September 1, 2015

Ms. Laura Jester and Ms. Karen Chandler
Bassett Creek Watershed Commission
16145 Hillcrest Lane
Eden Prairie, MN 55346

Re: Honeywell Enhancement/Improvement Project - 50% Submittal

Dear Ms. Jester and Ms. Chandler:

We are currently in the final design phase of the Honeywell Pond Enhancement/Improvement Project. The 50% plans are consistent with the proposed design in the feasibility report, which was approved at the October 16, 2014 Board meeting. Refer to Table 1 for key design aspects between exiting condition, the feasibility report, and the proposed design along with explanations for any differences.

1. **General Pond Design**

   The design of the Honeywell Pond is consistent with the improvements identified in the feasibility report. One slight change from the feasibility report to the 50% design is that the general design of the pond has more of an undulating edge than what was originally proposed. See the attached plan detail for more details. In addition, the existing XP-SWMM model was updated to reflect the proposed trunk storm sewer system and the outlet from Douglas Drive to Bassett Creek. A further comparison of the 50% design and the feasibility report are outlined in the table below.

<table>
<thead>
<tr>
<th>Table 1: Pond Design</th>
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</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td><strong>Feasibility Report</strong></td>
</tr>
<tr>
<td>Existing Condition</td>
</tr>
<tr>
<td>NWL (Outlet Elevation) (ft)</td>
</tr>
<tr>
<td>Pond Surface Area at NWL (ac)</td>
</tr>
<tr>
<td>100 Year HWL (Atlas 14) (ft)</td>
</tr>
<tr>
<td>Peak Flow Rate to Bassett Creek (cfs)</td>
</tr>
<tr>
<td>Pond Surface Area at HWL (ac)</td>
</tr>
<tr>
<td>Dead Pool Volume (ac-ft)</td>
</tr>
<tr>
<td>Live Pool Volume (ac-ft)</td>
</tr>
<tr>
<td>Honeywell Pond Drainage Area (ac)</td>
</tr>
<tr>
<td>TP removed (lb/yr)</td>
</tr>
<tr>
<td>Percent TP Removed (%)</td>
</tr>
<tr>
<td>Buffer</td>
</tr>
<tr>
<td>Undulating edge</td>
</tr>
</tbody>
</table>
2. **Low Flow Diversion Structure**
   The design of the low flow diversion structure in the 50% plan is consistent with the feasibility report. See the attached plan detail for further information on the low flow diversion structure and weir.

3. **TP Removals (Expanding Pond and 48 inch Low Flow Diversion and 4 foot Weir)**
   The September 2014 version of the feasibility report had a 48 inch low flow diversion system **without** a weir. The September P8 model demonstrated that the pond would remove 23.4% TP (51.6 lb/yr). The October 2014 version of the feasibility report had a 48 inch low flow diversion system **with** a 4 foot weir. The October P8 model demonstrated that the pond would remove 24.5% TP (61.9 lb/yr). The feasibility report included the 51.6 lb/yr value not the 61.9 lb/yr value. The feasibility report should have shown a 24.5% TP (61.9 lb/yr) for the 48 inch low flow diversion system **with** a 4 foot weir.

4. **Pumping for Irrigation of Sandburg Fields**
   A water balance was developed using available volume in Honeywell Pond (first 1.5 feet below the NWL) and irrigation demand at Sandburg Fields. The water balance assumes 1 inch of irrigation will occur per week over 17 acres of fields. This results in an irrigation demand of 462,000 gallons per week. Analysis completed using 50 years of rainfall runoff data shows the proposed irrigation system and infiltration system will only have 6.0 days/year that the pond’s pump will not be able to meet the estimated irrigation demand (the first 1.5 feet below the NWL are used). This allows for the following:

   - Volume available to be pumped for approximately 2.5 weeks without rain
     - The drawdown from upstream storage basins following a rainfall event will extend the timeframe where volume is available for pumping
   - The pumping volume will fully replenish (if down the full 1.5 feet) with a 0.35 inch rain event

<table>
<thead>
<tr>
<th>Table 2: Irrigate Sandburg Learning Center Fields</th>
<th>Feasibility Report</th>
<th>Final Design*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumping Below NWL (ft)</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Volume of Water available to pump (ac-ft)</td>
<td>3.37</td>
<td>3.37</td>
</tr>
<tr>
<td>Acres of irrigation (ac)</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Volume of water needed to irrigate per season (ac-ft)</td>
<td>13.25-26.52</td>
<td>28.3</td>
</tr>
<tr>
<td>TP removed (lb/yr)</td>
<td>5.77 - 11.54</td>
<td>12.3</td>
</tr>
<tr>
<td>Seed mix to be used in the 1.5 foot pond bounce zone</td>
<td>Not Stated in Report</td>
<td>33-261</td>
</tr>
</tbody>
</table>

