Frankfort Square Park District

Natural Areas Site Assessment and Management Report

September 2022

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Project Name	Frankfort Square Park District Natural Areas Site Assessment and Management Report
File Reference	Frankfort Square Park District - Site Assessment and Management Report - 2022
Approved By	Derek Pellicci Project Ecologist
Job Reference	238101180
Date	September 2022

Document History

Version	Effective Date	Description of Revision	Prepared by	Reviewed by
1.0	09/06/2022	Generate Report	Joshua Kemp, Field Supervisor	Derek Pellicci
2.0	09/07/2022	Brand, QC formatting	Iris Eschen, Document Production Supervisor	Derek Pellicci

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Project Overview

Introduction

Cardno now Stantec, Inc. was contracted by the Frankfort Square Park District to provide ecological consulting services related to the restoration and management of naturalized areas under its jurisdiction. Assessments were completed to create management guidelines that would help maintain naturalized sites in order to protect and enhance their ecological functions and aesthetic appearance. The assessed sites are of varying size and degree. Most sites consist of open water detention with emergent wetland edges and upland prairie buffers. A vegetation survey was conducted at each site, and management recommendations and practices were identified.

Overview of Natural Areas Management

Natural areas management consists of the actions, tools, and techniques used to maintain a naturalized area in order to meet specific goals. Common goals for managing a natural area are promoting the ecological functions and aesthetic appearance of the site. Objectives related to these goals include the control of invasive and undesirable native species, and the enhancement of desired native species. The primary tools used in natural areas management include: herbicide application, mowing, seed and plant installation, and prescribed burns.

Herbicides may be broadcast or selectively applied and are used to kill invasive or undesirable species. Herbicide applications are often the most effective method used to control perennial plants. Broadcast herbicide applications are made to eliminate all plants in an area. These are typically used if there are no desirable species present and areas are going to be seeded or planted. Selective herbicide applications are used to target specific species or individual plants. This technique is used when desirable plants are present among the undesirable species and off target damage needs to be minimized.

Mowing and cutting are management tools used to control annual and biennial herbaceous species, trees, and shrubs. Depending on target species, the equipment used for mowing and cutting ranges from tractor mounted mowers, weed whips, brush-saws, and chainsaws. When utilizing mowing as a management tool in prairie areas, vegetation should be mowed to a height of 8 to 12 inches with a rotary or flail-type mower. Mowing at this height allows perennial vegetation to re-grow while preventing annuals from flowering and setting seed. Control of woody vegetation is often necessary to promote and enhance herbaceous vegetation in wetland and prairie areas. Tractor mounted mowers and powered hand tools such as chainsaws are the primary tools used. When woody vegetation is cut, the appropriate herbicide should be applied to the stump. Applying herbicide will reduce or eliminate re-sprouting of cut trees and shrubs.

In some cases, seeding and/or planting of native species is used to restore a degraded area after invasive and undesirable species have been removed. Seed and plants can be installed manually or with equipment. Installation of plant material is often necessary if naturally occurring native species are not present on site or if invasive species have been eliminated from large areas. Seeding and or planting can also be used to supplement existing plants on a site to create greater biological diversity or enhance the aesthetic appearance of the area.

Prescribed burns are frequently used as a long-term tool to manage natural areas. Once a prairie site has well-established native vegetation, regular burns are an effective method to control the growth of woody and non-native species and to invigorate native species. Native prairie plants and seeds are adapted to regular fire regimes, while many non-native plants and seed cannot survive burning. Burning also removes thatch, allowing greater regeneration of native plants from rootstock and seed bank.

Naturalized Area Assessment Methods

Several visual assessments of each site were completed during the summer of 2022 in order to create a list of Recommended Management Tasks and determine the best management techniques to use. Sites were located using maps and verbal directions provided by the Frankfort Square Park District. A meander survey and floristic quality analysis were completed per site to identify the species composition of existing plant communities. Keeping in mind that the Frankfort Square Park District would like to perform as much work as possible using its own staff and equipment, the management strategies and site enhancements recommended below focus on reducing and controlling the dominant invasive species.

1 Arbor Park

Northwestern corner of Arbor Park's prairie buffer.

1.1 Site Assessment

Arbor Park was inspected on June 15, 2022, and August 5, 2022. The naturalized areas consist of a stormwater basin with an emergent wetland edge that transitions into a prairie buffer. Vegetation coverage of the slope areas is approximately 100%, and no significant erosion was found. The vegetative community contains a diverse mix of native grasses, sedges, and forbs; however, several populations of invasive species and non-desirable native species are established and spreading within the naturalized areas. The dominant three species encountered were: big bluestem (*Andropogon gerardi*), cup plant (*Silphium perfoliatum*), and sandbar willow (*Salix interior*). The park is surrounded by a walking trail and housing subdivision, so no significant sources of invasive plant seed exist nearby to cause contamination. No poison ivy or other hazards were identified.

Arbor Park has one of the highest quality native plant populations among sites at the Frankfort Square Park District, and it is recommended as a high priority for management. Vegetation maintenance is required to prevent the spread of invasive species and further degradation.

1.2 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method 1:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris should be removed from the site.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
    b. Method 2:
        i. Mow all areas containing targets during the late fall after native plants have produced seed and gone dormant.
        ii. Treat all stump re-sprouts using a backpack application of 5% triclopyr 3A solution during the following spring.
2. Control reed canary grass (*Phalaris arundinacea*) and encroaching turf grasses.
    a. Method:
        i. Treat reed canary grass and encroaching turf grass populations located on the slopes using a backpack application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth.
        ii. Treat reed canary grass growing in or adjacent to water using a backpack application of 2-3% glyphosate solution. Glyphosate will affect all vegetation, so care should be taken during application to avoid damage to nearby natives.
3. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.
4. Control broadleaved invasive and undesirable native plants.
    a. Method:

i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and curly dock (*Rumex crispus*) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings and stump re-sprouts using a backpack application of 5% triclopyr 3A solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.

ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), second year Queen Anne's lace (*Daucus carota*), and second year sweet clover (*Melilotus spp*.) using brush-cutters or other mowing equipment. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.

5. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.

   a. Method 1:

      i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.

   b. Method 2:

      i. This site contains sufficient fuels to carry a fire, and sizeable native populations to benefit from a fire regime. A prescribed burn can be used to clear the prairie buffer and portions of the emergent wetland edge.

1.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Treat monoculture populations of common reed (*Phragmites australis*) using a backpack application of 5% glyphosate solution in early-August. Common reed is the tallest, most aggressive plant found onsite. Treatment of large patches will prevent it taking over the area and improve park aesthetics.
2. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

1.4 Recommended Enhancement Tasks

Due to the stable populations of native plants at Arbor Park, no enhancement tasks (plug planting, seed installation, etc.) are currently recommended.

2 Brookside Bayous Park

View of Brookside Bayou Park's wetland basin from the boardwalk, facing north.

View of Brookside Bayou Park's wooded wetland from the boardwalk, facing east.

2.1 Site Assessment

Brookside Bayous Park was inspected on June 15, 2022, and August 5, 2022. The naturalized areas consist of a wetland basin and wooded wetland. The two bioswales planted during the park's installation are no longer needed for drainage and have been removed. Vegetation coverage of the shoreline areas is approximately 100%, and no significant erosion was found. The vegetative community contains a mixture of native grasses, sedges, and forbs; however, several populations of invasive species and non-desirable native species are established and spreading within the naturalized areas. The dominant three species encountered were: tall goldenrod (*Solidago altissima*), common reed (*Phragmites australis*), and cattail (*Typha* spp.). The ditches and stormwater basins across both streets which border the park contain common reed and teasel (*Dipsacus* spp.), so significant sources of invasive plant seed exist nearby to cause future contamination. Poison ivy (*Toxicodendron radicans*) growing near the boardwalk was identified as a potential hazard to be addressed.

While the naturalized areas of Brookside Bayou are accomplishing the core goals of stormwater management and erosion control, invasive species dominate much of the area. Vegetation management is recommended for areas adjacent to the boardwalk to improve aesthetics for park visitors, control the spread of invasive species, and prevent the further loss of native species. Vegetation enhancement projects are also recommended for the wetland basin.

2.2 Recommended Management Tasks

1. Reduce trees and shrubs that are not desired or were not part of the park's installation plan. This will improve aesthetics and reduce shade, helping native perennials to compete for space.
    a. Method:
        i. Cut targets approximately 2 inches above the ground using chainsaws or brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris can be left where cut. The branches will breakdown quickly in the wetland and provide habitat.
        iii. Treat the cut stumps of targets using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Control reed canary grass (*Phalaris arundinacea*), cattail (*Typha* spp.*)* and common reed (*Phragmites australis*) growing within 20 feet of the boardwalk and in the wooded wetland. These areas are where native plant populations are still existing. Control of reed canary grass, cattail, and common reed will help native populations expand, while improving the aesthetic view park visitors have from the boardwalk.
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat reed canary grass, cattail, and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for all three plants are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-June to early-July

for reed canary grass, mid-July to early-August for cattail, and late-July to mid-August for common reed.

3. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat poison ivy (*Toxicodendron radicans*), riverbank grape (*Vitis riparia*), purple loosestrife (*Lythrum salicaria*), tree/shrub saplings, and stump re-sprouts using a backpack application of 5% triclopyr 3A solution. Treat Canada thistle (*Cirsium arvense*), crown vetch (*Securigera varia*), and curly dock (*Rumex crispus*) using a backpack application of 0.5% Transline® solution., or 3% triclopyr 3A if found in standing water. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow giant ragweed (*Ambrosia trifida*), second year Queen Anne's lace (*Daucus carota*), and prickly lettuce (*Lactuca serriola*) using brush-cutters. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.

2.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Treat monoculture populations of common reed (*Phragmites australis*) using a backpack application of 5% glyphosate solution in early-August. Common reed is the tallest, most aggressive plant found onsite. Treatment of large patches will prevent it taking over the area and improve park aesthetics.

2.4 Recommended Enhancement Tasks

1. Control all cattail (*Typha* spp.*)*, common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), and purple loosestrife (*Lythrum salicaria*) growing in and around the wetland basin. This area is dominated by these 4 invasive species, and contains few or no native plants.
    a. Method:
        i. Treat populations of cattail, common reed, reed canary grass, and purple loosestrife using a pistol-spray application of 5% glyphosate solution. Late-July is the recommended time frame for the first treatment, but multiple treatments may be required throughout the growing season to achieve a thorough result. Care should be taken to avoid damaging the pickerelweed (*Pontederia cordata*) and arrowhead (*Sagittaria latifolia*) growing in the open water.
2. Install native plants in the areas treated during Task 1 and all other naturalized areas.
    a. Method:
        i. Mow all vegetation to the ground using brush-cutters during early or mid-fall. Heavy equipment can be used if ground conditions allow.
        ii. Use prescribed fire to clear the mowed vegetation and create as much bare soil as possible during mid to late fall.
        iii. Hand broadcast a shade tolerate wetland seed mix in the wooded wetland and a wetland seed mix around the wetland basin. Ideal timing is during the late fall, before the first snowfall of the season.
3. Maintain the area by following the Recommended Management Tasks above.

3 Candle Creek Park

Northwestern corner of Candle Creek Park's basin.

3.1 Site Assessment

Candle Creek Park was inspected on June 15, 2022, and July 20, 2022. The naturalized areas consist of a stormwater basin with a narrow buffer. The buffer has not been planted with natives. Vegetation coverage of the shoreline areas is approximately 100%, and no significant erosion was found. The vegetative community contains a mixture of trees, shrubs, and invasive vegetation. The dominant three species encountered were: sandbar willow (*Salix interior*), teasel (*Dipsacus* spp.), and sweet clover (*Melilotus spp*.). The ditches and stormwater basins across both streets which border the park contain sandbar willow and teasel, so significant sources of invasive plant seed exist nearby to cause future contamination. No poison ivy or other hazards were identified.

