COON CREEK WATERSHED DISTRICT
PERMIT REVIEW

MEETING DATE: March 28, 2016
AGENDA NUMBER: 10
FILE NUMBER: 16 - 044
ITEM: Gracie’s Woods

RECOMMENDATION: Table with 11 Stipulations

APPLICANT: TJB Homes, Inc.
9100 Baltimore Street NE
Blaine, MN 55449

PURPOSE: Residential Housing Development

LOCATION: 830 and 860 113th Ave NE, Blaine
APPLICABILITY:
1) Any building within the floodplain of any natural water course (1.07 sub 1)
2) Any building within a designated shoreland zone (1.07 Sub 2)
3) Any activity involving drainage, filling or alteration of wetlands (1.09)
4) Improvement of the bed, bank or shore of lakes and public drainage ways (1.10)
5) Development of land not authorized by the municipal drainage plan (1.04)
6) Construction of 1 acre or greater of impervious surface
7) Any land alteration within 1 mile of an impaired water
8) Project site is greater than 5 acres, a NPDES permit is required

EXHIBITS:
1. Construction Plan set (25 sheets) by Civil Site Group, dated 3/10/16, received 3/11/16.
2. Drainage Calculations by Civil Site Group, dated 3/10/2016, received 3/11/16.

HISTORY & CONSIDERATIONS: Site is located on two existing wooded lots. The site discharges to County Ditch 39, located directly to the south.
**FINDINGS:**

**Ditches:** There is a public ditch on the property. The public ditch is County Ditch 39 according to the public drainage map. County Ditch 39 was established in 1902. The ditch was last inspected in 2015. The ditch is not in need of repair.

The approved/as-built elevations and grades through this property are 889.44 ft NAVD88 and 0.11% slope. Existing elevations, slopes and condition of the ditch are Mod-Low and represent a 0.11% (1 ft) variance from the as-built elevations. Alternatives to repair and additional drainage have not been considered and reviewed.

The ditch is a second order stream. The ditch serves the primary role of

a. Storm water conveyance

Land use in the area is/trending toward residential.
There are no flooding concerns upstream and/or downstream.

**Ditch Hydraulics:**
A crossing of the ditch is not proposed.

**Erosion and Sediment Control:** Soils affected by the proposal are Sartell fine sand, Seelyeville Muck, and Millerville Mucky Peat. Stabilizing vegetation is proposed for disturbed areas within one week of rough grading. Adjacent properties are protected from sediment deposition. All wetlands, waterbodies, ponds, infiltration basins and water conveyance systems are protected from erosion and sedimentation. Project site is greater than 1 acre; a NPDES permit is required.

**Floodplain:** There is floodplain on the property according to FEMA. The District Atlas 14 model predicts the 100-year elevation for the subwatershed at 897.5 feet. The total floodplain fill impact is 103.8 CY of net fill within the flood/fringeway. Compensatory storage is provided.

There are no flooding concerns upstream or downstream.

**Groundwater:** Ground water is present at 889.0 from borings and estimated to be 893.0 feet due to the elevations of the creek.

The site is not within a Drinking Water Supply Management Area (DWSMA). The project site is not within the 10 Year Well Head Protection Area. The project site is not within the Emergency Response Area.

The proposal does not contain a land use discouraged or prohibited by the Safe Drinking Water Supply Act (SDSA).

The project is not within the 10 Year Well Head Protection Area.

**High Water Flooding:**
Information has been provided to substantiate low floor elevations. Low floor elevations meet the criteria for the City of Blaine 1 ft. above mottled soil elevation, 2 ft. above 100-year.

**Dewatering:**
The project does not require dewatering.

**Historic Sites:** The proposed project does not include sites of historic or archeological significance.

**Local Planning & Zoning:** The proposed project is consistent with local planning and zoning. There is an approved local water plan.

Property owners affected by changes in drainage have not been notified and acknowledge the changes proposed.

**Maintenance:** The Owner of the Stormwater Management features and treatment practices is City of Blaine. The City of Blaine has not agreed to maintain the Stormwater Treatment Practices (STPs) consisting of the following:

<table>
<thead>
<tr>
<th>Stormwater Treatment Practices</th>
<th>Number</th>
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<tbody>
<tr>
<td>Sump Manholes</td>
<td>3</td>
</tr>
<tr>
<td>Infiltration Basins</td>
<td>3</td>
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</table>

The owner has not submitted a Maintenance Plan for each Stormwater Treatment Practice. It is unknown if the Maintenance Plan is consistent with District Maintenance standards for each STP.

The owner has not agreed to maintain in perpetuity the Stormwater Treatment Practices in accordance with the approved maintenance plans and in a manner that will permit the Practices to perform the purposes for which they were designed and constructed. The Owner has signed a District Operations and Maintenance Agreement for Stormwater Facilities.

**Easements:** The proposed project does not include ditch maintenance easement. A maintenance access to all storm water management features is not provided.

Inspection and maintenance of stormwater facilities will be the responsibility of The City of Blaine. A maintenance agreement has not been executed.

**Stormwater & Hydrology:** The applicant is not meeting the volume management requirement equivalent to infiltrating runoff from the first inch of precipitation. Stormwater leaving the site is discharged into a well-defined receiving channel or pipe and routed to a public drainage system. Drainage sensitive uses do not exist downstream from the proposed site. The rate of post development runoff from the site does exceed
predevelopment rates, or rates which would interfere with sensitive downstream land uses during the 1 year event.