* Assumes 1 inch per week

5. **Additional Stormwater Management with Douglas Drive**

   **Pumping for Douglas Drive Infiltration (Not Part of Honeywell Project)**
   90% plan submittal is anticipated to include the construction of an underground infiltration system at 1576 Douglas Drive N. It is currently proposed to pump water to the infiltration system from
Honeywell Pond. The infiltration system is proposed to be located (at 1576 Douglas Drive N) where a house was recently removed as part of the project's right-of-way acquisition. There are three main reasons for this change. This is feasible for the following reasons:

- The water balance calculations for Honeywell Pond shows the volume of water available to be pumped is more than adequate for both irrigating the Sandburg Fields and for the Douglas Drive Infiltration System.
- CenterPoint Energy is abandoning a conduit under the railroad tracks. This conduit can be used to house the force main under the tracks avoiding the need for drilling under the tracks.
- Using water from Honeywell Pond will utilize pretreated stormwater which will extend the life of the infiltration system and reduce maintenance time and cost.

<table>
<thead>
<tr>
<th>Table 3: Pump to Douglas Dr Infiltration System</th>
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<tr>
<td></td>
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<tr>
<td>Size of the Douglas Drive infiltration system (ac)</td>
</tr>
<tr>
<td>Storage volume of the Douglas Drive infiltration system (ac-ft)</td>
</tr>
<tr>
<td>Assumed infiltration rate of Douglas Drive Infiltration System (in/hr)</td>
</tr>
<tr>
<td>Volume of water infiltrated at Douglas Drive Infiltration System per season (ac-ft)</td>
</tr>
<tr>
<td>TP removed (lb/yr)</td>
</tr>
</tbody>
</table>

As outlined in this memo, we feel the 50% plan is fully consistent with the design expectations in the feasibility report. If you have any questions or concerns feel free to contact me at 763-287-7188 or at pwillenbring@wsbeng.com.

Sincerely,

WSB & Associates, Inc.

Pete Willenbring, PE
Water Resources Vice President

Attachments
- 50% Plan (0701_Honeywell.pdf)
- Existing Conditions XP-SWMM model – (Decola_UTM_Stor_Closed_EC_FINAL_Ex100114.xp)
- Proposed Conditions XP-SWMM model (Decola_UTM_Stor_Closed_EC_FINAL_Ex100114_ForFinalDesign_072815.xp)
- Existing Conditions P8 model (UpstreamEastWestwood_rev08142014__Existing.p8c)
- Proposed Conditions P8 model (UpstreamEastWestwood_rev073015__Proposed Pond Expansion +low flow 48in with weir_FINAL.p8c)
NOTES
1) RESTORE ALL POND EDGES AND WOODED AREAS WITH TYPE 33-261 SEED (35 LBS/AC), AND COVER WITH OATS (20 LBS/AC) AND CATEGORY 2 EROSION CONTROL BLANKET WITHIN 7 DAYS OF DISTURBANCE.
2) CONTRACTOR RESPONSIBLE FOR THE DAMAGE TO STREETS AND CONCRETE CURB & GUTTER.
3) DAILY STORM SEWER CLEARING REQUIRED DURING MALLING OPERATIONS.
4) IF WINTER CONDITIONS ARE PRESENT DURING EXCAVATION, CITY WILL PUMP WATER DOWN PRIOR TO EXCAVATION. CONTRACTOR WILL BE RESPONSIBLE FOR ICE REMOVAL/STOCKPILING.
5) CONTRACTOR TO GRADE AROUND EXISTING STORM SEWER STRUCTURES AS DIRECTED BY THE ENGINEER.
6) CONTRACTOR TO COORDINATE ACCESS LIMITS WITH CITY INSPECTOR IN THE FIELD.
7) CLEARING AND GRUBBING REQUIRED TO ACCESS POND IS CONSIDERED INCIDENTAL.
8) CONTRACTOR TO COORDINATE WITH XCEL ENERGY TO ADDRESS POWER POLE NEEDS WITHIN POND.
9) CONTRACTOR RESPONSIBLE FOR THE DAMAGE TO STREETS AND CONCRETE CURB & GUTTER WITHIN 7 DAYS OF DISTURBANCE.