The naturalized areas of Candle Creek Park are accomplishing the core goals of stormwater management and erosion control. However, native plants typically have larger root systems than invasive forbs and shallowly rooted trees like sandbar willow. They would provide superior water filtration and erosion control than the existing vegetation. The park is a low priority for management due to its lack of native plantings. Enhancement projects are recommended if the Park District wishes to install native plants.

3.2 Recommended Management Tasks

1. Control broadleaved invasive plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), teasel (*Dipsacus* spp.), and crown vetch (*Securigera varia*) using a backpack application of 0.5% Transline® solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow second year sweet clover (*Melilotus spp*.) using brush-cutters. Perform 1-2 mowing events throughout the growing season, timed so target species do not produce seed.

3.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all non-woody vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

3.4 Recommended Enhancement Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired.
    a. Method:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris should be removed from the site.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Install native plants in the slope and buffer areas around the basin after Task 1 is complete.
    a. Method 1:
        i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution during early-fall before most plants begin going dormant.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended. A walk-behind tiller or hand rakes may be required for areas too steep for machinery.
        iv. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall, before the first snowfall of the season.
        v. Install erosion control blanket, covering all seeded areas.
    b. Method 2:

   i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.

3. Vegetation management.
   a. Method:
      i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.
      ii. Treat the entire buffer using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.
4. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.
   a. Method:
      i. Mow existing vegetation where plugs are desired.
      ii. Plant native plugs in the early spring.
      iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.
      iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

4 Champions Park

4.1 Site Assessment

Champions Park was inspected on July 20, 2022. The naturalized areas consist of a vegetated flood plain and a mowed turf field that previously contained a baseball diamond. The area has not been planted with native plants. Vegetation coverage of the flood plain is approximately 100%, and no significant erosion was found. The vegetative community contains a mixture of trees, shrubs, and invasive vegetation. The dominant three species encountered were: cattail (*Typha* spp.*)*, reed canary grass (*Phalaris arundinacea*), and purple loosestrife (*Lythrum salicaria*) The tree line adjacent to the park contains sandbar willow (*Salix interior*) and teasel (*Dipsacus* spp.), so significant sources of invasive plant seed exist nearby to cause future contamination. No poison ivy or other hazards were identified within the park boundaries, but the nearby tree line does contain poison ivy.

The naturalized areas of Champions Park are serving as basic stormwater management, and have not been managed in the past. The park is a low priority for management due to its lack of native plantings. However, enhancement projects are recommended if the Park District wishes to install native plants.

4.2 Recommended Management / Minimal Management Tasks

1. Continue mowing existing turf grass areas.

4.3 Recommended Enhancement Tasks

1. Install native plants in the flood plain and old baseball field.
    a. Method 1:
        i. Treat all existing vegetation using a pistol spray and boom spray application of 2% glyphosate solution during early-fall before most plants begin going dormant.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended.
        iv. Hand broadcast an emergent wetland seed mix containing only grasses, sedges, and rushes. Ideal timing is during the late fall, before the first snowfall of the season.
        v. Install erosion control blanket, covering all seeded areas.
    b. Method 2:
        i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.
2. Vegetation management.
    a. Method:
        i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.
        ii. Treat the entire area using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.

3. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.
    a. Method:
        i. Mow existing vegetation where plugs are desired.
        ii. Plant native plugs in the early spring.
        iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.
        iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

5 Community Park

Northwestern corner of Community Park's prairie buffer.

5.1 Site Assessment

Community Park was inspected on June 10, 2022 and July 20, 2022. The naturalized areas consist of a stormwater management basin with an emergent wetland edge that transitions into a prairie buffer. Vegetation coverage of the shoreline areas is approximately 100%, and no significant erosion was found. The vegetative community contains a mixture of native grasses, sedges, and forbs. However, approximately 40-50% of the existing vegetation is invasive or undesirable. The dominant three species encountered were: Canada thistle (*Cirsium arvense*), reed canary grass (*Phalaris arundinacea*), and Canada goldenrod (*Solidago canadensis*). The basin and buffer are surrounded by a walking trail and housing subdivisions, so no significant sources of invasive plant seed exist near the park to cause contamination. No poison ivy or other hazards were identified.

The naturalized areas of Community Park are accomplishing the core goals of stormwater management and erosion control. However, if the buffer continues to receive no maintenance, it will soon be completely dominated by invasive species and lose all aesthetic benefits. Enhancement projects are recommended if the Park District wishes to install additional native plants.

5.2 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris should be removed from the site.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Control reed canary grass (*Phalaris arundinacea*) and encroaching turf grasses.
    a. Method:
        i. Treat reed canary grass and encroaching turf grass populations located on the slopes using a backpack application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth.
        ii. Treat reed canary grass growing in or adjacent to water using a backpack application of 2-3% glyphosate solution. Glyphosate will affect all vegetation, so care should be taken during application to avoid damage to nearby natives.
3. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.
4. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), curly dock (*Rumex crispus*), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings, stump re-sprouts, riverbank grape (*Vitis riparia*), and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.

ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus spp*.), and prickly lettuce (*Lactuca serriola*), using brush-cutters or other mowing equipment. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.

5. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. This site contains sufficient fuels to carry a fire in some areas. A prescribed burn can be used to clear portions of the prairie buffer and emergent wetland edge.
6. Install supplemental native seed in areas where invasive species have been eliminated, but native regeneration does not seem likely. This will help prevent invasive recolonization.
    a. Method:
        i. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall before the first snowfall of the season, after a prescribed burn (Task 5) has been performed.

5.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

5.4 Recommended Enhancement Tasks

1. Reinstall native plants in the entire emergent wetland and prairie buffer.
    a. Method 1:
        i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution during early-fall before most plants begin going dormant.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended. A walk-behind tiller or hand rakes may be required for areas too steep for machinery.
        iv. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall, before the first snowfall of the season.
        v. Install erosion control blanket, covering all seeded areas.
    b. Method 2:

i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.

2. Vegetation management.
   a. Method:
      i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.
      ii. Treat the entire buffer using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.
3. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.
   a. Method:
      i. Mow existing vegetation where plugs are desired.
      ii. Plant native plugs in the early spring.
      iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.
      iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

6 Crystal Lake Park

Southeastern corner of Crystal Lake Park's prairie buffer.

