



## Memorandum

**To:** Bassett Creek Watershed Management Commission  
**From:** Barr Engineering Co.  
**Subject:** Item 4E – CSAH 66 Culvert Replacement – Golden Valley, MN  
BCWMC June 15, 2017 Meeting Agenda  
**Date:** June 7, 2017  
**Project:** 23270051 2017 2119

### 4E CSAH 66 Culvert Replacement – Golden Valley, MN BCWMC 2017-19

#### Summary:

**Proposed Work:** Removal of existing corrugated metal pipe culvert and installation of a precast concrete arch bridge structure for CSAH 66 (Golden Valley Road) crossing

**Basis for Commission Review:** Work in the floodplain, creek crossing

**Impervious Surface Area:** No change

**Recommendation:** Conditional Approval

#### General Background & Comments

The proposed project includes the removal of an existing 16.2 feet x 10.2 feet corrugated metal arch pipe, installation of a precast concrete arch bridge structure, storm sewer replacement, watermain relocation, and scour protection. The project is located in the Bassett Creek Main Stem subwatershed. The project results in 0.6 acres of disturbance (grading), 0.24 acre of reconstructed impervious, and no new impervious surface.

#### Floodplain

The proposed project includes work in the floodplain of Bassett Creek. The BCWMC requires that projects within the floodplain 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). At its May 18, 2017 meeting, the BCWMC approved the XP-SWMM Phase II (Atlas 14) model and adopted the revised (Atlas 14) floodplain elevations for Bassett Creek. Based on this approval and adoption, the floodplain elevation of Bassett Creek downstream of CSAH 66 (Golden Valley Road) is 828.2 feet NAVD88 and the floodplain elevation of Bassett Creek upstream of CSAH 66 (Golden Valley Road) is 833.8 feet NAVD88.

The applicant used an existing, truncated Bassett Creek HEC-RAS model, extending from Golden Valley Road to Hwy 100, to perform a hydraulic risk assessment study for the CSAH 66 (Golden Valley Road) crossing. This HEC-RAS model appears to have been developed in November 1996 and revised in January 1999. It does not appear that model was revised to reflect updated hydrologic parameters. The existing conditions model indicates that the existing 100-year flood elevation immediately upstream of CSAH 66

(Golden Valley Road) is 828.52 feet NAVD88 and the proposed 100-year flood elevation immediately downstream of CSAH 66 (Golden Valley Road) is 826.85 feet NAVD 88. However, these floodplain elevations are lower than both the revised (Atlas 14) floodplain elevations as well as the previous TP-40 floodplain elevations. In addition, the HEC-RAS model for the project does not appear to accurately represent existing conditions at Golden Valley Road. Specific items of concern in the model include the culvert, road embankment, and upstream/downstream ineffective flow areas.

The model was modified by the applicant to assess floodplain impacts of the proposed project. The model provided by the applicant indicates that the proposed 100-year flood elevation immediately upstream of CSAH 66 (Golden Valley Road) is expected to decrease by 0.96 feet and the proposed 100-year flood elevation immediately downstream of CSAH 66 (Golden Valley Road) is expected to decrease by 0.22 feet as a result of the project. However, the downstream boundary condition (i.e. end point) in the HEC-RAS model is too close to the project site to allow for complete assessment of downstream impacts. The proposed project will increase the waterway opening from 124 square feet in existing conditions to 211 square feet in proposed conditions. Flows are backed up upstream of CSAH 66 (Golden Valley Road) during the 100-year event in existing conditions, therefore increasing the conveyance through the crossing may increase flood elevations downstream. Comments related to the HEC-RAS modeling are included in the Recommendation section.

## **Wetlands**

The project appears to involve work adjacent to wetlands. The City of Golden Valley is the LGU for administering the Minnesota Wetland Conservation Act of 1991.

## **Stormwater Management**

The drainage patterns under existing and proposed conditions will remain the same; this project will not result in changes to land use or topography.

## **Water Quality Management**

The project results in 0.24 acre of reconstructed impervious surface and therefore does not trigger water quality review or treatment to MIDS performance goals.

## **Erosion and Sediment Control**

Since the area to be graded for the project is greater than 10,000 square feet, the proposed project must meet the BCWMC erosion and sediment control requirements. Proposed temporary erosion and sediment control features include silt fence, floating silt curtain, sediment control logs, construction entrances, and rapid stabilization. Permanent erosion and sediment control features include seeding and erosion control blanket.

