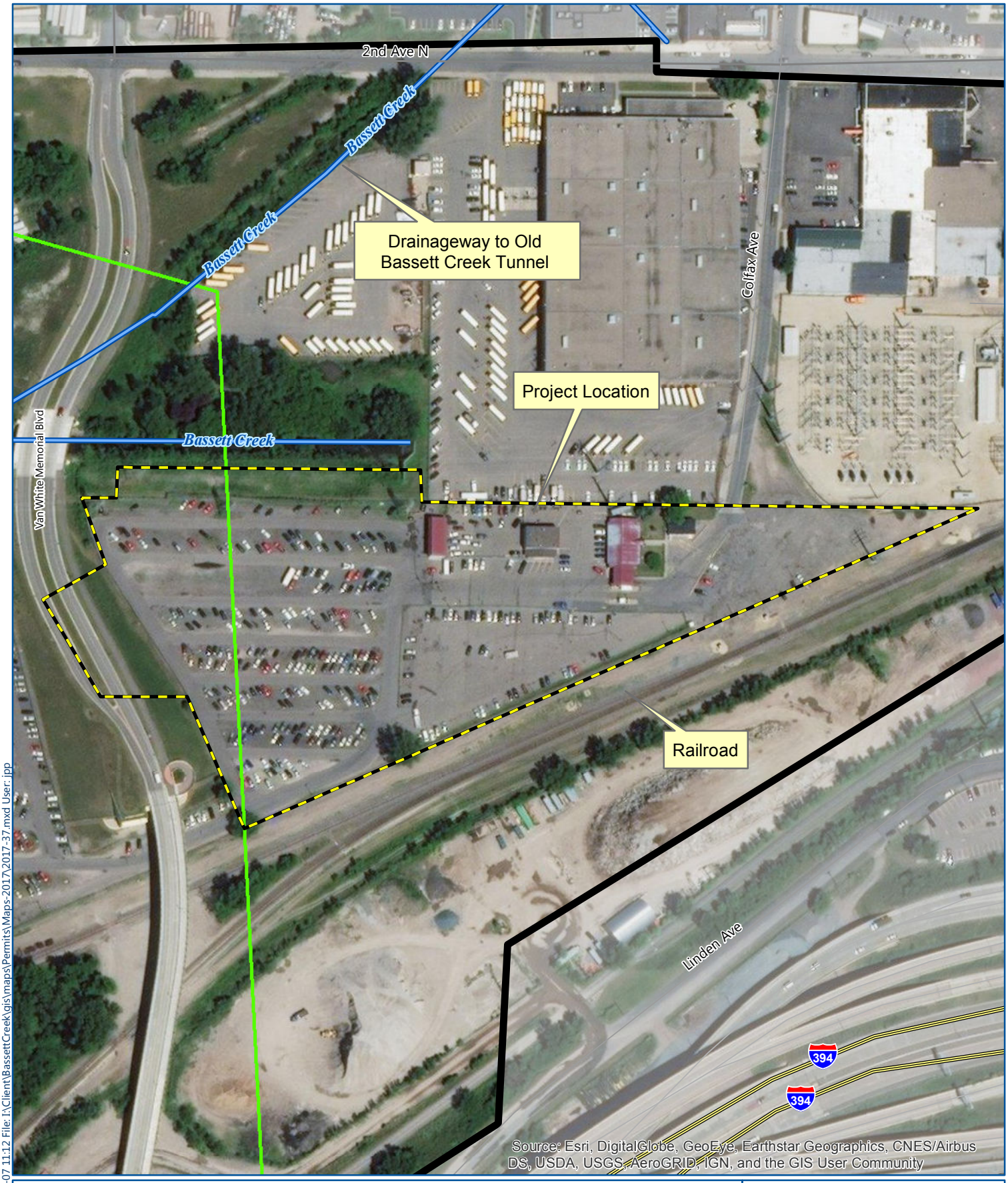
B) Conditional approval based on the following comments:

1. In HydroCAD, the diameter of the pipe from the Filtration Basin to Bassett Creek should be revised to match the plans.

2. Work along Bassett Creek should be coordinated with the City's creek restoration project.

3. *The revised submittal indicates that proposed runoff flow rates to the Bassett Creek Tunnel exceed existing runoff flow rates. Stormwater routed to the Bassett Creek Tunnel must be managed 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.*

4. Revised Drawings (paper and final electronic files) and a revised Stormwater Management Report must be provided to the BCWMC Engineer for final review and approval.



Project Location
Municipality
Bassett Creek
WMC Boundary
Major Subwatershed

BARR

N

0 100 200 400 Feet

Bassett Creek Watershed Management Commission

BCWMC #2017-37
Minneapolis Impound Lot Facility Improvements
Minneapolis, MN

LOCATION MAP

Barr Footer: ArcGIS 10.4.1, 2017-11-07 11:12 File: I:\Client\BassettCreek\gis\maps\Permits\Maps-2017\2017-37.mxd User: jpp

SRF No. 9398

MPLS Impound Lot Facility Improvements (BCWMC# 2017-37)

Variance Conditions

Below are responses to the five conditions a variance must satisfy to be granted per Section 3.3c of the BCWMC Requirements for Improvements and Development Proposals. This document serves as supplemental information to the permit application submitted on April 27th, 2018.

1. There are special circumstances or conditions affecting the property such that the strict application of the provisions of these standards and criteria would deprive the applicant of the reasonable use of the applicant's land.
   a. The owner operates a business from the affected parcel which relies on the secure movement and storage of vehicles. Excavation to mitigate for temporary floodplain fill due to surcharge would require further impacts to the owner's ability to store impounded vehicles and operate their business while construction is ongoing. In addition, the property is known to contain contaminated soils. Design of the facility improvements has sought to limit excavation and reduce the environmental and financial impacts of mitigation of the contaminates. Excavation to mitigate for temporary floodplain fill may increase the volume of contaminated soils that must be disposed of.
2. The variance is necessary for the preservation and enjoyment of a substantial property right of the applicant.
   a. As stated in condition 1, the variance is necessary to minimize impacts to the operation of the owner's business on the parcel during construction.
3. The granting of the variance will not be detrimental to the public welfare or injurious to the other property in the territory in which the property is situated.
   a. Granting of the variance allows for construction site to achieve adequate slope failure safety while the surcharge material is in place, thus protecting employees and customers that visit the property at that time.
4. In applications relating to a use in the 1% (base flood elevation, 100-year flood) floodplain set forth in Table 2-9 of the Plan, the variance shall not allow a lower degree of flood protection than the current flood protection.
   a. Modeling suggests the temporary fill does not increase flood elevations on the project site, and that an increase of 0.01' base flood elevation may occur in the Bassett Creek Channel adjacent to the site and upstream of Van White Boulevard bridge. Oscillations are seen in the hydrograph peaks of the creek reaches upstream of the Van White Boulevard bridge. Insurable structures exist within the 1%

floodplain upstream of the Van White Boulevard bridge and to the north of the old tunnel entrance based on floodplain elevations adopted by BCWMC in May of 2017. Modeling suggests that the temporary fill may increase base flood elevations at these structures by 0.01' if a 100-year event occurs during the 1-year surcharge period.

5. The granting of the variance will not be contrary to the intent of taking all reasonable and practical steps to improve water quality within the watershed.
   a. The variance will not have a negative impact on water quality within the watershed. Granting of the variance will reduce the amount and time that soils near Bassett Creek will need to be disturbed. This reduces the risk and severity of large rainfall events mobilizing soil from disturbed areas that would then discharge into the creek.