

City of Appleton
Pollution Prevention Program
Section 2.6 WPDES Permit No. WI-S050075-3
Permit Start Date May 1, 2019
February 2021

This document describes the City of Appleton Pollution Prevention Program as required in the WPDES Stormwater Permit from the Wisconsin Department of Natural Resources (WDNR). The program includes general procedures intended to prevent pollution from City of Appleton operations conducted by several departments. More detailed and supporting documentation for activities by individual departments and divisions will be kept with those departments and divisions.

The following City of Appleton departments and divisions are involved in this program:

- Department of Public Works - Engineering Division
- Department of Public Works – Operations Division
- Parks, Recreation and Facilities Management Department
- Fire Department
- Utilities Department

This document will be kept in the Engineering Division of the Department of Public Works located on the fifth floor of City Center, 100 N. Appleton Street, Appleton, Wisconsin 54911. All questions regarding this document should be directed to the Director of Public Works, at the above address, or (920)-832-6474.

Each department that is responsible for implementing any part of this plan is also responsible for training department staff on their plan and the permit requirements. Individual department and division updates will be periodically collected by the Department of Public Works Engineering Division for an overall update to this document.

Costs associated with this program are generally funded through the budget of each responsible department. Some costs associated with this program are funded through the City of Appleton Stormwater Utility.

Bold text is from the permit.

2.6 Pollution Prevention – The permittee shall continue to implement its pollution prevention program to prevent or reduce pollutant runoff from the MS4 to waters of the state. The permittee shall implement the following measurable goals:

2.6.1 Stormwater management facilities. Update and maintain an inventory of municipally owned or operated stormwater BMP’s such as wet detention ponds, bioretention devices, infiltration basins and trenches, permeable pavement, proprietary sedimentation devices, vegetated swales, or any similar practice used to meet a water quality requirement under this permit. At a minimum, the inventory shall be maintained in a tabular format and contain the following information for each structural stormwater facility:

- a. **A key corresponding to the location of the BMP on the storm sewer system map required under section 2.8.**
- b. **The name and description of the BMP, including the type and year constructed**
- c. **A confirmation of whether each of the following elements exist or are not available:**
 - (1) **An operation and maintenance plan with inspection procedures and schedule**
 - (2) **A record drawing**
 - (3) **If using a BMP to meet a water quality requirement in this permit and the BMP is owned by another entity, written documentation exists that the permittee has permission from the owner to use the BMP for this purpose.**

The Department of Public Works Engineering Division is responsible for maintaining this information. The current table is included as an attachment to this document. Changes to the inventory will be added to the table annually.

2.6.2 For each BMP inventoried under section 2.6.1, the permittee shall develop and implement a maintenance plan with inspection procedures and schedule to maintain the pollutant removal operating efficiency of the practice in compliance with any water quality requirement under this permit. Documentation of inspections and maintenance activities shall be maintained.

This section is the responsibility of the Department of Public Works, Engineering and Operations Divisions, and the Parks, Recreation, and Facilities Management Department. Currently the Department of Public Works provides this service for the Parks, Recreation and Facilities Management Department. This arrangement is subject to change based on a yearly review of available staffing and priorities. Operations and Maintenance Plans are available for the stormwater practices in the table identified in section 2.6.1. As examples, the Operation and Maintenance Plans for Leona Pond and the Northland Biofilter are included as attachments to this document.

2.6.3 Municipally owned public works facilities. The stormwater pollution prevention plans (SWPPPs) for municipal garages, municipal storage areas, and other public works related municipal facilities located within the permitted area shall be maintained and updated annually as needed and shall include the information in section 2.6.3.a. When a SWPPP is updated, it shall be submitted to the WDNR with the annual report.

- a. **SWPPPs shall include the following information:**
 - (1) **The physical locations of each facility with a key corresponding to the locations on the storm sewer system map required under section 2.8.**
 - (2) **The contact information for the individuals with overall responsibility for each facility.**
 - (3) **A map of each facility, drawn to scale, and including the following features:**
 - i. **The locations and descriptions of major activities and storage areas.**

- ii. **Identification of drainage patterns, potential sources of stormwater contamination and discharge points.**
 - iii. **Identification of nearby receiving waters or wetlands.**
 - iv. **Identification of connections to the MS4.**
 - (4) **A description of procedures, good housekeeping activities, and any BMP's installed to reduce or eliminate stormwater contamination.**
 - (5) **A maintenance plan with inspection procedures and schedule for each facility to identify deficiencies, necessary improvements and/or repairs, assess effectiveness, and address new or unaddressed potential sources of stormwater contamination.**
 - (6) **Spills prevention and response operating procedures**
- b. **The permittee is not required to comply with section 2.6.3 if the permittee certifies that the municipal facility qualifies for no exposure with the WNR's concurrence.**

The City has SWPPPs for the following sites:

- Whitman Yard Waste Site (Department of Public Works)
- Municipal Services Building and Hardstand Storage Area (Department of Public Works)
- Water Treatment Plant (Utilities Department)
- Wastewater Treatment Plant (Utilities Department)
- Fire Station No. 6 (includes training site) (Fire Department)
- Facilities and Grounds Operations Center on Witzke Blvd (formerly Parks and Recreation Department Office and Storage yard)
- Reid Golf Course Maintenance Yard (Parks, Recreation, and Facilities Management Department)

These plans are separate documents and not included in this program document. Each department is responsible for implementing the stormwater plan for their facilities, including physical site changes, plan updates and amendments, facility inspections, and staff training. In 2016, the Department of Public Works began performing site inspections for Parks, Recreation, and Facilities Management sites and assisting them with any necessary plan updates. This is subject to change based on yearly review of available staff and priorities.

2.6.4 Measures to reduce municipal sources of stormwater contamination within source water protection areas.

Small portions of the city are tributary to a Freedom municipal well, a Village of Fox Crossing municipal well, and Lake Winnebago. The city will continue current practices within known source water protection areas, including street cleaning and pond maintenance.

2.6.5 Collection services/Storm sewer system maintenance activities.

This section is the responsibility of the Department of Public Works, Operations Division.

- a. Street sweeping. If routine street sweeping is utilized to meet a water quality requirement under this permit, the permittee shall maintain documentation of the number and type of equipment used, standard operating procedures, an estimate of the number of lane-miles swept annually, and an estimate of the weight in tons of materials collected annually.**

The Department of Public Works Operations Division currently owns two (2) mechanical sweepers, one (1) high efficiency (HE) street sweeper and one Vac-All sweeper. The downtown is swept twice a week with half mechanical sweeping and half high efficiency (HE) sweeping. Arterial streets and industrial areas are swept once every two weeks with the Vac-All or the HE sweeper. The remaining areas are generally swept on either a 3-week or 6-week cycle. Areas that are tributary to regional stormwater ponds are swept on the 6-week cycle. The first sweeping in the spring is initiated when curb lines become exposed from snow and ice and is completed prior to hydrant flushing activities. Sweeping during the fall is associated with the leaf collection process and can be tracked separately according to date. Sweeping is generally done during nighttime hours when a parking control ordinance is in place.

There are approximately 700 lane miles maintained within the annual street sweeping program.

The 2020 Annual Report included collection of 1282 tons of material. The amount of material is tracked through tipping fees.

- b. Catch Basins. If routine cleaning of catch basins with sumps is utilized to meet a water quality requirement under this permit, the permittee shall maintain documentation of the number of catch basins inspected, the number of catch basins cleaned, standard operating procedures, and an estimate of the weight in tons of material collected annually.**

All structures with sumps (HSDs) are tracked in the City's ArcGIS system. The GIS system is updated annually to add any structures constructed that year. They are labeled as such and an updated spreadsheet is created after each annual update.

The Operations Division of Public Works inspects each structure in the spring and cleans them as necessary. Cleaning occurs when there is less than 18" from the top of sediment to the invert of the outlet pipe. The inspection date and cleaning date are documented in the spreadsheet.

The 2020 Annual Report included collection of 160 tons of material. The amount of material collected is tracked through tipping fees.

c. Material handling and disposal. Material collected under a. and b. of this sections shall be handled and stored in a manner that prevents contamination of stormwater runoff and shall be disposed of or beneficially reused in accordance with applicable solid and hazardous waste statutes and administrative codes. Non-stormwater discharges to water of the state associated with dewatering and drying material collected under sections a. and b. of this section are not authorized by this permit.

Street sweeping and storm sewer cleaning waste is dumped from the equipment daily in a pit in the yard at the Municipal Services Building. The pit drains to the sanitary sewer. On a weekly basis, the material is removed from the pit and taken to the Outagamie County Landfill for disposal. The amount of removed and disposed material is tracked on a spread sheet using weight tickets from the landfill.

d. Leaf Management. Proper management of leaves and grass clippings from municipally owned properties and private property. On-site management and/or drop-off shall be communicated to private property owners in accordance with the public education and outreach program implemented under section 2.1 of this permit. If the permittee has a municipal collection program, collected material shall be handled and stored in a manner that prevents contamination from stormwater runoff. For a municipal leaf collection program, the permittee shall maintain the following documentation:

- (1) A description of the leaf collection program, including the type of pick-up methodology and equipment used, timing of associated street cleaning, standard operating procedures, schedule and frequency, and instructions for private property owners.**

Parks, Recreation and Facilities Management uses mulching mowers in the parks, public terraces, and at other city facilities that they maintain. Generally, no leaves or grass clippings are removed from these sites. When the pools are open, grass clippings inside the fence are bagged to keep them from getting into the pool. Mulching is used when the pools are closed. At Reid Golf Course all material is mulched or composted and kept on-site.