## **Recommendation**

Conditional approval based on the following comments:

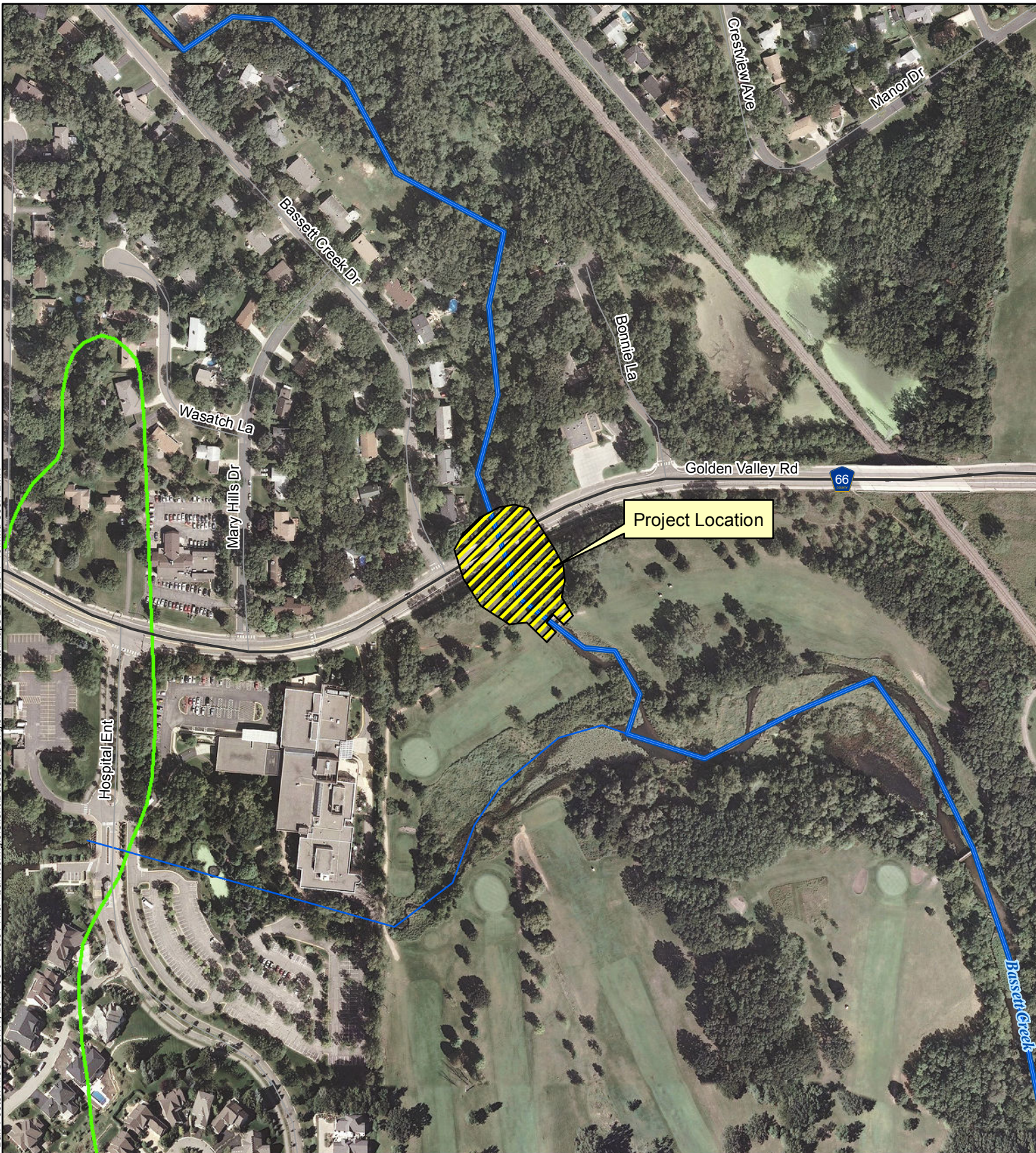
1. Applicant must review downstream impacts due to the increased waterway opening and demonstrate the project does not increase downstream flood levels. This may require modifying

the proposed structure. Due to the BCWMC's recent approval of the XP-SWMM Phase II model and adoption of revised floodplain elevations, revised modeling efforts should be coordinated between the applicant and Barr.







- a. The HEC-RAS model for the project does not appear to accurately represent existing conditions at Golden Valley Road. Specific items of concern in the model include the culvert, road embankment, and upstream/downstream ineffective flow areas. A corrected effective HEC-RAS model must be developed to accurately compare existing and proposed conditions floodplain elevations for the project. Alternatively, we recommend the applicant request and use the BCWMC's XP-SWMM Phase II (Atlas 14) model, which accurately represents existing conditions at the crossing.
  - b. The downstream boundary condition (i.e. end point) in the HEC-RAS model is too close to the project site to allow for complete assessment of downstream impacts. The HEC-RAS model must be extended downstream to ensure that the downstream floodplain elevations are not artificially altered by the downstream boundary condition.
2. The location of rock construction entrances must be shown on the plans.
  3. Inlet protection must be shown on the plans for inlets that receive drainage from the project area.
  4. Require that soils tracked from the site be removed from all paved surfaces within 24 hours of discovery throughout the duration of construction.
  5. Require that all exposed soil areas be stabilized as soon as possible, but in no case later than 14 days after the construction activity has temporarily or permanently ceased or within 7 days if the project is within 1 mile of a special or impaired water.
  6. Revised Drawings (paper copy and final electronic files) must be provided to the BCWMC Engineer for final review and approval.