Crystal Lake Park was inspected on June 15, 2022 and August 5, 2022. The naturalized areas consist of an emergent wetland edge that transitions into a prairie buffer. Vegetation coverage of the shoreline areas is approximately 90-95%, and erosion of soil around the culverts in the southeast corner is occurring. The vegetative community contains a mixture of native grasses, sedges, and forbs. However, approximately 50-60% of the existing vegetation is invasive or undesirable. The bare spots on site were found in teasel dominated areas, and are likely due to historic herbicide use. The dominant three species encountered were: sandbar willow (*Salix interior*), teasel (*Dipsacus* spp.), and Canada thistle (*Cirsium arvense*). The basin and buffer are surrounded by buildings on three sides, but there is sandbar willow and teasel growing across the road to the north which provide significant sources of invasive plant seed to cause contamination. No poison ivy or other hazards were identified.

The naturalized areas of Crystal Lake Park are accomplishing a core goal of stormwater management. However, they are not meeting erosion control goals in some areas, and, if the buffer continues to receive no maintenance, it will soon be completely dominated by invasive species and lose all aesthetic benefits. Enhancement projects are recommended if the Park District wishes to install additional native plants.

6.1 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method:
        i. Mow all areas containing targets during the late fall after native plants have produced seed and gone dormant. A chainsaw may be required to cut several larger diameter trees.
        ii. Treat all stump re-sprouts using a backpack application of 5% triclopyr 3A solution during the following spring.
2. Control cattail (*Typha* spp.*)*, common reed (*Phragmites australis*), and reed canary grass (*Phalaris arundinacea*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat cattail, common reed, and reed canary grass that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for all three plants are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-June to early-July for reed canary grass, mid-July to early-August for cattail, and late-July to mid-August for common reed.
3. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), crown vetch (*Securigera varia*), common mugwort (*Artemisia vulgaris*), curly dock (*Rumex crispus),* and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings, stump re-sprouts, riverbank grape (*Vitis riparis*), and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
4. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. This site contains insufficient fuels to fully carry a fire, but a prescribed burn can be used to clear portions of the prairie buffer and emergent wetland edge.

5. Install supplemental native seed in areas where invasive species have been eliminated, but native regeneration does not seem likely. This will help prevent invasive recolonization.
    a. Method:
        i. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall before the first snowfall of the season, after a prescribed burn (Task 5) has been performed.

6.2 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

6.3 Recommended Enhancement Tasks

1. Reinstall native plants in the entire emergent wetland and prairie buffer.
    a. Method 1:
        i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution during early-fall before most plants begin going dormant.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended. A walk-behind tiller or hand rakes may be required for areas too steep for machinery.
        iv. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall, before the first snowfall of the season.
        v. Install erosion control blanket, covering all seeded areas.
    b. Method 2:
        i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.
2. Vegetation management.
    a. Method:
        i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.
        ii. Treat the entire buffer using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.

3. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.
    a. Method:
        i. Mow existing vegetation where plugs are desired.
        ii. Plant native plugs in the early spring.
        iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.
        iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

7 Indian Boundary South Park

Southern ditch and prairie buffer at Indian Boundary South Park.

7.1 Site Assessment

Indian Boundary South Park was inspected on June 15, 2022, and July 20, 2022. The naturalized areas consist of a ditch line with a prairie buffer, a stormwater basin with a wet/mesic prairie buffer, and an emergent wetland surrounded by a wet/mesic prairie. Vegetation coverage of the slope areas is approximately 100%, and no significant erosion was found. The vegetative community contains some native populations; however, three different invasive species dominate the naturalized areas. The dominant three species encountered were: reed canary grass (*Phalaris arundinacea*), cattail (*Typha* spp.), and purple loosestrife (*Lythrum salicaria*). The areas are contained within a housing subdivision, but nearby Frankfort Square Park District properties such as Lincoln-Way North Park and Island Prairie Park serve as possible sources of invasive plant seed contamination. No poison ivy or other hazards were identified.

The naturalized areas of Indian Boundary South Park are accomplishing the core goals of stormwater management and erosion control. However, if the areas receive no maintenance, they will eventually be completely dominated by invasive species, crowded with tall tree and shrub saplings, and lose many aesthetic benefits. As an additional concern, a majority of the vegetative community is made up of reed canary grass and cattail. Removal of these species is typical, but would leave the ecosystem barren and

encourage erosion. It is not recommended to treat them if no native replanting is planned. See Recommended Enhancement Tasks below.

7.2 Recommended Management Tasks

1. Reduce trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method 1:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris can be left where cut. The branches will breakdown quickly and provide habitat.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets in dry areas using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Control all common reed (*Phragmites australis*). Control any reed canary grass (*Phalaris arundinacea*) or cattail (*Typha* spp.*)* growing among the existing pockets of native plants.
    a. Method:
        i. Treat monoculture populations of common reed using a backpack application of 5% glyphosate solution.
        ii. Treat reed canary grass, cattail, and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for all three plants are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-June to early-July for reed canary grass, mid-July to early-August for cattail, and late-July to mid-August for common reed.
3. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), curly dock (*Rumex crispus*), birds foot trefoil (*Lotus corniculatus*), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings, stump re-sprouts, multiflora rose (*Rosa multiflora*), and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), second year sweet clover (*Melilotus spp*.), and prickly lettuce (*Lactuca serriola*) using brush-cutters or other mowing equipment. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.

4. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. This site contains sufficient fuels to carry a fire. It does not contain large populations of natives which would benefit from fire, but treatment of invasive species is made easier in the spring if a prescribed burn has been performed to clear vegetation.