Appleton has two yard waste drop off sites that collect grass clippings, brush, and yard waste from residents. A fee is charged for each bag of grass clippings as an incentive to mulch grass or compost at home.

Leaves are collected by the Department of Public Works Operations Division in the fall in approximately three (3) cycles through the city. Some leaves are ground and made available to residents as mulch. Other leaves are applied to farm fields and provided to landscapers. Grass clippings are currently mixed with other ground yard waste and provided to the public.

Residents are asked to rake their leaves into the road gutter for pickup by the City. Residents are also allowed to place other bulk materials (sticks, garden debris, etc.) out

for pickup at the same time. The City has 4 single-axle dump trucks with modified leaf pushers/rakes that collect leaves into large piles which are then picked up by front end loaders with a clamshell bucket that loads the leaves into trucks for disposal. Street cleaning follows the leaf collection with a mechanical sweeper. The mechanical sweeper is used to pick up larger garden debris and works during colder temperatures.

(2) An estimate of the weight in tons of material collected annually.

Appleton collects approximately 5250 tons of leaves each year.

(3) Municipally operated leaf disposal locations with a key corresponding to the locations on the storm sewer system map required under section 2.8. If the disposal location is outside of the MS4 boundary, then the permittee can provide documentation if the disposal is taken elsewhere.

After leaves are collected they are temporarily stored at a City-owned parcel in the Town of Center (W4915 CTH O) and a City owned site at Sandra Street and Glendale Street. The City works with area farmers to take leaves for incorporation into their fields. Locations vary year to year. Final disposal locations used in 2020 include:

- Todd Whittman, 8693 State Park Rd. Menasha
- Dan Stumpf, Hwy 114 Harrison
- Scott VandenBerg, Cornerstone Farm, N4065 CR U
- Matt Stumpf, Manitowoc Rd
- B-Ann Farms Kaukauna 55 S/O KK
- Dave VanElzen, Hwy 114 Harrison
- Kendall Vosters, W2594 Cty Rd JJ
- Darin Tiedt, N4151 Cty Rd PP
- Larry Van Handel, S/E corner of Buchanon Rd. and Secluded Ct.
- N5310 Cty Rd PP

2.6.6 Winter Road Management. If road salt or other deicers are applied by the permittee or a contractor on behalf of the permittee, no more shall be applied than necessary to maintain public safety. Documentation on deicing activities shall be performed by the permittee or a contractor on behalf of the permittee and include the following:

a. Contact information for the individuals with overall responsibility for winter roadway maintenance.

The following people are responsible for winter roadway maintenance:

1. Nate Loper, Deputy Director of Public Works – Operations
Office 920-832-5804, Cell 920-419-6225, nathan.loper@appleton.org

2. Lance Wilkinson, Operations Foreman, Department of Public Works
Office 920-832-5581, Cell 920-419-0265, lance.wilkinson@appleton.org

3. Paula Vandehey, Director of Public Works
Office 920-832-6474, Cell 920-419-6713, paula.vandehey@appleton.org

b. A description of the types of deicing products used.

The Department of Public Works Operations Division (streets) uses the following:
Granular sodium chloride (road salt)
Liquid sodium chloride 28%, salt brine, prewet and anti-ice application
Liquid calcium chloride 42% prewet application – mixed 20/80 (calcium/salt brine)

c. The amount of deicing product used per month.

This information will be tracked through the City's inventory system and reported annually.

d. A description of the type of equipment used.

The Department of Public Works Operations Division (streets) operates the following equipment:
10 tri-axle plow trucks, wing and plow, tailgate salt spreader with prewet capabilities
15 single axle plow trucks, wing and plow, tailgate salt spreader with prewet capabilities
6 front end loaders with a wing and plow
2 road graders with a wing and plow
2 one ton plow trucks with a salt spreader
3 sidewalk snow plows with a salt spreader

e. An estimate of the number of lane-miles treated with deicing products for the roadways that the permittee is responsible for, and an estimate in acres of the total area of municipally owned parking lots treated with deicing products by the permittee or contractor.

The City treats approximately 800 lane miles of roadways and approximately 10 acres of municipally owned parking lots with de-icing materials.

f. If applicable, snow disposal locations with a key corresponding to the locations on the storm sewer map required under section 2.8.

South side of the intersection of E. Glendale Avenue and N. Sandra Street
NE Corner of Kensington Drive and Express Court
701 S. Whitman Drive

g. A description of anti-icing, pre-wetting and brining, equipment calibration, pavement temperature monitoring, and/or salt reduction strategies implemented or being considered, and/or alternative products.

The Department of Public Works Operations Division has a written "Snow and Ice Control Program" adopted by the Common Council to address winter street maintenance. This program does not commit to bare pavement, establishes proper use of chemicals, and sets guidelines for the amount of salt used per lane mile depending on temperature, the type of storm event, and the type of street. It also includes the use of pre-wetting solutions to further reduce salt usage. The equipment used to apply salt is kept in good working condition and calibrated regularly.

