



Village of Menomonee Falls  
W156 N8480 Pilgrim Road  
Menomonee Falls, WI 53051-3140  
Telephone: (262) 532-4200

## STORMWATER MANAGEMENT FACILITIES OPERATION AND INSPECTION REPORT

|                        |            |                              |                           |
|------------------------|------------|------------------------------|---------------------------|
| Quarter Section        | 15 SE      | Name of Business/Subdivision | COMBINED PUBLIC WORKS     |
| Property Tax ID Number | 0060965001 | Address of Property          | FACILITY                  |
|                        |            |                              | N72W15756 GOOD HOPE RD    |
|                        |            |                              | MENOMONEE FALLS, WI 53051 |

|          |   |
|----------|---|
| Dry Pond |   |
| Wet Pond | X |
| Other    |   |

|                                  |                     |                                                                 |
|----------------------------------|---------------------|-----------------------------------------------------------------|
| Description: SWP15S005<br>P-0180 | Location Of<br>Pond | WEST OF ENTRANCE TO<br>PUBLIC WORKS FACILITY ON<br>GOOD HOPE RD |
|----------------------------------|---------------------|-----------------------------------------------------------------|

Year Pond Constructed 2017 Year of Last Certification 2018

| Compliance Verification                  | Design (Non-AsBuilt) | Actual (GPS) | Compliant<br>Yes    No |   | Comments<br>(Condition of Structure)               |
|------------------------------------------|----------------------|--------------|------------------------|---|----------------------------------------------------|
| <b>Primary Outlet Pipe</b><br>(ST017320) |                      |              |                        |   | Outlet Pipe Material                               |
| Opening Diameter (inches)                | 12” RCP              | 12” RCP      | Y                      | - | 12” RCP IN GOOD CONDITION                          |
| Upstream Invert                          | 849.00               | 848.71       | Y                      | - |                                                    |
| Downstream Invert                        | 848.25               | 847.95       | Y                      | - |                                                    |
| Length (feet)                            | 75.0 FT              | 101.4 FT     | Y                      | - |                                                    |
| Slope (%)                                | 0.0100’/,            | 0.0075’/,    | Y                      | - |                                                    |
| <b>Secondary Outlet Pipe</b>             | N/A                  |              |                        |   | Outlet Pipe Material                               |
| Opening Diameter (inches)                |                      |              | -                      | - |                                                    |
| Upstream Invert                          |                      |              | -                      | - |                                                    |
| Downstream Invert                        |                      |              | -                      | - |                                                    |
| Length (feet)                            |                      |              | -                      | - |                                                    |
| Slope (%)                                |                      |              | -                      | - |                                                    |
| <b>Riser</b>                             |                      |              |                        |   | Riser Material                                     |
| Opening Diameter (inches) (ST015921)     | 36”x36”              | 36”x36”      | Y                      | - | REINFORCED CONCRETE STRUCTURE<br>IN GOOD CONDITION |
| Elevation                                | 853.00               | 852.57       | Y                      | - |                                                    |
| <b>Upper Discharge Control</b>           |                      |              |                        |   |                                                    |
| Opening Diameter (inches)                | 8”                   | 8”           | Y                      | - |                                                    |
| Elevation                                | 850.75               | 850.28       | Y                      | - |                                                    |