**Water Quality:** The proposed project does cause an exceedence of State water quality standards. The project does contribute to the adverse impact of wetlands through inundation or volume of flow. All discharges into wetlands are pretreated by a sediment basin/water quality pond, and are not designed correctly. All work adjacent to wetlands, waterbodies and water conveyance systems are protected from erosion. The proposal will not detrimentally affect the existing water quality of the receiving water. The proposal will not cause extreme fluctuations of water levels or temperature changes.

**Impairments:** This project is not within one (1) mile and drains to an Impaired Water.

**Wetlands:** Wetlands do exist on-site according to the 1987 Federal manual, NWI, PWI and Soil Survey. Wetlands have been delineated. The most recent delineation was completed on June 26, 2015. The wetland boundary has been checked.

The wetland is not a DNR protected water.

The total proposed wetland impact is 0 square feet.

**Wetland Replacement Plan:** A wetland replacement plan is not required.

**Wildlife:** The proposed project does not include endangered or threatened species, rare natural communities, colonial waterbird nesting sites, migratory waterfowl concentration areas, deer wintering areas or wildlife travel corridors. No substantial adverse alteration or significant detrimental impact on a species food supply, security or reproductive cycle or the alteration or removal of a plant species will occur.

There are not Ground Water Dependent water resources on site.

**Performance Escrow:** $6,600.00

**Wetland Escrow:** N/A

There are not ditch liens on the property.

**FINDINGS/ISSUES/CONCERNS:**

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<tr>
<th>ISSUE</th>
<th>NEED</th>
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<tr>
<td>No borings were taken at the location, or within the vicinity of the infiltration basins 1 &amp; 3. NRCS soil survey suggests that soil conditions change to muck and mucky peat. More site investigation needs to be done to determine the infiltration potential at these sites.</td>
<td>1. The applicant must demonstrate that the infiltration basins 1 and 3 have adequate separation from groundwater, have soils that will support infiltration, and will infiltrate at the proposed rate</td>
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</table>
2. A Seeding plan is required to show location and type of seeding.

The proposed design shows that there is an increased rate during the 1-year event, however the overall volume decreases. All other event flows show that they are meeting rate control under the current design.

3. No action required to the existing design. The applicant will need to show rate control for any modifications made to the conveyance system identified in other stipulations in this report.

Sump manholes are present in the current design as pretreatment to the infiltration basins; however, it is not clear on the plans what the sump elevation is in reference to the invert of the out flow pipe or what size the manhole diameter is.

The performance of sump catch basins is related to the volume in the sump (i.e., the storage in the catch basin below the outlet). The District recommends the use of MnPCA guidelines (http://stormwater.pca.state.mn.us/index.php/Flow-through_structures_for_pre-treatment) which advocates the use of the program SHSAM for appropriately sizing the sumps. Another source of optimal water quality sump treatment sizing is available in “Urban Stormwater Management And Technology: Uupdate and Users Guide” Lager et al. (1977) (http://nepis.epa.gov/Adobe/PDF/300014K5.pdf)

Another option that can reduce the overall size of the sump is to incorporate hydrodynamic separation. Two economical options that the District recommends are SAFL Baffle (http://upstreamtechnologies.us/products/safl-baffle) or The Preserver™ (http://www.momentumenv.com). Both of which have design guidelines for optimal water quality treatment.

4. Provide sizing calculations for the proposed sumps. Information that is required by the District is:
   a) A sizing methodology that can be verified and reviewed
   b) An estimation of the annual sediment load
   c) An estimation of the annual sediment reduction capacity of each sump.

Sumps are only efficient if they are cleaned at regular intervals appropriate to their size and sediment loading. Without hydrodynamic

5. Provide an estimate of the interval in which the sump needs to be cleaned.
separation, the cleaning intervals need to be more frequent than with hydrodynamic separation.

| For all sump manholes the District requires an operation and maintenance agreement is executed that describes the intervals that the sumps will be cleaned to maintain optimal function. | 6. Provide an operations and maintenance agreement for sumps. |
| A 100 foot easement from the ditch needs to be shown on the plans. It is recommended that the proposed infiltration basin (Basin 1), be located completely within the ditch easement. | 7. Label 100 ft ditch setback easement on plan sets. |
| All infiltration basins need to be located within a stormwater easement and/or have an operations and maintenance agreement that is agreeable to the City and the District. | 8. If possible locate infiltration Basin 1 within the ditch easement. |
| Infiltration basins located in residential rear yards have the potential of encroachment and infilling by residents. To mitigate against such action stormwater easements, signage, and operations and maintenance documents will be required to meet City and District approval. | 9. Provide stormwater easements for all infiltration basins and/or operations and maintenance agreement with City and District. |
| Escrows: $2,000 + (9.2 ac * $500/ac) = $6,600 | 10. Provide signage identifying the stormwater feature within easements for infiltration basins located in back yards. |
| 11. Receipt of escrows. |

**RECOMMENDATION:** Table with 11 Stipulations

**Stipulations:**

1. Receipt of escrows.
2. The applicant must demonstrate that the infiltration basins 1 and 3 have adequate separation from groundwater, have soils that will be support infiltration, and will infiltrate at the proposed rate of 0.45”/hr.
3. Provide new rate control and volume control calculations for all modified features.
4. Seeding plan to show location and type of seeding.
5. Provide sizing calculations for the proposed sumps.
6. Provide an estimate of the interval in which the sump needs to be cleaned.
7. Provide a copy of an operations and maintenance agreement for sumps.
8. Label 100 ft ditch setback easement on plan sets.
9. Consider locating the infiltration Basin 1 within the ditch easement.
10. Provide stormwater easements for all infiltration basins and/or operations and maintenance agreement with City and District.
11. Provide signage identifying the stormwater feature within easements for infiltration basins located in back yards.