The Department of Public Works Operations Division considers available technologies, available equipment, locations of critical sites and available staff in determining snow and ice strategy.

The City applies liquid salt brine as an anti-ice agent prior to snow/ice storms and forecasted frost events on hills, bridges, curves and four lane roads. All equipment having a material spreader is equipped with prewet capabilities and an on-board computer system which regulates material application. This equipment is calibrated annually. The City has a snow and ice matrix that is used to evaluate impending storm conditions and helps determine the proper methodology for combating the snow event. The matrix is attached to this document. The City also subscribes to a weather service that helps establish duration, intensity and timing of a storm. In addition, the service forecasts present and future air and pavement temperatures and recommends material spreading applications.

h. Other measurable data or information that the permittee uses to evaluate or modify its deicing activities.

The primary focus of the winter road management program is to anti-ice instead of de-ice as much as possible. City staff stay current with the latest snow and ice technology by networking with vendors and other communities, attending American Public Works Association training on the topic, and sending various staff to UW-Madison and NEWSC sponsored classes regularly. New employees are trained on the program every fall.

2.6.7 Nutrient management. Application of turf and garden fertilizers on municipally controlled properties, with pervious surfaces over 5 acres each, in accordance with site-specific nutrient application schedule based on appropriate soil tests.

City owned properties with over 5 acres of pervious area include most city parks, Reid Golf Course, the Water Treatment Plant (WTP) and the Wastewater Treatment Plant (WWTP). The city also owns property with over 5 acres of pervious surface that is leased by USA Youth Sports.

This section is the responsibility of The Parks, Recreation and Facilities Management Department.

The City has a Turf Management Policy for city parks and other City owned properties, except Reid Golf Course. There are also completed soil tests and Nutrient Management Plans for all city parks, Reid Golf Course, and the Water and Wastewater Treatment Plants. The site specific Nutrient Management Plans fall under the Turf Management Policy. Reid Golf Course has a stand-alone Nutrient Management Plan, not under the Turf Management Policy. Reid Golf Course and Parks, Recreation and Facilities Management staff are certified for the proper application of lawn and garden fertilizers and follow the Nutrient Management Plans. The plans will be updated every five (5) years following new soil tests. The lease agreement with USA Youth Sports includes this requirement.

2.6.8 Environmentally sensitive development. Consideration of environmentally sensitive land development designs for municipal projects, including green infrastructure and low impact development, which shall be designed, installed, and maintained to comply with a water quality requirement under this permit.

The Parks, Recreation and Facilities Management Department will add this requirement to Requests for Proposals for designs of municipal building projects.

The Department of Public Works evaluates street width for every reconstruction project. Streets are narrowed, increasing terrace width for trees and grass, whenever possible.

2.6.9 Internal training and education. At a minimum, the permittee shall hold one annual training event for appropriate municipal staff and other personnel involved in implementing each of the elements of the pollution prevention program under this section 2.6. Documentation shall be maintained of the date, the number of people attending this training, the names of each person attending and a summary of their responsibilities, and the content of the training. The permittee shall inform contractors performing any services to implement section 2.6 of the permit requirements and expectations. The permittee shall also inform their elected officials of the permit requirements and expectations.

Each Department impacted by this section of the Permit is required to provide training to their own personnel regarding the implementation of this plan. Some of the topics may be applicable to multiple departments and combined training efforts will be used whenever the time and topic are appropriate. Training will be incorporated into existing training programs.

Attachments:

- Municipal BMP Table (2.6.1)
- Leona Pond Operation and Maintenance Plan (2.6.2)
- Northland Biofilter Operation and Maintenance Plan (2.6.2)
- 2021 Snow and Ice Matrix (2.6.6)