LEGEND

EXISTING CONTOURS
PROPOSED CONTOURS

PROPOSED POND BOTTOM: 870.4'
HWL: 884.6'
NWL: 876.4'

UPLAND EXCAVATION: 9,400 CU YD
POND EXCAVATION: 9,500 CU YD

TO ADDRESS POWER POLE NEEDS WITHIN POND.

877.0
POND BOTTOM=870.4'
POND BOTTOM=870.4'
NWL=876.4'

NOTES
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TO ADDRESS POWER POLE NEEDS WITHIN POND.
STORM SEWER DIVERSION STRUCTURE
DESIGN SPECIAL 3
NOT TO SCALE

NOTE: SEE DRAINAGE PLANS FOR PIPE PROFILES
**SECTION A-A**

**TABLE**

<table>
<thead>
<tr>
<th>DIA.</th>
<th>NO. 4 AT 10'' EACH WAY</th>
<th>NO. 5 BARS, PLACE ON TOP OF BOTTOM BARS, TYPICAL ALL COVER.</th>
<th>NO. 5 BARS, PLACE ON TOP OF BOTTOM BARS, TYPICAL ALL COVER.</th>
<th>MIN. OF THREEハンデリングホールス AT 10'' SPACING</th>
<th>MIN. UPPER LAYER OF STEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>48''</td>
<td>58'' 1140 LBS. 61'' 8'' 8'' 8'' NO. 5 AT 4''</td>
<td>NO. 5 BARS, PLACE ON TOP OF BOTTOM BARS, TYPICAL ALL COVER.</td>
<td>NO. 5 BARS, PLACE ON TOP OF BOTTOM BARS, TYPICAL ALL COVER.</td>
<td>MIN. OF THREEハンデリングホールス AT 10'' SPACING</td>
<td>MIN. UPPER LAYER OF STEEL</td>
</tr>
<tr>
<td>84''</td>
<td>72'' 1740 LBS. 8'' 6'' 8'' 8'' NO. 5 AT 4''</td>
<td>NO. 5 BARS, PLACE ON TOP OF BOTTOM BARS, TYPICAL ALL COVER.</td>
<td>NO. 5 BARS, PLACE ON TOP OF BOTTOM BARS, TYPICAL ALL COVER.</td>
<td>MIN. OF THREEハンデリングホールス AT 10'' SPACING</td>
<td>MIN. UPPER LAYER OF STEEL</td>
</tr>
<tr>
<td>120''</td>
<td>120'' 2760 LBS. 12'' 8'' 8'' 8'' NO. 5 AT 4''</td>
<td>NO. 5 BARS, PLACE ON TOP OF BOTTOM BARS, TYPICAL ALL COVER.</td>
<td>NO. 5 BARS, PLACE ON TOP OF BOTTOM BARS, TYPICAL ALL COVER.</td>
<td>MIN. OF THREEハンデリングホールス AT 10'' SPACING</td>
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</tr>
</tbody>
</table>

**NOTES:**

AS SHOWN 25 LOADING

MAXIMUM FULL HEIGHT IS 15 FT.

THE NO. 4020 SHALL BE PERMANENTLY MARKED ON THE TOP OF THE COVER.

EQUIVALENT STEEL ARRAYS IN WIRE MESH MAY BE USED.

REINFORCEMENT PER SPEC. "AASHTO HS 25 LOADING."

Any STEEL EQUIVALENT STEEL AREAS IN WIRE MESH MAY BE USED.

REFER TO PLANS FOR STEP REQUIREMENTS, HEIGHT, & DIAMETER.

MEET THE REQUIREMENTS OF ASTM A706.

REINFORCEMENT PER SPEC. "AASHTO HS 25 LOADING."

ANY STEEL EQUIVALENT STEEL AREAS IN WIRE MESH MAY BE USED.

NOTE: MANHOLE OR CATCH BASIN MASONRY CONSTRUCTION (BRICK OR BLOCK), MEETING THE REQUIREMENTS OF CLASS II PIPE; OR CONCRETE PIPE; CAST-IN-PLACE CONCRETE WALL CONSTRUCTION MAY BE: CLASS II PRECAST CONCRETE BASIN MASONRY. See Standard Plate 4011.

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**APPROVED**

Nov. 22, 2000

State Design Engineer

State of Minnesota
Department of Transportation

**MANHOLE OR CATCH BASIN FOR USE WITH OR WITHOUT TRAFFIC LOADS**

**SPECIFICATION REFERENCE**

2006

**REVISION DATE**

3-20-2003

**STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION**

**MANHOLE OR CATCH BASIN FOR USE WITH OR WITHOUT TRAFFIC LOADS**

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