7.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Treat monoculture populations of common reed (*Phragmites australis*) using a backpack application of 5% glyphosate solution in early-August. Treatment of large patches will prevent the spread and establishment of a fourth dominate invasive species.
2. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

7.4 Recommended Enhancement Tasks

1. Reinstall native plants in the sloped buffers around the ditch and stormwater basin. It is not necessary to replant all areas at once. Restoration can take place section at a time. However, any unmanaged areas will continue to support invasive species which will invade active restoration zones.
    a. Method 1:
        i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution. Treat populations of cattail, common reed, and purple loosestrife that are too dense or too tall for a boom sprayer using a pistol-spray application of 5% glyphosate solution. Late-July is the recommended time frame for the first treatment, but multiple treatments may be required throughout the growing season to achieve a thorough result.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Use prescribed fire to clear the mowed vegetation and create as much bare soil as possible during mid to late fall.
        iv. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall, before the first snowfall of the season.
        v. Install erosion control blanket, covering all seeded areas.
    b. Method 2:
        i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.

2. Reinstall native plants in the emergent wetland and wet/mesic prairies. It is not necessary to replant all areas at once. Restoration can take place section at a time. However, any unmanaged areas will continue to support invasive species which will invade active restoration zones.
    a. Method:
        i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution. Treat populations of cattail, common reed, and purple loosestrife that are too dense or too tall for a boom sprayer using a pistol-spray application of 5% glyphosate solution. Late-July is the recommended time frame for the first treatment, but multiple treatments may be required throughout the growing season to achieve a thorough result.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Use prescribed fire to clear the mowed vegetation and create as much bare soil as possible during mid to late fall.
        iv. Use a tractor and drill seeder to install wetland and mesic prairie seed mixes containing only grasses, sedges, and rushes. Ideal timing is during the late fall, before the first snowfall of the season. Hand broadcast seed into any areas ground conditions do not allow the tractor/drill seeder to operate.

Emergent wetland with wet/mesic prairie buffers at Indian Boundary South Park.

Western side of Indian Boundary South Park's basin and walking trail.

3. Vegetation management.
    a. Method:
        i. Treat the entire seeded area using a boom spray application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth, but after invasive grasses such as reed canary grass (*Phalaris arundinacea*) have begun growing. Only apply clethodim when areas do not contain standing water.
        ii. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.
        iii. Treat the entire area using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.
        iv. Control reed canary grass, cattail (*Typha* spp.), and common reed (*Phragmites australis*) that are intermixed with native plants using a wick application of 10% glyphosate solution. Treat

these 3 species throughout the growing season, preventing them from shading out native plants and producing seed.

4. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.
    a. Method:
        i. Mow existing vegetation where plugs are desired.
        ii. Plant native plugs in the early spring.
        iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.
        iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

8 Island Prairie Park

View from the boardwalk at Island Prairie Park, facing southwest.

Eastern side of the wetland basin at Island Prairie Park.

8.1 Site Assessment

Island Prairie Park was inspected on June 10, 2022, June 16, 2022, July 19, 2022, and August 5, 2022. The naturalized areas consist of a stormwater management ditch and wetland surrounded by a wet/mesic prairie. These areas are surrounded by a walking path, and contain a boardwalk leading to a canoe launch. Vegetation coverage of the areas is approximately 100%, but the northwestern bank of the wetland has eroding, bare soil where water laps the shore. The vegetative community contains some native populations; however, three different invasive species dominate the naturalized areas. The dominant three species encountered were: reed canary grass (*Phalaris arundinacea*), cattail (*Typha* spp.), and purple loosestrife (*Lythrum salicaria*). The areas are contained within a housing subdivision, but nearby Frankfort Square Park District property, Island Prairie Park, serves as a possible sources of invasive plant seed contamination. Overgrown vegetation in pathways, damaged boardwalk ramps, uneven portions of boardwalk, and poison hemlock (*Conium maculatum*) were identified as hazards to be addressed.

The naturalized areas of Island Prairie Park are accomplishing the core goal of stormwater management. However, if the areas receive no maintenance, they will eventually be completely dominated by invasive species, crowded with tall tree and shrub saplings, and lose many aesthetic benefits. As an additional concern, a majority of the vegetative community is made up of reed canary grass, cattail, and purple loosestrife. Removal of these species is typical, but would leave the ecosystem barren and encourage erosion. It is not recommended to treat them if no native replanting is planned. See Recommended Enhancement Tasks below.

8.2 Recommended Management Tasks

1. Reduce trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris can be left where cut. The branches will breakdown quickly and provide habitat.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located in dry areas using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Control all common reed (*Phragmites australis*). Control any reed canary grass (*Phalaris arundinacea*) or cattail (*Typha* spp.*)* growing 20 feet from the boardwalk, in the canoe launch, and among the existing pockets of native plants.
    a. Method:
        i. Treat monoculture populations of common reed using a backpack application of 5% glyphosate solution.
        ii. Treat reed canary grass, cattail, and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.

iii. Treatments for all three plants are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-June to early-July for reed canary grass, mid-July to early-August for cattail, and late-July to mid-August for common reed.

3. Control broadleaved invasive and undesirable native plants. Control purple loosestrife (*Lythrum salicaria*) growing 20 feet from the boardwalk, in the canoe launch, and among the existing pockets of native plants.

   a. Method:

      i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), crown vetch (*Securigera varia*), curly dock (*Rumex crispus*), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings, stump re-sprouts, poison hemlock (*Conium maculatum*), and purple loosestrife using a backpack application of 5% triclopyr 3A solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.

      ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus spp*.), and prickly lettuce (*Lactuca serriola*) using brush-cutters or other mowing equipment. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.

4. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.

   a. Method 1:

      i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.

   b. Method 2:

      i. This site contains sufficient fuels to carry a fire. It does not contain large populations of natives which would benefit from fire, but treatment of invasive species is made easier in the spring if a prescribed burn has been performed to clear vegetation.

8.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Treat monoculture populations of common reed (*Phragmites australis*) using a backpack application of 5% glyphosate solution in early-August. Treatment of large patches will prevent the spread and establishment of a fourth dominate invasive species.

2. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

8.4 Recommended Enhancement Tasks

1. Reinstall native plants in the sloped buffer along the ditch and along the wetland shoreline. It is not necessary to replant all areas at once. Restoration can take place section at a time. However, any unmanaged areas will continue to support invasive species which will invade active restoration zones.

a. Method 1:

   i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution. Treat populations of cattail, common reed, and purple loosestrife that are too dense or too tall for a boom sprayer using a pistol-spray application of 5% glyphosate solution. Late-July is the recommended time frame for the first treatment, but multiple treatments may be required throughout the growing season to achieve a thorough result.

   ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.

   iii. Use prescribed fire to clear the mowed vegetation and create as much bare soil as possible during mid to late fall.

   iv. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall, before the first snowfall of the season.

   v. Install erosion control blanket, covering all seeded areas.

b. Method 2:

   i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.

2. Reinstall native plants in the wet/mesic prairie. It is not necessary to replant all areas at once. Restoration can take place section at a time. However, any unmanaged areas will continue to support invasive species which will invade active restoration zones.

   a. Method:

      i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution. Treat populations of cattail, common reed, and purple loosestrife that are too dense or too tall for a boom sprayer using a pistol-spray application of 5% glyphosate solution. Late-July is the recommended time frame for the first treatment, but multiple treatments may be required throughout the growing season to achieve a thorough result.

      ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.

      iii. Use prescribed fire to clear the mowed vegetation and create as much bare soil as possible during mid to late fall.

      iv. Use a tractor and drill seeder to install a mesic prairie seed mix containing only grasses, sedges, and rushes. Ideal timing is during the late fall, before the first snowfall of the season. Hand broadcast seed into any areas ground conditions do not allow the tractor/drill seeder to operate.

3. Vegetation management.

   a. Method:

      i. Treat the entire seeded area using a boom spray application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth, but after invasive grasses such as reed canary have begun growing. Only apply clethodim when areas do not contain standing water.

      ii. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.

iii. Treat the entire area using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.

iv. Control reed canary grass (*Phalaris arundinacea*), cattail (*Typha* spp.*)*, and common reed (*Phragmites australis*) that are intermixed with native plants using a wick application of 10% glyphosate solution. Treat these 3 species throughout the growing season, preventing them from shading out native plants and producing seed.

4. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.

   a. Method:

      i. Mow existing vegetation where plugs are desired.

      ii. Plant native plugs in the early spring.

      iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.

      iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

9 Island Prairie Park—Greenhouse

View of Island Prairie Park's greenhouse from the parking lot.

Eastern side of Greenhouse bioswale.

9.1 Site Assessment

The Greenhouse at Island Prairie Park was inspected on June 10, 2022, June 16, 2022, July 19, 2022, and August 5, 2022. The naturalized areas consist of a bioswale on the southern and eastern sides of the Nature Center. Vegetation coverage of the areas is approximately 100%, and no significant erosion was found. The vegetative community contains many of the diverse native species originally installed; however, several populations of invasive species and non-desirable native species are established and spreading within the bioswale. The dominant three species encountered were: Canada thistle (*Cirsium arvense*), rosinweed (*Silphium integrifolium*), and common mountain mint (*Pycnanthemum virginianum*). Island Prairie Park serves as a source of invasive plant seed contamination. No poison ivy or other hazards were identified

The bioswale at the Greenhouse is accomplishing the core goal of stormwater management. However, continued spread of invasive species will further reduce the aesthetic benefits of the natural area. It requires management using a combination of standard gardening techniques and natural areas restoration best practices, and is recommended as a high priority for management. Only plants originally found in the installation plan, or natives of equal quality and function, should be allowed to grow.

9.2 Recommended Management Tasks

Follow the management recommendations for the Island Prairie Park Interpretive Garden, and perform the maintenance on the same time frame, if possible.

9.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

9.4 Recommended Enhancement Tasks

1. Install supplemental native plants in areas where invasive species have been eliminated, but native regeneration does not seem likely. This will help prevent invasive recolonization.
    a. Method:
        i. Mow existing vegetation where plugs are desired. Remove mowed material.
        ii. Plant native plugs in the early spring.
        iii. Manage the newly planted areas using the Recommended Management Tasks above.

10 Island Prairie Park—Interpretive Garden

View of the Island Prairie Park Interpretive Garden from the parking lot.

A southwestern section of the Interpretive Garden containing equal amounts of native and invasive vegetation.

10.1 Site Assessment

The Interpretive Garden at Island Prairie Park was inspected on June 10, 2022, June 16, 2022, July 19, 2022, and August 5, 2022. The naturalized areas consist of several native planting beds surrounded by a seeded prairie buffer. The site is bordered by the Frankfort Square Park District headquarters, Island Prairie Park's playground, and Island Prairie Park's boardwalk. Vegetation coverage of the areas is approximately 100%, and no significant erosion was found. The vegetative community contains many of the diverse native species originally installed; however, several populations of invasive species and non-desirable native species are established and spreading within the garden. The dominant three species encountered were: Canada thistle (*Cirsium arvense*), prickly lettuce (*Lactuca serriola*), and mare's tail (*Erigeron canadensis*). Island Prairie Park serves as a source of invasive plant seed contamination. Poison ivy (*Toxicodendron radicans*), overgrown vegetation in pathways, damaged boardwalk ramps, and uneven portions of boardwalk were identified as hazards to be addressed.

The Interpretive Garden is not accomplishing the core goals of park user education and recreation. It requires management using a combination of standard gardening techniques and natural areas restoration best practices, and is recommended as a high priority for management. Only plants originally found in the installation plan, or natives of equal quality and function, should be allowed to grow in the garden.

10.2 Recommended Management Tasks

1. Remove trees and shrubs that are not desired or were not part of the garden's installation plan.
    a. Method:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris should be removed from the site.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Control reed canary grass (*Phalaris arundinacea*), invasive cool season grasses, and encroaching turf grasses.
    a. Method:
        i. Treat reed canary grass, invasive cool season grass, and encroaching turf grass populations located in dry areas using a backpack application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth.
        ii. Treat reed canary grass growing in or adjacent to water using a backpack application of 2-3% glyphosate solution. Glyphosate will affect all vegetation, so care should be taken during application to avoid damage to nearby natives.

3. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.
4. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), curly dock (Rumex crispus), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. Treat poison ivy (*Toxicodendron radicans*), multiflora rose (*Rosa multiflora*), riverbank grape (*Vitis riparia*), and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Hand weed common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus spp*.), prickly lettuce (*Lactuca serriola*), mare's tail (*Erigeron canadensis*), Canada goldenrod (*Solidago canadensis), and tall goldenrod (Solidago altissima).* Selective mowing using brush-cutters can be utilized for large populations. Avoid impact on native plant communities. Perform 3-4 weeding/mowing events throughout the growing season, timed so target species do not produce seed.
5. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. This site contains insufficient fuels to fully carry a fire, but a prescribed burn can be used to clear portions of the prairie areas.

10.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

10.4 Recommended Enhancement Tasks

1. Install supplemental native plants in areas where invasive species have been eliminated, but native regeneration does not seem likely. This will help prevent invasive recolonization.
    a. Method:
        i. Mow existing vegetation where plugs are desired. Remove mowed material.
        ii. Plant native plugs in the early spring.
        iii. Manage the newly planted areas using the Recommended Management Tasks above.

11 Island Prairie Park—Island

View of the southwestern half of the island, facing northwest.

View of the northeastern half of the island, facing northwest.

11.1 Site Assessment

The Island at Island Prairie Park was inspected on June 10, 2022. It is located in the middle of the wetland pond, and can only be accessed by boat. Vegetation coverage of the area is approximately 70%, and all portions of the shoreline are bare and eroding. The vegetative community contains a mixture of native and invasive species, including several small trees growing on the water's edge. The dominant three species encountered were: reed canary grass (*Phalaris arundinacea*), common boneset (*Eupatorium perfoliatum*), and sneezeweed (*Helenium autumnale*). No hazards were identified.

Since Island Prairie Park was named after the island at its center, the Frankfort Square Park District specifically asked for a plan that addressed the significant erosion issues. The island has lost much of its total area over the past two decades. If no erosion control steps are taken, the island will eventually erode away. To determine if resources should be used, Cardno now Stantec recommends weighing the positive and negative aspects of the island against each other.

The island provides aesthetic and sentimental benefits to the park's community. It also provides a unique recreational opportunity for boaters and fisherman, and additional shore habitat for animals.

Unfortunately, the island is time consuming for management crews to access, and acts as an invasive seed source for the rest of Island Prairie Park. In addition, if the island were to completely disappear, the stormwater management functions of the ecosystem would not be negatively impacted.

11.2 Recommended Management / Minimal Management Tasks

If performing vegetation management on the island, follow the management recommendations for the primary Island Prairie Park location, and perform the maintenance on the same time frame, if possible.

11.3 Recommended Enhancement Tasks

1. Prevent erosion of the island shoreline.
    a. Method 1:
        i. Use a walk-behind tiller, other machinery, or hand tools to cut the edge of the bank to a taper. This will cause water to wash up and off the bank as opposed to hitting/lapping against the flat eroded edge.
        ii. Install rock rip-rap along the entire shoreline.
            > This method will provide the best erosion control of the three methods listed.
    b. Method 2:
        i. Install biodegradable erosion control coir logs along the entire shoreline at normal water level. Use 3-foot biodegradable wooden stakes for the installation.
        ii. Use a walk-behind tiller, other machinery, or hand tools to cut the edge of the bank located behind the coir logs to a taper. The lower end of the taper should meet the top of the line of coir logs (normal water level). This will cause water to wash up and off the bank as opposed to hitting/lapping against the flat eroded edge.
        iii. Hand broadcast a native sedge and grass seed mix onto the 4 feet behind the coir log line.
        iv. Install a 4-foot strip of erosion control blanket on top of the seeded area. Tuck the waterside edge of all erosion control blankets underneath the coir log line. Blankets made from coconut or jute fiber are recommended over straw. Use 12-inch biodegradable wooden stakes for the installation.
        v. Install native plant plugs into the erosion control blanket on a 12-inch spacing.

- This method will provide less erosion control than rip-rap, but will provide a much greater ecological benefit.

c. Method 3:

i. Install native tree and shrub species across the entire island by planting live stakes on a 2-foot spacing.

- While this method is the easiest and most cost-effective option, it has several drawbacks. A dense growth of trees will eliminate the islands usefulness to fisherman and some animals. The trees planted, although native species, will spread to other parts of the ecosystem and create additional management work in the future.

12 Lake of the Glens Park

View of the southeastern basin at Lake of the Glens Park, facing north.

View of the northeastern basin at Lake of the Glens Park, facing north.

View of the western basin at Lake of the Glens Park, facing northwest.

12.1 Site Assessment

Lake of the Glens Park was inspected on June 15, 2022 and July 20, 2022. The naturalized areas consist of three stormwater basins, all of which have an emergent wetland edge that transitions into a prairie buffer. The two eastern basins are of similar quality. Vegetation coverage of the slope areas is approximately 100%, and no significant erosion was found. The vegetative community contains a mix of native grasses, sedges, and forbs; however, large populations of sandbar willow (salix interior) and other invasive species are established and spreading within the naturalized areas. The dominant three species encountered were: Canada thistle (*Cirsium arvense*), sandbar willow, and Canada goldenrod (*Solidago canadensis*). The western basin has some native plants, but is dominated by sandbar willow and other tree/shrub species. The dominant three species encountered were: sweetclover (*Melilotus* spp.), sandbar willow, and Hungarian brome (*Bromus inermus*). Vegetation coverage of the slope areas is 100%, but the soil has eroded up to the willow roots on the western and northern sides of the basin. All three basins are contained within a housing subdivision, so only nearby Frankfort Square Park District properties such as the adjacent creek corridor and Union Creek basins serve as possible sources of invasive plant seed contamination. Muskrat holes on the eastern side of both eastern basins were identified as a possible hazard to be addressed.

The naturalized areas of Lake of the Glens Park are accomplishing the core goals of stormwater management and erosion control. While native plant populations exist, invasive species will continue to spread and crowd out the areas. Vegetation maintenance is required to prevent further degradation and the loss of aesthetic benefits. Enhancement projects are recommended if the Park District wishes to install additional native plants.

