Item 4E.
BCWMC 6-18-15
StormTech Fact Sheet online

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Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 4E – Plymouth Ice Center/Lifetime Fitness Parking Lot Project – Plymouth
BCWMC June 18, 2015 Meeting Agenda
Date: June 10, 2015
Project: 23270051 2015 2044

4E Plymouth Ice Center/Lifetime Fitness Parking Lot Project - Plymouth

Summary:

Proposed Work: Parking lot redevelopment and expansion

Basis for Commission Review: Use of underground storage for stormwater treatment

Impervious Surface Area: Increase 0.7 acres

Recommendation: Conditional approval

General Background & Comments

The proposed project includes parking lot redevelopment and expansions (in the southeast and northeast corners of the site), curb and gutter removal and replacement, parking lot mill and overlay, and installation of an underground stormwater treatment system. The project is in the Plymouth Creek subwatershed. The project proposes an increase of 0.7 acres of impervious surface resulting in a total proposed site impervious area of 2.7 acres. The project site is 9.5 acres.

Floodplain

N/A

Wetlands

The project does not involve work in wetlands. The City of Plymouth is the LGU for administering the Minnesota Wetland Conservation Act of 1991.

Stormwater Management

Under existing conditions, runoff from the site is conveyed through storm sewer to a pond east of the site. Under proposed conditions, the drainage divides will remain the same and runoff will be conveyed to the same discharge point. The north portion of the parking lot will be routed through an underground stormwater management system for water quality treatment before discharging to the east pond.

Water Quality Management

There is currently no water quality treatment provided on the site; however, runoff from the site is treated in a downstream pond. Because project is a redevelopment, the parcel size is greater than five acres and the added impervious surface is greater than 10,000 square feet, the project must meet the BCWMC's nondegradation water quality treatment requirements. An underground StormTech chamber system with an underground sand filter is proposed to provide water quality treatment on site for the parking lot expansion. Documentation must be provided to demonstrate that the underground StormTech chamber system and sand filter are adequately sized to meet BCWMC's nondegradation requirements. A sump manhole will be used as pretreatment for the treatment system.

Erosion and Sediment Control

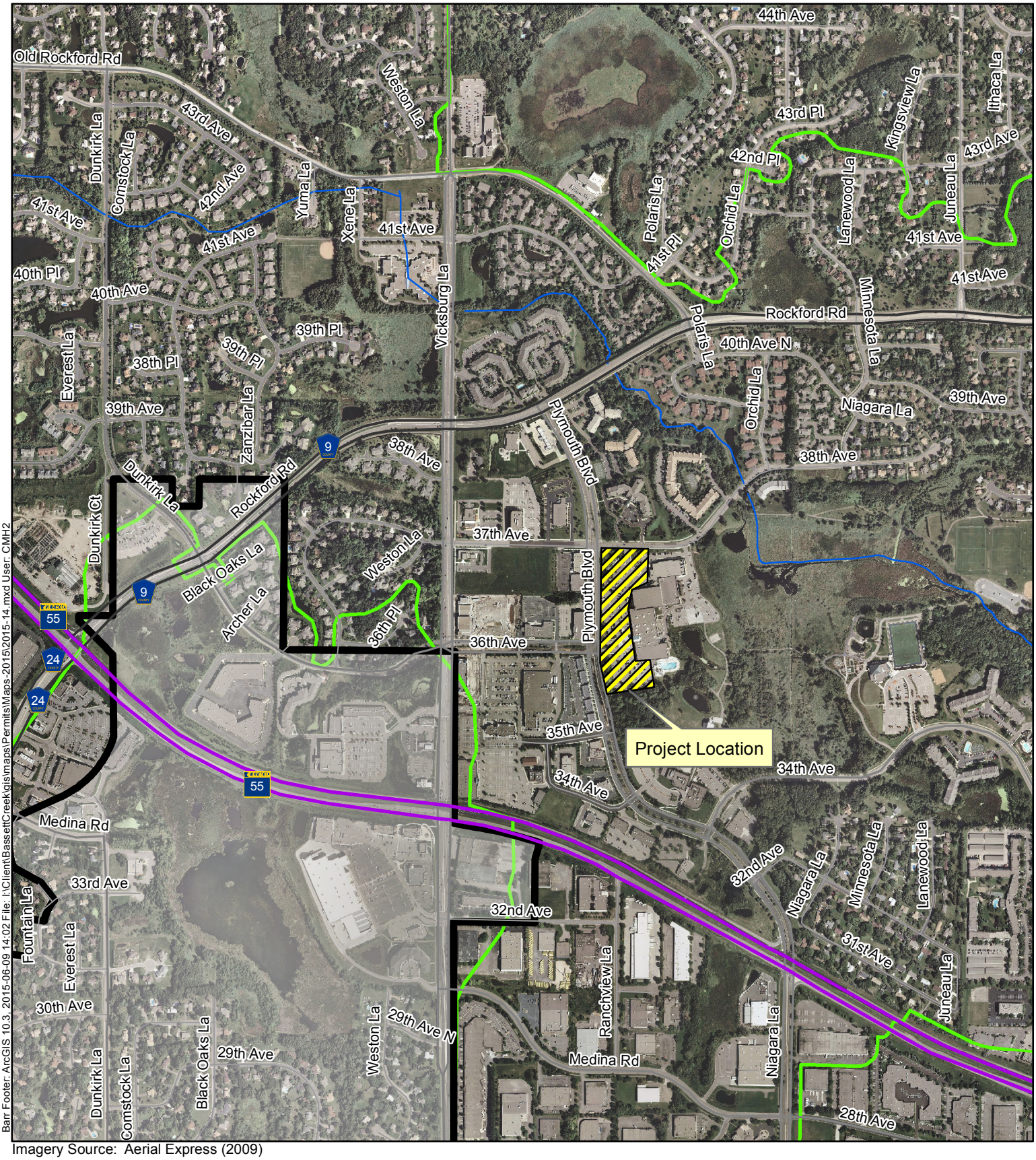
Since the area to be graded is greater than 10,000 square feet, the proposed project must meet the BCWMC erosion control requirements. Proposed temporary erosion control features include catch basin inlet protection, silt fence, and a rock construction entrance.