2.6.1 Stormwater Practices Inventory (Last Updated 12/31/2020)

DNR BMP ID	BMP Name	BMP Type	Construct Year	O&M Plan?	Record Dwg?
1	Coop Road Pond	Wet Pond	2008	Y	Y
2	Plank Road Northwest Pond	Wet Pond	2005	Y	Y
3	Memorial Park Northeast Pond	Wet Pond	2007	Y	Y
4	Kensington Pond (aka Southeast Pond) and Dam	Wet Pond	2009	Y	Y
6	Ballard Pond (aka Northeast Wetland Det Pond)	Wet Pond	1996	Y	Y
7	Plank Road Pond	Wet Pond	2000	Y	Y
8	Southpoint Commerce Park Pond North (aka K2A Pond)	Wet Pond	2004	Y	Y
9	Plank Road West Pond	Wet Pond	2005	Y	Y
10	French Road Northeast Business Park Pond	Wet Pond	1996	Y	Y
11	Emerald Valley Pond	Wet Pond	2006	Y	Y
12	Glenhurst West Pond	Wet Pond	2003	Y	Y
13	Ashbury Pond	Wet Pond	2000	Y	Y
14	Meade Evergreen Pond	Wet Pond	2001	Y	Y
15	Mud Creek South Pond	Wet Pond	2002	Y	Y
16	Meade Pond (aka Meade-JJ Pond)	Wet Pond	2001	Y	Y
19	Glenhurst East Pond	Wet Pond	2003	Y	Y
20	Apple Hill Farms East Pond	Wet Pond	2005	Y	Y
21	Crossing Meadows Pond	Hybrid Pond	1997	In Progress	Y
22	Apple Hill Farms Pond G-1	Wet Pond	2006	Y	Y
23	Apple Hill Farms Pond 3	Wet Pond	2004	Y	Y
24	Apple Hill Farms Pond 1A	Wet Pond	2004	Y	Y
24	Apple Hill Farms Pond 1B	Wet Pond	2004	Y	Y
25	Apple Hill Farms Pond 4	Wet Pond	2004	Y	Y
26	Apple Hill Farms Pond 6	Wet Pond	2004	Y	Y
27	Southpoint Commerce Park Pond South (aka K2B Pond)	Wet Pond	2004	Y	Y
28	Pershing 441 Pond (aka Pershing Pond)	Wet Pond	2009	Y	Y
29	Apple Hill Farms Pond Dry Pond (aka Pond HP or Low Pond)	Dry Pond	2005	In Progress	Y
30	Apple Hill Farms Pond High Pond (and u.s. grass swale)	Wet Pond	2005	Y	Y
31	Apple Hill Farms Pond 5	Wet Pond	2004	Y	Y
32	Clearwater Creek Pond	Wet Pond	2007	Y	Y
33	Holland Road Pond and Dam	Wet Pond	1998	Y	Y
34	Conkey Pond	Wet Pond	2011	Y	Y
35	Memorial Park South Pond	Wet Pond	2011	Y	Y
36	Northland Ave Biofiltration	Biofilter	2009	Y	Y
37	College Ave Biofilter Southwest	Biofilter	2009	Y	Y
38	College Ave Biofilter Northeast	Biofilter	2009	Y	Y
39	College Ave Biofilter Southeast	Biofilter	2009	Y	Y
40	Apple Hill Farms Mackville Rd (aka F-1) Pond	Wet Pond	2008	Y	Y
41	Apple Hill Farms Thomas Ct (aka E-2) Pond	Wet Pond	2008	Y	Y
42	Reid Golf Course South Pond	Wet Pond	2013	Y	Y
43	Reid Golf Course East Pond	Wet Pond	2013	Y	Y
44	Glacier Ridge Werner NW Pond	Wet Pond	2007	Y	Y
45	Glacier Ridge Werner SW Pond	Wet Pond	2007	Y	Y
46	Glacier Ridge Werner S Pond	Wet Pond	2007	Y	Y
47	Glacier Ridge Southeast (Kurey) Pond	Wet Pond	2007	Y	Y
48	Cotter Street Pond	Wet Pond	2017	Y	Y
49	Lightning JJ Pond	Wet Pond	2017	Y	Y
50	Northland Pond	Wet Pond	2018	Y	Y
51	Leona Pond	Wet Pond	2019	Y	In Progress
52	Schindler 441 Pond	Wet Pond	2019	Y	In Progress
53	Spartan Bear Creek Pond (Pond 2)	Wet Pond	2020	Y	In Progress
54	Spartan Lift Station Pond (Pond 4)	Wet Pond	2020	Y	In Progress
55	Spartan Haymeadow Pond (Pond 5)	Wet Pond	2020	Y	In Progress
56	Apple Ridge Pond A	Wet Pond	2019	Y	In Progress
57	Apple Ridge Pond B	Wet Pond	2020	Y	In Progress
58	Apple Ridge Pond C	Wet Pond	2020	Y	In Progress
59	North Edgewood Estates Pond	Wet Pond	2019	Y	In Progress
60	Broadway Hills Pond South	Wet Pond	2020	Y	In Progress
61	Broadway Hills Pond North	Wet Pond	2020	Y	In Progress

Operation and Maintenance Plan

51. Leona Pond

Last Updated: 12/31/2020

Responsible Party

The City of Appleton Department of Public Works is the party responsible for the operation and maintenance of the pond.

Pond Location and Components

Pond location and components are indicated on the record drawings on file with the City of Appleton Department of Public Works.

Inspection Requirements

The City will inspect the entire pond area a minimum once per year for erosion, condition of inlet/outlet pipes and structures, visible sedimentation/scouring of the pond that may impact function, condition of vegetation, damage from burrowing and/or herbivorous animals, and trash. Areas of concern will be documented and repairs will be made in a timely manner by the City of Appleton or its agents. If feasible, non-vegetation components should be inspected before or early in the growing season to reduce the likelihood that vegetation will obscure pond components. If feasible, vegetation components should be inspected in the mid- or late-growing season.