| Compliance Verification                                       | Design                   | Actual          | Compliant<br>Yes    No            |   | Comments                                     |                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------|--------------------------|-----------------|-----------------------------------|---|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lower Discharge Control</b>                                |                          |                 |                                   |   |                                              |                                                                                                                                                                                                                                                          |
| Opening Diameter (inches)                                     | 4”                       | 3”              | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Elevation                                                     | 849.00                   | 848.60          | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| <b>Other (Description)</b>                                    | N/A                      |                 |                                   |   |                                              |                                                                                                                                                                                                                                                          |
| Opening Type and Size (inches)                                |                          |                 | -                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Elevation                                                     |                          |                 | -                                 | - |                                              |                                                                                                                                                                                                                                                          |
| <b>Emergency Spillway</b>                                     |                          |                 |                                   |   |                                              |                                                                                                                                                                                                                                                          |
| Elevation                                                     | 854.00                   | 854.20          | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Length of spillway (feet)                                     | 10.0 LF                  | 19.0 LF         | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| <b>Embankment</b>                                             | Present<br>Yes        No |                 | Comments/Maintenance Requirements |   |                                              |                                                                                                                                                                                                                                                          |
| Unauthorized Plantings, trees, or woody vegetation            | -                        | N               |                                   |   |                                              |                                                                                                                                                                                                                                                          |
| Animal burrows or slope erosion or hole                       | -                        | N               |                                   |   |                                              |                                                                                                                                                                                                                                                          |
| <b>Storm Sewer Outfalls</b>                                   | Type & Size              |                 | Location                          |   | Comments                                     |                                                                                                                                                                                                                                                          |
| Outfall 1 (ST015918)                                          | RCP - 15”                |                 | NORTHEAST CORNER                  |   | RCP IN GOOD CONDITION, RIPRAP AT END SECTION |                                                                                                                                                                                                                                                          |
| Outfall 2 (ST015920)                                          | RCP – 15”                |                 | EAST EMBANKMENT                   |   | RCP IN GOOD CONDITION, RIPRAP AT END SECTION |                                                                                                                                                                                                                                                          |
| Outfall 3                                                     |                          |                 |                                   |   |                                              |                                                                                                                                                                                                                                                          |
| <b>Storage Properties</b>                                     | Design<br>(NON-ASBUILT)  | Actual<br>(GPS) | Compliant<br>Yes    No            |   | Not Applicable                               | Equipment Used                                                                                                                                                                                                                                           |
| Normal Water Elevation<br><i>(Wet Ponds)</i>                  | 849.00                   | 848.75          | Y                                 | - | N/A                                          | GPS EQUIPMENT:<br>GEOMAX ZENITH35 &<br>CARLSON SURVEYOR2<br>WITH SURV CE v5.04<br><br>ELEVATIONS TO VARY<br>SLIGHTLY FROM YEAR TO<br>YEAR DUE TO GPS<br>TECHNOLOGY<br><br>UNABLE TO SECURE CAD FILES<br>TO CALCULATE POND AREAS<br>FROM ORIGINAL DESIGN. |
| Design High Water Elevation                                   | 853.00                   | 852.57          | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Area at Normal Water Elevation (Ac)<br><i>(Wet Ponds)</i>     | 0.071<br>AC              | 0.058<br>AC     | Y                                 | - | N/A                                          |                                                                                                                                                                                                                                                          |
| Area at Design High Water Elevation (Ac)                      | 0.282<br>AC              | 0.383<br>AC     | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Active Storage Available (Ac-Ft)*                             | 0.597<br>ACFT            | 1.771<br>ACFT   | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Lowest Elevation at Top of Embankment <i>(If Applicable)</i>  | 855.00                   | 854.54          | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Average Elevation at Top of Embankment <i>(If Applicable)</i> | 855.00                   | 854.80          | Y                                 | - | N/A                                          |                                                                                                                                                                                                                                                          |
| Maximum Bottom Elevation                                      | 844.00                   | 844.34          | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Average Pond Bottom Elevation                                 | 846.00                   | 846.00          | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Pond Bottom Area (Ac)                                         | 0.005<br>AC              | 0.006<br>AC     | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Maximum Pond Depth                                            | 11.0 FT                  | 10.5 FT         | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Average Pond Depth                                            | 5.0 FT                   | 4.3 FT          | Y                                 | - |                                              |                                                                                                                                                                                                                                                          |
| Average Permanent Pool Depth <i>(Wet Ponds)</i>               | 5.0 FT                   | 2.75 FT         | Y                                 | - | N/A                                          |                                                                                                                                                                                                                                                          |

\*To Determine Active Storage  $V = \left( \left( \frac{H}{3} \right) \left( A_1 + A_2 + \left( \left( A_1 + A_2 \right)^{\left( \frac{1}{2} \right)} \right) \right) \right)$

Wet Ponds Use  $H$  = Height of Section ,  $A_1$ = area at normal water elevation,  $A_2$ =area at top section

Dry Ponds Use  $H$ = Height of Section,  $A_1$ = pond bottom area,  $A_2$ =area at top section

# Combined Public Works Facility (SW Pond) - SWP15S005

## Overview



Outlet ST015918



Outlet ST015920





# Combined Public Works Facility (SW Pond) - SWP15S005

## Overflow ST015921



## RipRap Parking Lot Drainage



## RipRap Spillway



## Combined Public Works Facility (SW Pond) - SWP15S005

Repairs Needed (11/08/21)

None

*Sketch Outlet*

*Place Photograph of Pond*

*Place Photograph of Pond*

Inspection Firm: VILLAGE OF  
MENOMONEE FALLS  
Phone Number: 262-532-4411  
Address: W156N8480 PILGRIM RD  
MENOMONEE FALLS, WI  
53051

Inspector Name : CHRISTOPHER M GARIEPY  
Inspection Date: 11/08/2021

Certifying  
Professional Name: THOMAS M. HOFFMAN, P.E.  
Phone Number: (262) 532-4415

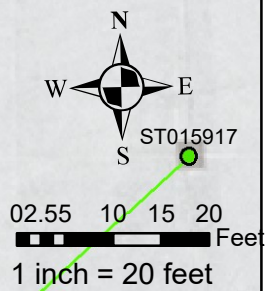
Date: 4/14/2022

Signature: 



*Affix Seal Here*







Acre Feet pond storage volume calculations for:

**Combined Public Works Facility - SW Pond**  
**SWP15S005**

**Entered Value**  
**Calculated Value**  
**Description of Elevations Calculated**

Year of Inspection: **2021**

Example:  $H = H2 - H1$ , where  $H2 > H1$

|                 |                  |                                                                                                 |
|-----------------|------------------|-------------------------------------------------------------------------------------------------|
| <b>H1 =</b>     | <b>848.75</b>    | Lower Height Elevation in Feet (Pond Bottom for Dry Pond <b>OR</b> Top of Observed Water Level) |
| <b>H2 =</b>     | <b>854.22</b>    | Height at Bottom of Spillway (Wet or Dry)                                                       |
| <b>H3 =</b>     | <b>855.00</b>    | Higher Height Elevation in Feet (Top of Bank Around Pond - Wet or Dry)                          |
| <b>H4 =</b>     | <b>845.00</b>    | Bottom of Wet Pond Elevation in Feet (Wet Ponds Only)                                           |
|                 | Sq.Ft.           | Acres                                                                                           |
| <b>Area 1 =</b> | <b>2,522.00</b>  | <b>0.0579</b> Area of H1                                                                        |
|                 |                  | Area 1 = Area at Top of Observed Water Level                                                    |
| <b>Area 2 =</b> | <b>13,431.40</b> | <b>0.3083</b> Area of H2                                                                        |
|                 |                  | Area 2 = Area at Bottom of Spillway                                                             |
| <b>Area 3 =</b> | <b>16,691.90</b> | <b>0.3832</b> Area of H2                                                                        |
|                 |                  | Area 3 = Area at Top of Bank                                                                    |
| <b>Area 4 =</b> | <b>249.20</b>    | <b>0.0057</b> Area of H3                                                                        |
|                 |                  | Area 4 = Area at Bottom of Pond                                                                 |

Equation to determine Volume (AcFt) of pond storage capacity from

**Top of Water to Bottom of Spillway:**

$$V = ( ((H2-H1)/3)(A1+A2 + (\sqrt{A1+A2})) )$$

|           |               |             |           |   |                |
|-----------|---------------|-------------|-----------|---|----------------|
|           | Feet          |             | Acres     |   | Acres          |
| V=        | $((H2-H1)/3)$ | x           | $(A1+A2)$ | + | $\sqrt{A1+A2}$ |
| V=        | 1.8233        | x           | 0.3662    | + | 0.6052         |
| V=        | 1.8233        | x           | 0.9714    |   |                |
| <b>V=</b> | <b>1.7712</b> | <b>AcFt</b> |           |   |                |

Equation to determine Volume (AcFt) of pond storage capacity from

**Top of Water to Top of Bank at Spillway:**

$$V = ( ((H3-H1)/3)(A1+A3 + (\sqrt{A1+A3})) )$$

|           |               |             |           |   |                |
|-----------|---------------|-------------|-----------|---|----------------|
|           | Feet          |             | Acres     |   | Acres          |
| V=        | $((H3-H1)/3)$ | x           | $(A1+A3)$ | + | $\sqrt{A1+A3}$ |
| V=        | 2.0833        | x           | 0.4411    | + | 0.6641         |
| V=        | 2.0833        | x           | 1.1052    |   |                |
| <b>V=</b> | <b>2.3026</b> | <b>AcFt</b> |           |   |                |

Equation to determine Volume (AcFt) of pond storage capacity from

**Bottom of Pond to Top of Water:**

$$V = ( ((H1-H4)/3)(A1+A4 + (\sqrt{A1+A4})) )$$

|           |               |             |           |   |                |
|-----------|---------------|-------------|-----------|---|----------------|
|           | Feet          |             | Acres     |   | Acres          |
| V=        | $((H1-H4)/3)$ | x           | $(A1+A4)$ | + | $\sqrt{A1+A4}$ |
| V=        | 1.2500        | x           | 0.0636    | + | 0.2522         |
| V=        | 1.2500        | x           | 0.3158    |   |                |
| <b>V=</b> | <b>0.3948</b> | <b>AcFt</b> |           |   |                |

Equation to determine Volume (AcFt) of pond storage capacity from

**Bottom of Pond to Top of Bank at Spillway:**

$$V = ( ((H3-H4)/3)(A3+A4 + (\sqrt{A3+A4})) )$$

|           |               |             |           |   |                |
|-----------|---------------|-------------|-----------|---|----------------|
|           | Feet          |             | Acres     |   | Acres          |
| V=        | $((H3-H4)/3)$ | x           | $(A3+A4)$ | + | $\sqrt{A3+A4}$ |
| V=        | 3.3333        | x           | 0.3889    | + | 0.6236         |
| V=        | 3.3333        | x           | 1.0125    |   |                |
| <b>V=</b> | <b>3.3751</b> | <b>AcFt</b> |           |   |                |