Lower Rum River WMO

To: Lower Rum River Water Management Organization

From: Barr Engineering Co.

Date: Date: September 13, 2020

Re: Permit # 2020-11: Hampton Townhomes: Ramsey

The project submitted proposes the construction of 26 townhomes on a 5.6-acre site located in the southeast quadrant of Nowthen Boulevard and 146th Avenue N.W. in Ramsey.

Three stormwater basins and an infiltration trench are proposed for volume retention, rate control and water quality management.

The geotechnical report prepared by Independent Testing Technologies identifies the on-site underlying soil as poorly graded sand with silt (SP-SM) to a depth of 2-5 feet with poorly graded sand (SP) beneath. The submittal proposes an infiltration rate of 1.63 inches/hour for the poorly grade sand. In accordance with the Minnesota Stormwater Manual, an infiltration rate of 0.8 inches/hour has been used for this soil type in our review with the assumption that the SP-SM soils encountered in the infiltration areas will be removed. Groundwater was encountered at a depth of 21 feet in Basin #1, elevation 865 M.S.L, a depth of 21 feet in Basin #3, elevation 858 M.S.L. and not encountered in the area of Basin #2 and the infiltration trench.

The following table summarizes the existing and proposed discharges from the site for the 2, 10, and 100-year frequency storm:

Frequency	Existing Discharge c.f.s.	Proposed Discharge c.f.s
2-Year	<1.0	<1.0
10-Year	<1.0	<1.0
100-Year	3.7	3.7

A volume retention of 8,177 cubic feet is required from the 98,128 square feet of impervious area. The proposed basins provide a retention volume of 9,065 cubic feet (8,177 cubic feet required) with an area of 8,812 square feet (2,55 square feet required) at a depth of 1.8 feet or the outlet elevation of the basin(s), whichever is less. A depth of 1.8 feet is the maximum allowable depth of inundation for a drawdown of the volume retention within 48 hours 0.8 inches/hour as the infiltration rate.

LRRWMO water quality criteria requires an annual removal efficiency of 90% for total suspended solids and 60% of total phosphorous for the project. The results of the MIDS calculator submitted indicates the basins will provide an annual removal efficiency of 100% for total suspended solids (885 lbs.) and 100% for total phosphorus (4.87 lbs.).

As previously stated, groundwater was encountered at elevation 865 M.S.L in Basin #1, at elevation 858 M.S.L. in Basin #3 and not encountered in the area of Basin #2 and the infiltration trench. The bottom elevation of Basin #1 is 882 M.S.L. and Basin #3 is 858 M.S.L., a separation of 17 and 18 feet, respectively between the bottom of the basins and groundwater. A minimum 3 foot separation between the bottom of an infiltration facility and groundwater is required.

The calculated 100-year frequency flood elevation of basins and the low floor elevation of the adjacent structures are as follows:

	Calculated 100-year HW elevation (M.S.L.)	Low floor elevation (M.S.L.) *	Separation (feet)
Basin #1	883.5	Lots 23-26: 888.2	2.7
Basin #2	880.6	Lots 1-2: 881.5	0.9
Infiltration Trench	880.6	Lots 6-7: 882.2	1.6
Basin #3	879.1	Lot 1: 881.5	2.4

*The garage floor elevation is the lowest elevation shown.

The lowest floor elevation for the proposed structures on Lots 1-2 and 6-7 must be adjusted for compliance with the LRRWMO's requirement of 2 feet of separation between the low floor elevation of a structure and a riparian basin.

Silt fence is shown to be constructed at the limits of construction, inlet protection encircling storm water inlets, and a rock construction entrance for erosion control.

It is our recommendation that the LRRWMO approve of the permit for this project subject to the following conditions:

1. Erosion control measures need to be installed prior to the commencement of construction.
2. Upon completion of construction and restoration of disturbed areas, the permit applicant is responsible for the removal of all erosion control measures installed throughout the construction site.
3. To minimize the potential of material from leaving the site and being tracked onto the roadway, a rock filter construction entrance being a minimum of 2 feet in height and having side slopes of 4:1 must be constructed at the entryway onto the site. The rock construction entrance will provide an erosion control facility and also enable construction traffic to enter the site.
4. Street sweeping must be undertaken and completed on an as needed basis.
5. Compliance with the storm water management requirements of the Lower Rum River Watershed Management Organization are to be administered for this project by the City of Ramsey.
6. A revised plan showing compliance with the LRRWMO criteria requiring a minimum of 2 feet of separation between the low floor elevation of a structure and the 100-year frequency flood elevation of a riparian basin.

7. In all cases where the doing by the permittee of anything authorized by this permit shall involve the taking, using, or damaging of any property, rights or interests of any other person or persons, or of any publicly owned lands or improvements or interests, the permittee; before proceeding; shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all necessary property rights and interest.

The permit for the project will not be issued until Conditions 5 and 6 have been satisified.