Operation and Maintenance Requirements

Sediment Accumulation

The pond relies on a permanent pool depth of at least 3 feet, measured from the normal water level to the top of any accumulated sediment within the forebays and main bays. This depth should be measured approximately every 10 years, sooner if conditions warrant (e.g. accumulated sediment visible from surface). Additionally, any sediment that obstructs flow into or out of the pond, such as in/around the inlet/outlet pipes and/or structures, should be removed.

If feasible, dredging of large quantities of sediment should be performed in the winter to minimize damage to pond vegetation. Dredging/disposal of sediment from the forebays and main bay shall be performed in accordance with NR 528.

Care should be taken to dredge no deeper than pond bottom design elevations, to prevent excavation through the clay lining the pond bottom.

Inlet and Outlet Pipes and Structures

inlet and outlet pipes and structures should be kept free of sediment and debris that may impact their function. Pipes and structures should be structurally sound to prevent leaks that could impact design function, such as release rates and water levels.

The inlet and outlet structures, including storm sewer components, will be checked during annual inspections for defects or deterioration. Items in disrepair should be fixed as soon as is feasible. Accumulated sediment, debris and litter should be removed periodically.

Pond Safety Shelf/Slopes/Embankments

Pond safety shelf and sideslope vegetation is self-sustaining and does not require mowing, other than maintenance mowing intended to reduce weeds. Qualified individuals familiar with native vegetation should perform maintenance as needed to prevent excessive weed growth. Appropriate techniques may include spot herbiciding, mowing, spot mowing, cutting/treatment of woody vegetation, and the like. If plugging or replacement seeding is indicated due to loss of plants, the species mix per the construction documents should be used unless otherwise indicated by the engineer.

The pond does not rely on safety shelf vegetation to perform its primary function of Total Suspended Solids removal, but such vegetation provides aesthetic and habitat benefits while reducing the area available for weed growth, as desired by the City.

If erosion occurs, the area should be reseeded and/or plugged after replacing any lost topsoil. Placement of temporary erosion control practices such as erosion control blankets may be needed during vegetation establishment. Shoreline erosion caused by wave action, fluctuating water levels, and or animals such as muskrats is also possible. Such erosion may reduce or eliminate the vegetation in the affected area. If this occurs, the shoreline should be restored and protected with vegetation and/or temporary or long-term practices such as erosion mats, Turf Reinforcement Mats, and coir logs that are suitable for the wet environment.

Trees and other woody vegetation shall be kept out of any embankment (earth fill) areas to help ensure structural integrity of the embankment is maintained.

Permanent Pool Area

Permanent pools should be monitored for excessive algae growth. Appropriate treatment, such as cutting, physical removal, and application of chemicals according to manufacturer guidelines are techniques that may be appropriate. Chemical application requires prior WDNR permitting.

If aquatic weeds are detected, DPW should consult with a qualified individual or firm knowledgeable in pond biology to help determine a proper plan for inspection, monitoring, treatment, and/or removal. Natural predators, such as dragonfly larvae and amphibians, tend to keep nuisance insects in check on wet stormwater ponds. If nuisance insect or other wildlife are suspected, an investigation should be conducted. The City of Appleton Health Department has individuals qualified to test for mosquito larvae. If treatment is warranted, WDNR requirements are to be followed.

Nuisance Wildlife

Muskrats and other burrowing wildlife are often associated with pond problems. The holes they burrow can lead to leakage, unstable shorelines or even embankment failure. In addition, muskrats feed on wetland vegetation that may be established within the pond. Particular attention should be given to the pond embankments to prevent failure. Muskrat populations can be controlled by trapping as required.

Debris and Litter

The stormwater pond may collect debris and litter. It is recommended that the debris that may affect flow into or out of the pond is removed on a regular basis. The structure at the outlet of the pond may also collect debris. The outlet structure will be inspected annually and after large storms and any debris should be removed to ensure proper performance. Debris trapped inside the outlet structure should also be removed.

Maintenance Tasks

The following tasks are anticipated on an as-needed basis:

Periodic Maintenance:

- Remove accumulated debris and litter from pond inlet and outlet structures including storm sewers.
- Check for erosion on pond side slopes and around inlet/outlet structures. Repair as necessary.
- Check for animal burrow in shoreline, sideslopes, and pond embankments. Repair as necessary.

Seasonal Maintenance: Spring (and/or after large events)

- Remove accumulated debris and litter from pond outlet and trash racks.
- Check and repair pond outlet structure for cracks or other undesirable condition.
- Check and repair pond inlet area for settlement and/or erosion above and around the inlet area or other undesirable condition.
- Remove invasive plants as may be recommended by engineer. Control by hand pulling, herbicide application and/or mowing.
- Plant, or seed, additional plants in bare spots or areas with vegetation that is not sufficiently robust to prevent erosion.

