

Project Name	Marylane Avenue North Drainage Easement Assessment	Date	10/5/2016
To / Contact info	BCWD Board of Managers		
Cc / Contact info	Karen Kill, District Administrator		
From / Contact info	Ryan Fleming, PE & Camilla Correll, PE		
Regarding	Scope of Services		

Background

Rutherford Station has been designed to meet pre-settlement conditions for rate control and meets the NPDES requirements for volume control (1-inch off of impervious surfaces), the volume of stormwater runoff generated during construction is greater than the downstream conveyance system can handle. The District’s rules do not require that a permit applicant evaluate interim downstream impacts during construction and the NPDES requirements for temporary erosion and sediment control were met.

As shown in Figure 1, the flow from Rutherford Station leaves the site with a newly constructed culvert under Marylane and flows overland across a heavily-wooded drainage easement with little understory/groundcover (bare soil with high erosion potential) from the eastern edge of Marylane Avenue across parcel number (0006), through the rear lots of the Brown’s Creek Preserve Subdivision and onto city owned Outlot A of the Settlers Glen 6th Addition. The water goes to a City owned stormwater pond and outlets to natural wetlands. Flow from this area ultimately ends up at the diversion structure.

There are 64.4 acres that make up the drainage area flowing to the Marylane Culvert:

Table 1: Drainage Area Proportion

<u>Municipality</u>	<u>Area</u>	<u>Percent</u>
Grant	35.8	56%
Stillwater	28.6	44%

Residents living adjacent to the drainage easement have notified the BCWD and the City of Stillwater that the drainage has been flooding yards as a result of the development dewatering activity taking place at Rutherford Station. Temporary dewatering activities have been changed to require the clean water to be piped to the city owned stormwater pond in Settler’s 6th Addition, but the unstable nature of the woodlands and undefined flow path through this relatively flat area have been identified by BCWD staff and City staff as potential long-term issues. Staff are concerned about capacity to pass flows during spring snowmelt conditions and future issues when additional undeveloped parcels along Marylane are converted to higher density residential development.

After discussing these concerns with the City of Stillwater staff, it was decided that a collaborative evaluation of the drainage easement should be performed. This evaluation would characterize its condition and identify opportunities to stabilize the flow area, restore capacity, and potentially make improvements to provide additional treatment (storage) if needed. If it is determined that improvements need to be made to restore the capacity of the drainage easement, the City of Stillwater is interested in cost-sharing with the BCWD on the implementation of these improvements.

Scope of Services

The following scope of services identifies the tasks that should be taken to evaluate the capacity of the drainage easement to pass flows under existing conditions as well as fully developed conditions.

Task 1: Data Collection –

- a. Survey of Channel in drainage easement to determine grade, identify obstructions to flow and characterize the conditions of the channel, vegetation, erosion, sediment deposition, etc.
- b. Procurement of data in contributing drainage area from DNR, Washington County, City of Stillwater and permitted development.

Assumptions: The cost for this task assumes that EOR will be conducting the work. However, the City of Stillwater may be able to contribute to this effort.

Task 2: Existing Conditions Model Refinements –

- a. Survey conditioning & comparison/combination with MnDNR Digital Elevation Model for model import.
- b. Update District Hydrologic and Hydraulic model with data collected in Task 1 to more accurately simulate the existing flow through the drainage easement and City property.
- c. Site walkthrough to address modeling questions and assure drainage understanding

Assumptions: Models developed by others for Washington County Road Improvement Projects and Rutherford Station will be made available for incorporation into the BCWD H/H model. Additional surveying field verification is not included beyond the initial survey and site visit for modeling understanding.

Task 3: Modeling Scenarios –

- a. Concept level modeling of the following scenarios into the BCWD model and run for the 1-inch, 2-, 5-, 10-, 100-year 24-hour rainfall events, 2012 and 2014 continuous simulations. Both the ultimate build out and un-vegetated, interim construction conditions will be reviewed.
 - i. Grading improvements throughout easement
 - ii. Pipe conveyance through the entire easement
 - iii. Grading improvements on property immediately east of Marylane, combined with a pipe conveyance through the City property
 - iv. Regional storage options upstream of wetlands on City property

Assumptions: Design drawings are not included in this scope of services

Task 4: Cost/Benefit Impact Analysis –

- a. Alternatives cost estimating, cost/benefits analysis and summary. Options will be vetted based on public benefit with respect to flooding, water quality benefit, and wetland impacts. The District Rules for discharge rate, volume and wetland bounce and duration of inundation will be used as guidance for project ranking in addition to City drainage priorities.
- b. Meeting (x1) with the District Administrator and the City of Stillwater for reviewing project merits, wetland impacts and permitting requirements.

Assumptions: One meeting will be required for review with the City and District staff.

Task 5: Project Documentation & Reporting –

- a. Report drafting, revisions, finalization with project close-out documentation
- b. Meeting (x1) with the City and District staff to review draft report and propose revisions
- c. Presentation to the District Board of Managers & City staff

Assumptions: One meeting and one presentation will be required for review of results of this study.