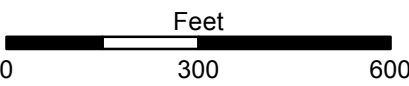


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Imagery Source: Aerial Express (2009)

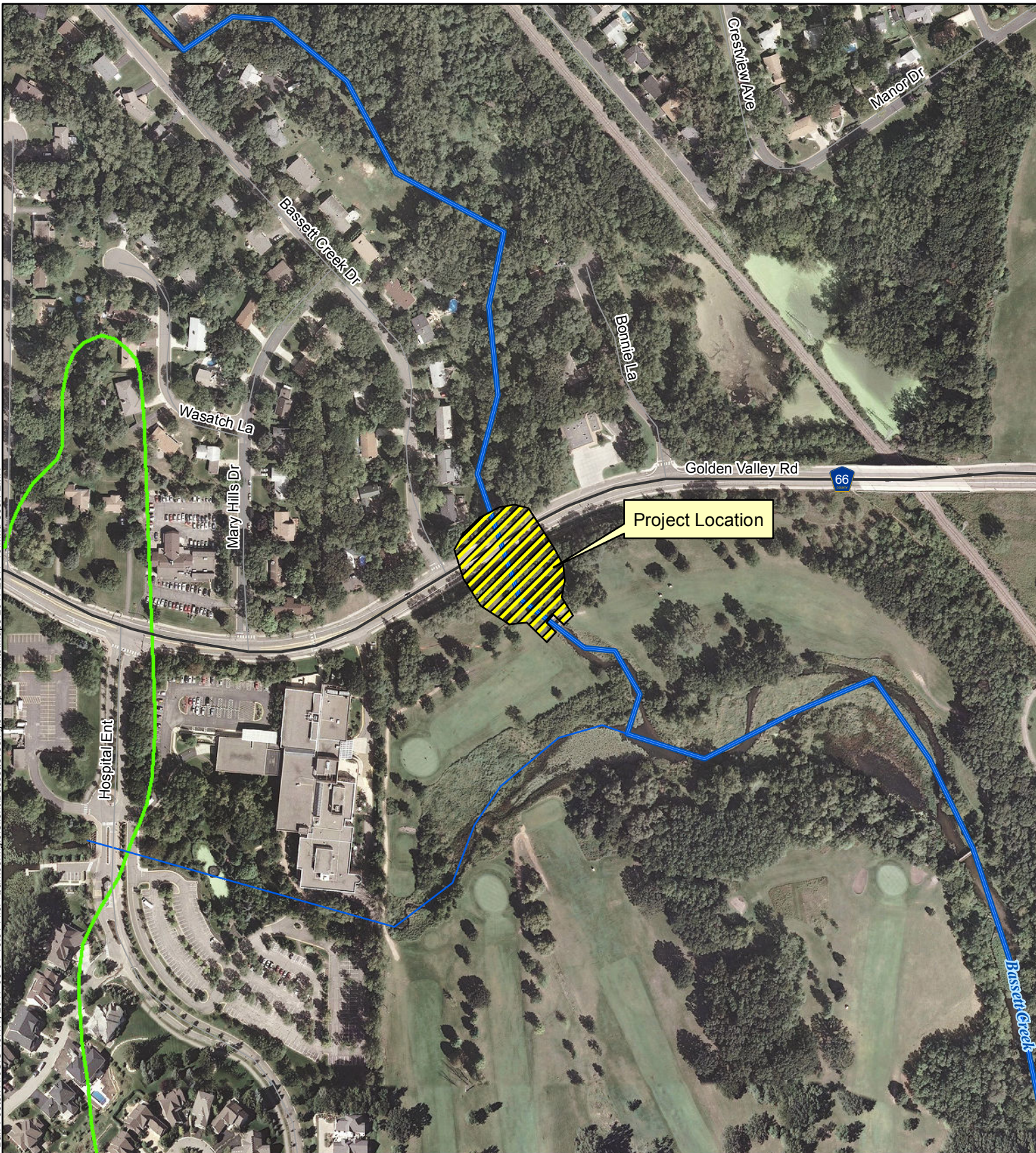
-  Project Location
-  Bassett Creek
-  WMC Boundary
-  Major Subwatershed
-  Municipality
-  Stream









**LOCATION MAP**  
**APPLICATION 2017-19**  
**CSAH 66 Culvert Replacement**  
**Golden Valley, MN**

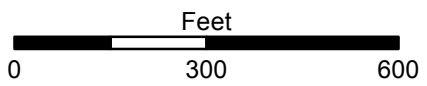


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