Seasonal Maintenance: Fall

- Remove unwanted woody vegetation from pond side slopes and embankments. Remove by hand pulling, brushing and/or mowing. Undesirable woody vegetation can be mowed.
- Maintain vegetation along pond side slopes as appropriate.

Infrequent Maintenance

Approximately every ten years, measure sediment levels within the pond and evaluate the need for sediment removal. A minimum pond depth of 3 feet should be maintained to allow for settling of and prevent resuspension of stormwater pollutants.

Operation and Maintenance Plan

36 Northland Biofilter

Last Updated: 12/31/2020

Responsible Party

The City of Appleton Department of Public Works is the party responsible for the operation and maintenance of the Biofilter.

Biofilter Location and Components

Biofilter location and components are indicated on the record drawings on file with the City of Appleton Department of Public Works.

Inspection Requirements

The City will inspect the entire Biofilter area a minimum once per year for erosion, condition of inlet/outlet pipes and structures, visible sedimentation/scouring of the Biofilter that may impact function, condition of vegetation, damage from burrowing and/or herbivorous animals, sinkholes, prolonged standing water, and trash. Areas of concern will be documented and repairs will be made in a timely manner by the City of Appleton or its agents. If feasible, non-vegetation components should be inspected before or early in the growing season to reduce the likelihood that vegetation will obscure Biofilter components. If feasible, vegetation components should be inspected in the mid- or late-growing season.

Operation and Maintenance Requirements

Inlet and Outlet Pipes and Structures

Inlet and Outlet Pipes should be kept free of sediment and debris that may impact their function. Pipes and structures should be structurally sound, so as to prevent leaks that could impact design function, such as release rates and water levels. The inlet and outlet structures, including storm sewer components, will be checked during annual inspections for defects or deterioration. Items in disrepair should be fixed as soon as is feasible. Accumulated sediment, debris and litter should be removed periodically.

Biofilter Slopes/Embankments

Biofilter sideslope/embankment vegetation is turf grass that requires occasional mowing. In case of excessive weed growth, appropriate techniques may include spot herbiciding, mowing, spot mowing, cutting/treatment of woody vegetation, and the like. If plugging or replacement seeding is required due to loss of plants, the species mix per the construction documents should be used unless otherwise indicated by the engineer.

If erosion occurs, the area should be reseeded and/or plugged after replacing any lost topsoil. Placement of temporary erosion control, such as erosion control blankets, may be

needed during vegetation establishment. Shoreline erosion caused by wave action, fluctuating water levels, and or animals such as muskrats is also possible. Such erosion may reduce or eliminate the vegetation in the affected area. To correct, the shoreline should be restored and protected with vegetation and/or temporary or long-term practices such as erosion mats, Turf Reinforcement Mats, and coir logs that are suitable for the wet environment.

Smaller native woody vegetation such as Dogwood species are appropriate, but larger woody vegetation such as trees have large root structures that can weaken slopes and embankments, and should be removed to help ensure structural integrity of the sideslope/embankment.

Engineered Soil Area

The interior of the Biofilter's visible surface contains a flat bottom that is bound by the Biofilter side slopes. This area consists of a vegetated surface beneath which lies an engineered soil layer at least 2 feet thick designed to allow the slow filtration of runoff, removing pollutants as it passes through to the bottom of the practice. Once there, the treated runoff is collected in an underdrain pipe and routed to the Biofilter outlet pipe. Biofilter function relies on relatively uniform passage of runoff through the bulk of the engineered soil layer, without significant "short cuts" of flow that bypass treatment. Typically, these "short cuts" consist of voids that appear as depressed areas, or "sinkholes" at the biofilter surface. Repeated formation of multiple sink holes, and/or failure of a biofilter to empty standing water within 30 hours of a rainfall event, is evidence that the engineered soil layer is reaching the end of its useful life and must be replaced.

The engineered soil surface area should be monitored for sinkholes and evidence of prolonged (more than 30 hours) standing water after an event. If sinkholes are detected but evidence does indicate the engineered soil must be completely replaced, the sinkhole should be filled with replacement engineered soil meeting DNR standards.

The engineered soil surface area contains native deep-rooted plants to resist erosion and improve aesthetics. The roots of such plants may offer additional sites for pollutant removal and encourage filtration through the engineered soil layer, but are not necessary for the Biofilter to perform its primary function for removal of Total Suspended Solids. If such plants are missing or in poor health, consider replacement plants to help resist erosion and for aesthetic purposes.

The Biofilter engineered soil area surface was initially constructed with a hardwood mulch layer to help resist erosion and aid in the establishment of the native plants. Once the plants have achieved full growth and density, the mulch layer may not be necessary to prevent erosion. If plants are not sufficient to prevent erosion, consider replacing areas of sporadic or missing mulch.

If weeds are detected, they should be removed via herbicide, pulling, or mowing.

Smaller native woody vegetation such as Dogwood species are appropriate, but larger woody vegetation such as trees have large root structures that can create short cuts through the engineered soil layer, and should be removed.

