The Camp Buckner Wastewater Treatment Plant (CBWWTP) treats the municipal waste of units who train at Camp Buckner and Camp Natural Bridge. In 2010, the Motor Pool (TMP) wastewater plant was constructed to treat industrial waste. The TMP and CBWWTP currently treat wastewater separately even though they are located 1 mile apart. Our team designed an upgraded, combined wastewater treatment train, located in the existing footprint of the CBWWTP, that treats municipal and industrial waste simultaneously.

**ASSUMPTIONS**
- The CBWWTP will be re-permitted to treat industrial wastewater. The solids generated will be taken to Target Hill WWTP at West Point.
- CB will remain seasonally operated (8 months of the year) with some holding capacity to eliminate or minimize operation of the TMP.
- TMP must be able to shutoff as needed (70 – day max).
- Wastewater diverted to CB for storage in off season (equalization basin)
- Wastewater diverted to CB for treatment in season
- Prevent operation of the CB effluent discharge pipe during the off season
- Potential for freezing of pipeline between systems

**RESULTS (PIPELINE)**

**Pipe Layout:**
- TMP- Macerator, Gate Valve
- 1- Manhole
- 2- Manhole, Knife Gate Valve
- Lift Station- Manhole, Gate Valve
- 3- Manhole
- 4- Manhole
- 5- Manhole
- 6- Manhole
- CBWWTP- Isolation Valve

**General Pipe Parameters:**
- 3in Galvanized Iron
- 3.4 ft/sec
- 0.002 slope
- Submersible Lift Station 1.2 hp

**Comparing Permit Requirements With Model Results**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Permit</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>30 mg/L</td>
<td>2.56 mg/L</td>
</tr>
<tr>
<td>TSS</td>
<td>30 mg/L</td>
<td>1.63 mg/L</td>
</tr>
<tr>
<td>NH₃</td>
<td>15-20 mg/L</td>
<td>0.74 mg/L</td>
</tr>
<tr>
<td>Total P</td>
<td>1 mg/L</td>
<td>0.39 mg/L</td>
</tr>
</tbody>
</table>

**CONCLUSION**

Our final product includes a screw press replacing the drying beds, a 15% expansion of the aeration basin, and the additions of a UCT process, secondary clarifier, and a pipeline from the TMP to the WWTP. This project would benefit from a pipeline modeling software to get more accurate values for open channel flow within the pipe.

We would like to thank American Water for their continued guidance and support of this design.