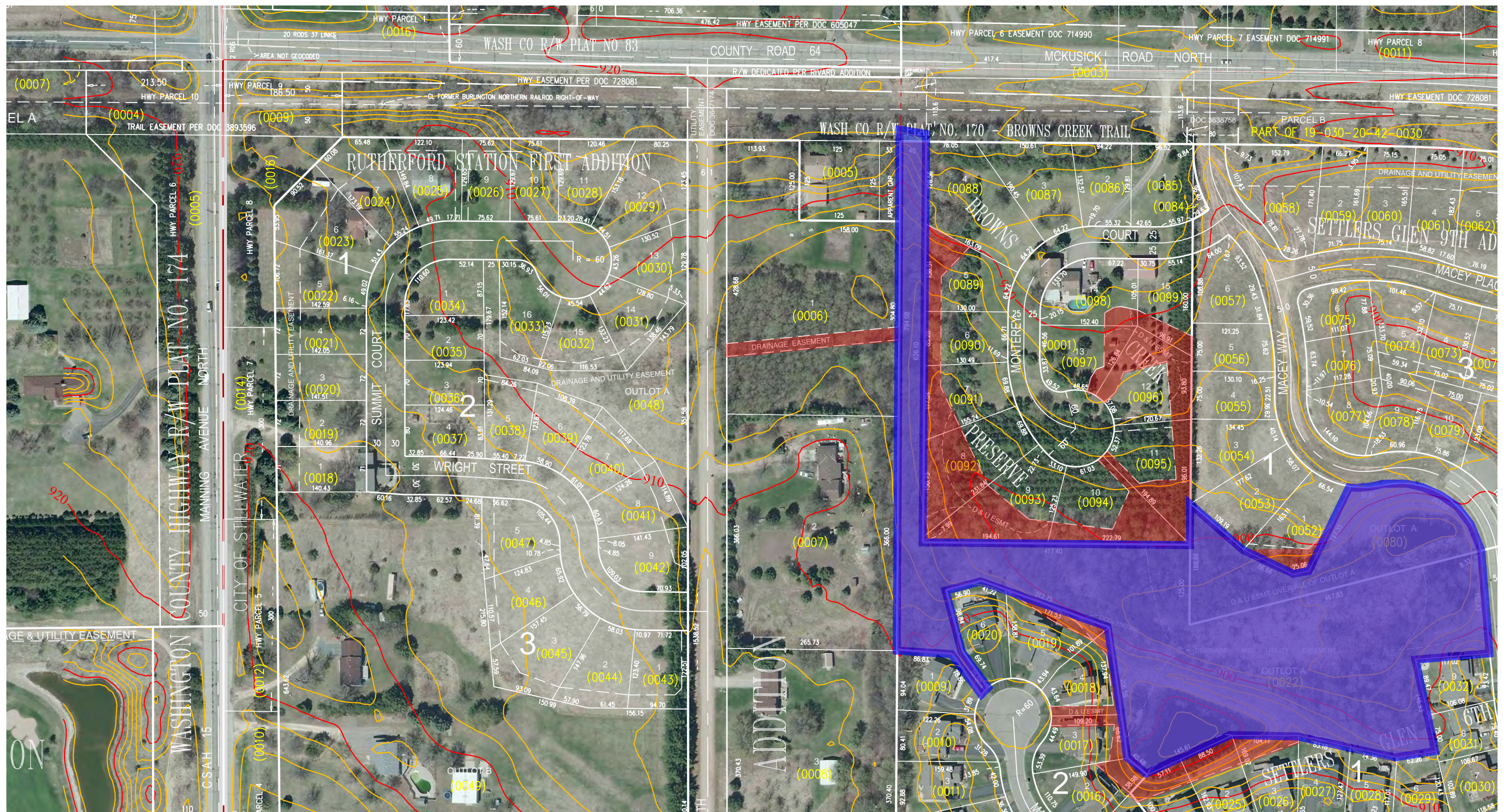
Task	Description	Estimated Hours	Estimated Cost
1	Data Collection	33	\$4,034
2	Existing Conditions Model Refinements	24	\$2,661
3	Modeling Scenarios	27	\$3,149
4	Cost/Benefit Impacts Analysis	60	\$7,884
5	Documentation & Reporting	50	\$6,399
TOTAL		196	\$24,127

Requested Action

1. The City of Stillwater has indicated it will consider a cost-sharing of this effort and plans to have this item on their October 18, 2016 City Council meeting agenda. It is recommended that the BCWD consider approval of this scope of services so that a sound understanding of the drainage conditions is reached and improvements to the drainage easement can be made as soon as feasible. Completing this work in the winter may minimize impacts to downstream resources and ensure that there is sufficient capacity in the system to convey flows generated under spring snowmelt conditions.

Figure 1: ■ - Drainage Easement ■ - City of Stillwater Property

\$17.00



Washington County
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SURVEY AND LAND MANAGEMENT DIVISION

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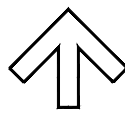
CONTOUR LEGEND

- 10 FOOT INTERVAL CONTOUR
- 2 FOOT INTERVAL CONTOUR

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LEGEND

- DNR PROTECTED WATERS
- DNR PROTECTED WETLAND
- DNR PROTECTED WATERCOURSE
- MUNICIPAL BOUNDARY
- PARK BOUNDARY



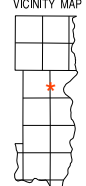
NORTH

SCALE: 1 inch = 150 feet

SECTION-TOWNSHIP-RANGE INDEX

1303021	1803020	1703020
2403021	1903020	2003020
2503021	3003020	2903020

COUNTY VICINITY MAP



SECTION VICINITY MAP

22	21	12	11
NW	+	NE	
23	24	13	14
32*	31	42	41
SW	+	SE	
33	34	43	44

PROPERTY IDENTIFICATION NUMBER FORMAT (GEOCODE)

SECTION NUMBER	TOWNSHIP NUMBER	RANGE NUMBER	QUARTER NUMBER	SPECIFIC PARCEL
##	##	##	##	####

(0011) - LAST FOUR DIGITS OF PROPERTY IDENTIFICATION NUMBER

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MAP LAST UPDATED: July 14, 2016

NO ADDITIONAL CHANGES HAVE BEEN REPORTED TO DATE

DATE OF CONTOURS: November, 2011 DATE OF PHOTOGRAPHY: May, 2013