Water Treatment System Classification

System Owner: Thorne Bay, City of
System: Thorne Bay Water Treatment System
Classification: Class 2 Water Treatment System
PWSID: 120216
Report Date: 06/15/2018

Operators:

<table>
<thead>
<tr>
<th>Name</th>
<th>Certificate Level</th>
<th>Expiration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samuel H. Sawyer</td>
<td>WT 1</td>
<td>12/31/2019</td>
</tr>
<tr>
<td>Billy J. Phillips</td>
<td>Not Certified</td>
<td></td>
</tr>
</tbody>
</table>

Water treatment systems are classified according to a point rating system. Point values are assigned for each component found in the treatment plant, and the point total determines the classification. The classification of this system is shown below with each component highlighted.

Classification:

Total Classification Points: 34  
Class 2 = 31 to 55 classification points

Size (Peak day design capacity, gallons per day)

<table>
<thead>
<tr>
<th>Size Range</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 10,000</td>
<td>1</td>
</tr>
<tr>
<td>10,000 - 50,000</td>
<td>2</td>
</tr>
<tr>
<td>50,001 - 100,000</td>
<td>4 ←</td>
</tr>
<tr>
<td>100,001 - 500,000</td>
<td>9</td>
</tr>
<tr>
<td>500,001 - 1,000,000</td>
<td>12</td>
</tr>
<tr>
<td>1,000,001 - 5,000,000</td>
<td>16</td>
</tr>
<tr>
<td>5,000,001 - 10,000,000</td>
<td>20</td>
</tr>
<tr>
<td>10,000,001 - 50,000,000</td>
<td>25</td>
</tr>
<tr>
<td>greater than 50,000,000</td>
<td>30</td>
</tr>
</tbody>
</table>

Water Supply Source

<table>
<thead>
<tr>
<th>Source</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater</td>
<td>2</td>
</tr>
<tr>
<td>Groundwater under the direct influence of surface water</td>
<td>4</td>
</tr>
<tr>
<td><strong>Surface water</strong></td>
<td><strong>6 ←</strong></td>
</tr>
<tr>
<td>Surface water maintaining filtration avoidance criteria under 18 AAC 80.620</td>
<td>8</td>
</tr>
</tbody>
</table>
Seawater 10
Purchased treated water 0
Raw water storage tank 3

Pretreatment
Presedimentation basin 4
Hydrocyclone or similar sand separator device 2
Microscreen 3
Roughing filter: Cartridge filter 2
Roughing filter: Non-backwashable strainer or filter 2
Roughing filter: Gravel or rock filter 4
Roughing filter: Backwashable granular media filter 8
Add-heat system to heat raw water 2

Adjustment and Corrosion Control

<table>
<thead>
<tr>
<th>pH adjustment</th>
<th>3 ←</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosion inhibitor 3</td>
<td></td>
</tr>
<tr>
<td>Limestone or calcite contactor 2</td>
<td></td>
</tr>
<tr>
<td>Sequestration 3</td>
<td></td>
</tr>
</tbody>
</table>

Aeration / Ion Exchange
Aeration: In-line venturi-type 1
Aeration: Mechanical or diffused 3
Degasification 3
Ion exchange 4

Arsenic Treatment
Non-regenerated sorption processes, including activated alumina, modified activated alumina, and iron based sorbents 3
On-site regeneration of sorption process media 10

Activated Carbon
Cartridge or bag filter 2
Powdered activated carbon treatment 4
Granular activated carbon contactors 4
On-site regeneration of activated carbon 16
Oxidation
- Hypochlorite solution 3
- Gas chlorine 12
- Potassium permanganate 4
- Hydrogen peroxide 5

Ozonation
- Ozonation without pure oxygen 3
- Ozonation with pure liquefied oxygen 4
- Ozonation with on-site generation of pure oxygen 5

Coagulation
- **Primary coagulant** 5
- Coagulant aid, flocculent, or filter aid (3 each up to 12) 3

Mixing
- Mechanical mixers 5
- Injection mixers 3
- In-line blender mixers 2
- **In-line static mixers** 0

Flocculation
- Hydraulic flocculator 4
- Mechanical flocculator 8

Sedimentation
- Tube settlers 2
- Inclined-plate, Lamella-type or equivalent 2
- Horizontal flow conventional clarifier 4
- Batch sedimentation 2
- Adsorption clarifier 6
- Up-flow solids contact 10
- Dissolved air flotation 16
- Combined rapid mix-coagulation-flocculation-sedimentation unit 20

Filtration
- Cartridge or bag filter - single unit 2
Cartridge or bag filters - staged, multiple units 4
Slow sand 4
Granular media 8 ←
Membrane filtration 8
Membrane filtration integrated system 12
Diatomaceous earth 12

Electro/Lime/Recarb
Electrodialysis, electrodialysis reversal, distillation 10
Lime softening 16
Recarbonation 8

Fluoride
Sodium fluoride saturator 2
Sodium silicofluoride 3
Hydrofluorosilicic acid 5

Disinfection
Liquid and powdered hypochlorites 3 ←
Additional points if hypochlorites are generated on-site 2
Gas chlorine 12
Chlorination using tablets 1
Ammonia addition for chloramination using liquid ammonia solution 3
Ammonia addition for chloramination using ammonia gas 12
Chlorine dioxide 8
Chlor-alkali on-site generation 12
Ozonation without pure oxygen 3
Ozonation with pure liquefied oxygen 4
Ozonation with on-site generation of pure oxygen 5
Ultraviolet light 2
Ultraviolet light, for meeting required inactivation 4

Sludge Treatment
Discharge to sewer or other off-site treatment 0
Discharge to on-site pond, septic tank, or lagoon 2 ←
Mechanical dewatering 6
Filter backwash water or sludge supernatant recycling, groundwater source 2
Filter backwash water or sludge supernatant recycling, surface water source 3

Other Treatment
Other water treatment 0

Storage
Water storage tank, for achieving CT 3
Tank capacity 1,000,000 gallons or greater 3
Tank capacity between 50,000 and 999,999 gallons 2
Tank capacity less than 50,000 gallons 1
Pressure tanks 0
Water Distribution System Classification

System Owner: Thorne Bay, City of
System: Thorne Bay Water Distribution System
Classification: Class 1 Water Distribution System
Report Date: 06/15/2018

Operators:

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Water distribution systems are classified according to the number of service connections, the number of pressure zones, and whether water is circulated or heated to prevent freezing. Initially, the classification is determined based on the number of service connections. The classification is then elevated one class if the system has five or more pressure zones or if water is circulated or heated to prevent freezing in the distribution system. A system that has five or more pressure zones and where water is circulated or heated is only elevated one class even when both conditions are met.

Classification:

This system is classified as follows:

<table>
<thead>
<tr>
<th>Number of Service Connections in this System</th>
<th>Classification</th>
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<tbody>
<tr>
<td>203</td>
<td>Class 1 = 15 to 500</td>
</tr>
<tr>
<td></td>
<td>Class 2 = 501 to 5,000</td>
</tr>
<tr>
<td></td>
<td>Class 3 = 5,001 to 15,000</td>
</tr>
<tr>
<td></td>
<td>Class 4 = more than 15,000</td>
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Number of Pressure Zones: 1 - Does not affect the classification.

Water is circulated or heated to prevent freezing in the distribution system: No - Does not affect the classification.