Nuisance Wildlife

Muskrats and other burrowing may cause Biofilter problems. The holes they burrow can lead to leakage, unstable surfaces or even embankment failure. In addition, muskrats feed on

wetland vegetation that may be established within the Biofilter. Particular attention should be given to the Biofilter embankments to prevent failure. Muskrat populations can be controlled by trapping as required.

Debris and Litter

The stormwater Biofilter may collect debris and litter. The vegetation within the Biofilter will help to hide the debris and it is recommended that the debris that may affect flow into or out of the Biofilter is removed on a regular basis. The structure at the outlet of the Biofilter may also collect debris. The outlet structure will be inspected annually and after large storms and any debris should be removed to ensure proper performance. Debris trapped inside the outlet structure should also be removed.

Maintenance Tasks

The following tasks are anticipated on an as-needed basis:

Periodic Maintenance:

- Remove accumulated debris and litter from Biofilter inlet and outlet structures including storm sewers.
- Check for erosion on Biofilter side slopes and around inlet/outlet structures. Repair as necessary.
- Check for animal burrow in shoreline, sideslopes, and Biofilter embankments. Repair as necessary.

Seasonal Maintenance: Spring (and/or after large events)

- Remove accumulated debris and litter from Biofilter outlet and trash racks.
- Check and repair Biofilter outlet structure for cracks or other undesirable condition.
- Check and repair Biofilter inlet area for settlement and/or erosion above and around the inlet area or other undesirable condition.
- Remove invasive plants as may be recommended by engineer. Control by hand pulling, herbicide application and/or mowing.
- Plant, or seed, additional plants in bare spots or areas with vegetation that is not sufficiently robust to prevent erosion.
- Inspect for sinkholes and evidence of prolonged standing water. Spot repair with replacement engineered soil as appropriate.

Seasonal Maintenance: Fall

- Remove unwanted woody vegetation from Biofilter side slopes and embankments. Remove by hand pulling, brushing and/or mowing. Undesirable woody vegetation can be mowed.
- Maintain vegetation along Biofilter side slopes as appropriate.

Infrequent Maintenance

Inspect biofilter for frequent and/or multiple sinkholes and for evidence of prolonged (more than 30 hours) standing water. If this continues to occur without significant improvement after a designated monitoring period is complete, replace the entire engineered soil layer with material and methods meeting DNR requirements.

SNOW & ICE CONDITIONS FLOW CHART

	Ice Storm	Above 20°		10° to 20°		0° to 10°		Below 0°		New Concrete Streets	
		<1.5"	>1.5"	<1.5"	>1.5"	<1.5"	>1.5"	<1.5"	>1.5"	<1.5"	>1.5"
Plow Blade Down *see Note 1*	No	↑ No	Yes	↑ No	Yes	↑ No	Yes	↑ No	Yes	↑ No	Yes
		↓ Yes	Yes	↓ Yes	Yes	↓ Yes	Yes	↓ Yes	Yes	↓ Yes	Yes
Sodium Chloride Rock Salt	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes Chip Mix	Yes Chip Mix	** See note below	** See note below
Sand	Yes	No	No	No	No	No	No	Yes	Yes	Below 0°	Below 0°
Chips	Yes	No	No	No	No	No	No	Yes	Yes	Below 0°	Below 0°
Prewet	No	Yes	Yes	Yes	Yes	Yes 80/20 only	Yes 80/20 only	*See note below	*See note below	**See note below	**See note below
Anti-Icing (80 gal/lane mile)	Yes, if prior to storm	Brine or Mix	Brine or Mix	Mix	Mix	No	No	No	No	No	No
	No, if storm has started										

80/20 mix will be 80% salt brine and 20% calcium chloride, January 1st to March 1st only, prewet @ spinner (25 gal/ton)

Calcium is 42% before adding to brine

Sand or chips only used with deputy director approval. Use sparingly as a last resort, until able to cut ice with grader or conditions improve.

- ↑ Conditions getting better
- ↓ Conditions getting worse

*Do not prewet with brine or 80/20 mix when temperatures are below 0 degrees. If necessary, calcium chloride may be used **but never on new concrete streets.**

New concrete, **primary streets will be salted the full length. Brine or 80/20 prewet only used on new concrete, primary streets.

New concrete, **secondary streets will be spot salted at intersections only. **No 80/20 prewet** used on new concrete, secondary streets.

Salt Calibration Options

1. 100 pounds (standard)
2. 200 pounds
3. 300 pounds
4. Blast 600 lbs for 15 seconds
5. Trucks will mount plows (standard)

Pre-Wet Calibration Options

1. 15 gal/ton
2. 20 gal/ton
3. 25 gal/ton (standard)

Salting Instructions

Arterials & Collectors - Salt both directions (up and back)
Residential Streets - Salt one direction (last pass only)

Note 1: Plow mains when >1 inch of accumulation