Recommendation

Conditional approval based on the following comments:

1. Construction entrance(s) should be shown on the plans.
2. If a construction entrance is not to be installed at the northern site driveway, sediment control logs or other appropriate perimeter control devices must be installed to prevent sediment-laden water from leaving the site.
3. Sediment control logs or other appropriate perimeter control devices should be installed at the northeastern project limits to prevent sediment-laden water from leaving the site.
4. Applicant should add the following erosion control notes to the plans:
    - Vehicle tracking of sediment from the construction site (or onto streets within the site) must be minimized by installing rock construction entrances (with a minimum height of 2 feet above the adjacent roadway and with maximum side slopes of 4:1), rumble strips (mud mats), wood chips, wash racks, or equivalent systems at each site access.
    - Soils tracked from the site by motor vehicles must be cleaned daily (or more frequently, as necessary) from paved roadway surfaces throughout the duration of construction.
    - Temporary or permanent mulch must be uniformly applied by mechanical or hydraulic means and stabilized by disc-anchoring or use of hydraulic soil stabilizers.
5. StormTech details should be modified to show the sand filter layer below the typical chamber cross section.
6. Documentation must be provided demonstrating that the proposed StormTech system and sand filter meet BCWMC nondegradation water quality treatment requirements.

7. The invert used in the HydroCAD model for the 21″ RCP overflow pipe should be consistent with the invert shown on the plans.
8. Applicant should confirm from the soil borings taken on-site that the seasonally high groundwater table is adequately below the bottom of the sand filter to allow the structure to function hydraulically and to allow trapping and treatment of pollutants by the filter (a minimum of 3 feet between the bottom of the filter and groundwater is recommended). The soil boring report was not included with the BCWMC review submittal.
9. The sand used in the sand filter must be designed in accordance with the BCWMC document *Requirements for Improvements and Development Proposals, Section 6.2.1.2.5*.
10. The number and location of draintiles must be shown on the plans. The under drain system must be designed in accordance with the BCWMC document *Requirements for Improvements and Development Proposals, Section 6.2.1.2.6*.
11. Applicant should add the following sand filter construction notes to the plans:
    - Sand must be placed uniformly to prevent formation of voids that could lead to short-circuiting and to prevent damage to the underlying under drain system.
    - Mechanical compaction of the sand filter should be avoided. The sand bed can be stabilized by wetting the sand periodically, allowing it to consolidate, and then adding extra sand. This process can be repeated until consolidation is complete.
12. A maintenance agreement for the StormTech system and underlying sand filter must be developed.
13. Revised drawings must be provided to the BCWMC Engineer for final review and approval.



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Imagery Source: Aerial Express (2009)

- Project Location
- Bassett Creek
- WMC Boundary
- Major Subwatershed
- Municipality
- Stream

Feet

0 500 1,000 1,500 2,000

LOCATION MAP
APPLICATION 2015-14
Plymouth Ice Center/Lifetime Fitness
Parking Lot Project
Plymouth, MN