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Stormwater Management Memorandum

Date: March 24, 2026
To: City of Mankato Public Works
From: Alec Pietz, P.E. – Project Manager
Subject: Pohl Townhomes LLC – Pohl Lofts
BMI Project No.: 25X.141475

I. Project Introduction

The following report provides a summary and analysis of the existing and proposed hydrology for Parcel I.D. R010920479029 in Mankato, Minnesota. The proposed project consists of three apartment buildings with a total of 84 units; necessary infrastructure, surface improvements, and stormwater management are also provided with this project. The SCS TR-20 hydrology method was utilized in Autodesk Storm and Sanitary Analysis (SSA) for the project. NOAA Atlas 14 rainfalls for Blue Earth County, Minnesota and MSE 3 distribution curves were used to develop rainfall events. Although additional storm events were used in the stormwater modeling, the 2-yr (2.87"), 10-yr (4.29"), and 100-yr (7.20") events are reported for both peak flow rates and basin high-water levels.

II. Existing Site Hydrology

The current site generally consists of fairly grassed area with varying elevation difference from west to east in D soils. An existing wet sedimentation basin constructed as part of private drainage infrastructure for the College Town development (west of Pohl Road) also exists on site. As such, a portion of the existing development is routed through the property and is approximated as shown by the subbasin boundary and existing storm sewer in the *Existing Hydrology* figure. Three primary subbasins are identified for study with this project:

- College Town – which, as previously mentioned, routes through the project site
- Direct to Wetland – the portion of the project site that bypasses the existing basin and discharges to adjacent property or the wetland
- Direct to Existing Basin – additional drainage on the project site that directly flows to the existing basin.

It was found that the private storm sewer in College Town will overflow to Pohl Road and continue south.

The existing basin storage curve was developed based on the topographic survey and is the basis for existing condition modeling. The dead storage is not reported as it was not surveyed; this does not influence the modeling. A data sheet is provided as an attachment with this memo.

Modeling results for the design storms yield the following peak flows:

Existing Condition Peak Flow Rates (cfs)			
Location	2-yr	10-yr	100-yr
College Town EOF	1.08	7.33	18.47
Direct to Wetland / Adjacent Property	3.78	7.00	13.88
Wetland From Existing Basin	5.70	8.13	11.22
Total	10.56	22.46	43.57

Proposed peak flows to these areas must not exceed the existing peak flows.

III. Proposed Site Hydrology

The *Proposed Hydrology* figure illustrates the proposed improvements, drainage areas, storm sewer routing, and the proposed wet sedimentation basin. The proposed basin is designed to accommodate the College Town drainage area (and bringing it to current stormwater design standards) along with the proposed project. A summary sheet is provided showing the design information for the wet sedimentation basin. A total of 6.13 acres of impervious area is routed to the basin between the existing development and proposed project requiring 0.56 ac-ft of water quality volume to meet the City of Mankato's requirement of 1.1-inches over the impervious area. An outfall control structure with a v-notch weir was designed to limit flows within the water quality volume to meet MPCA maximum discharge rates. A detail is provided with the plans accompanying the project submittal. Typical conveyance pipes were sized to a minimum 2-year event.

Proposed peak flow rates for design storms were determined to be:

Proposed Condition Peak Flow Rates (cfs)			
Location	2-yr	10-yr	100-yr
College Town EOF	0.00	2.71	13.57
Direct to Wetland / Adjacent Property	0.92	1.82	3.77
Wetland From Proposed Basin	6.43	8.52	12.56
Total	7.35	13.05	29.90
Overall Existing Peak Rate	10.56	22.46	43.57

In review of the existing and proposed peak flow rates, the following is observed:

- The College Town EOF has reduced peak flow rates for all events due to the more efficient conveyance of stormwater through the site than existing conditions. This reduces the amount of surcharge onto Pohl Road.
- The sum of peak flows to the wetland and adjacent properties is less than the sum in existing conditions.

Please review the attached basin information, figures, & PUD submittal construction documents and feel free to contact Alec Pietz, P.E. at Alec.Pietz@bolton-menk.com or 507-766-3283 with any questions.

EXISTING WET SEDIMENTATION BASIN
POHL LOFTS - MANKATO, MN
BMI Project No. 25X.141475

Input Data

Existing Drainage Area:

5.87

 Acres
Existing Impervious Area to Basin:

3.48

 Acres

Basin Information

Dead Storage Not Determined

		Area	Area	Volume	Volume
	Elev	(Square Feet)	(Acres)	(Cu. Feet)	(Acre-Feet)
Normal Water Level	972	6290	0.14	0	0.00
	973	8140	0.19	7215	0.17
	974	10105	0.23	16338	0.38
Overflow	975	14940	0.34	28860	0.66

Basin High Water Levels	
2-year	974.0
10-year	974.4
100-year	975.0

PROPOSED WET SEDIMENTATION BASIN
POHL LOFTS - MANKATO, MN
BMI Project No. 25X.141475

Input Data

Drainage Area:	7.88	Acres
Existing Impervious Area:	3.48	Acres
Proposed Impervious Area:	2.65	Acres
Total Impervious:	6.13	Acres

Dead Storage Volume Required

1800 cubic feet per drainage area or 1.1 inches of runoff from all new and fully reconstructed impervious surfaces.

Volume (1800 CF) :	14184	cubic feet =	0.33	acre-feet
Volume (1.1") :	24477	cubic feet =	0.56	acre-feet

Controls

Water Quality Volume Required

(1.1 inches of runoff from impervious surfaces) (Total Site Impervious)

Volume :	24,477	cubic feet =	0.56	acre-feet
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Pond Information

	Elev	Area (Square Feet)	Area (Acres)	Incr. Volume (Acre-Feet)	Total Volume (Acre-Feet)	
<u>Dead Storage Volume</u>						
Pond Bottom:	966	1000	0.02	0.00	0.00	
	967	1710	0.04	0.03	0.03	
	968	2605	0.06	0.05	0.08	
	969	3685	0.08	0.07	0.15	
	970	4965	0.11	0.10	0.25	
Bench Bottom:	971	6480	0.15	0.13	0.38	
Maintained Water Surface:	972	12370	0.28	0.21	0.59	Meets Req'm
<u>Water Quality Volume</u>						
Maintained Water Surface:	972	12370	0.28	0.00	0.00	
Water Quality Bump Elev:	974	16400	0.38	0.66	0.66	Meets Req'm
<u>Extended Retention</u>						
Water Quality Bump Elev:	974	16400	0.38	0.66	0.66	
	975	18500	0.42	0.40	1.06	
	976	20500	0.47	0.45	1.51	
Pond Top:	977	23000	0.53	0.50	2.01	

Discharge Requirements

(5.66 cfs per acre of surface area of pond)

Surface Area of Pond at Water Quality Bump Elevation:	0.38	acres
Maximum Discharge Rate at Water Quality Bump Elevation:	2.13	cfs
Designed Discharge Rate at Water Quality Bump Elevation:	2.06	cfs

Basin High Water Levels	
2-year	974.4
10-year	975.2
100-year	976.5