12.2 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs (two eastern basins only).
    a. Method:

i. Mow all areas containing targets during the late fall after native plants have produced seed and gone dormant.

ii. Treat all stump re-sprouts using a backpack application of 5% triclopyr 3A solution during the following spring.

2. Control reed canary grass (*Phalaris arundinacea*) and encroaching turf grasses.

   a. Method:

      i. Treat reed canary grass and encroaching turf grass populations located on the slopes using a backpack application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth.

      ii. Treat reed canary grass growing in or adjacent to water using a backpack application of 2-3% glyphosate solution. Glyphosate will affect all vegetation, so care should be taken during application to avoid damage to nearby natives.

3. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).

   a. Method:

      i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.

      ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.

      iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.

4. Control broadleaved invasive and undesirable native plants.

   a. Method:

      i. Treat Canada thistle (*Cirsium arvense*), curly dock (*Rumex crispus*), crown vetch (*Securigera varia*), and teasel (*Dipsacus fullonum*) using a backpack application of 0.5% Transline®. Treat tree/shrub saplings, stump re-sprouts, poison ivy (*Toxicodendron radicans*), and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.

      ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus spp*.), and prickly lettuce (*Lactuca serriola*) using brush-cutters or other mowing equipment. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.

5. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, and helps to keep the height of unwanted trees/shrubs in check.

   a. Method 1:

      i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.

b. Method 2:

i. This site contains sufficient fuels to carry a fire in most areas. A prescribed burn can be used to clear the prairie buffers and portions of the emergent wetland edges.

6. Install supplemental native seed in areas where invasive species have been eliminated, but native regeneration does not seem likely. This will help prevent invasive recolonization.

a. Method:

i. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall before the first snowfall of the season, after a prescribed burn (Task 5) has been performed.

12.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

12.4 Recommended Enhancement Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired from around the western basin.

a. Method:

- Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
- All brush debris should be removed from the site.
- Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
- Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
- Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.

2. After trees and shrubs are removed from the western basin, the areas can either be included in the maintenance regime for the eastern basins (refer to Recommended Management Tasks above), or new native plants can be installed.

a. Method 1:

i. Treat all existing vegetation using a boom spray application of 2% glyphosate during early-fall before most plants begin going dormant.

ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.

iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended. A walk-behind tiller or hand rakes may be required for areas too steep for machinery.

iv. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall, before the first snowfall of the season.

v. Install erosion control blanket, covering all seeded areas.

b. Method 2:

i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.

3. Vegetation management.

a. Method:

i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.

ii. Treat the entire buffer using a boom spray or backpack application of 2-3% triclopyr 3A as needed to control invasive broadleaved plants.

4. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.

a. Method:

i. Mow existing vegetation where plugs are desired.

ii. Plant native plugs in the early spring.

iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.

iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the basin.

13 LaPorte Meadows Park

View of the prairie buffer around the northern basin at LaPorte Meadows Park, facing north.

13.1 Site Assessment

LaPorte Meadows Park was inspected on June 15, 2022, and July 20, 2022. The naturalized areas consist of two stormwater basins and a small rain garden adjacent to the playground. Both basins have an emergent wetland edge that transitions into a prairie buffer. Vegetation coverage of the slope areas is approximately 100%, and no significant erosion was found. The vegetative community contains a mix of native grasses, sedges, and forbs; however, several populations of invasive species and non-desirable native species are established and spreading within the naturalized areas. The dominant three species encountered were: big bluestem (*Andropogon gerardi*), Illinois bundleflower (*Desmanthus illinoensis*), and cattail (*Typha* spp.). Other naturalized stormwater management areas to the north and southwest serve as possible sources of invasive plant seed contamination. Poison ivy (*Toxicodendron radicans*) was identified as a potential hazard to be addressed.

View of the prairie buffer adjacent to the playground at LaPorte Meadows Park, facing north.

The naturalized areas at LaPorte Meadows Park have well-established native plant populations and are accomplishing the core goals of stormwater management and erosion control. However, species such as sandbar willow (*Salix interior*) and cattail are beginning to take over large sections of the emergent wetland edge. Vegetation maintenance is required to prevent the spread of invasive species and further degradation.

13.2 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method 1:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris should be removed from the site.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Control reed canary grass (*Phalaris arundinacea*) and encroaching turf grasses.
    a. Method:
        i. Treat reed canary grass and encroaching turf grass populations located on the slopes using a backpack application of 0.5% clethodim solution. Clethodim will only affect grass species, so

it should be applied during early spring before native grasses show evidence of active growth.

ii. Treat reed canary grass growing in or adjacent to water using a backpack application of 2-3% glyphosate solution. Glyphosate will affect all vegetation, so care should be taken during application to avoid damage to nearby natives.

3. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
   a. Method:
      i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
      ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
      iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.
4. Control broadleaved invasive and undesirable native plants.
   a. Method:
      i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), curly dock (*Rumex crispus*), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline®., or 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings, stump re-sprouts, poison ivy (*Toxicodendron radicans*), riverbank grape (*Vitis riparia*), and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
      ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus* spp.*),* and prickly lettuce (*Lactuca serriola*) using brush-cutters. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.
5. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
   a. Method 1:
      i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
   b. Method 2:
      i. This site contains sufficient fuels to carry a fire, and sizeable native populations to benefit from a fire regime. A prescribed burn can be used to clear the prairie buffer and portions of the emergent wetland edge.

13.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

13.4 Recommended Enhancement Tasks

Due to the stable populations of native plants at LaPorte Meadows Park, no enhancement tasks (plug planting, seed installation, etc.) are currently recommended.

14 Lighthouse Point Park

A basin and adjacent prairie on the eastern side of Lighthouse Point Park.

A section of prairie in the center of Lighthouse Point Park, slightly north of Hickory Creek.

14.1 Site Assessment

Lighthouse Point Park was inspected on June 15, 2022, and August 5, 2022. The naturalized areas consist of seven stormwater basins and a creek connected by walking trails and prairies of various size. The basins all have an emergent wetland edge that transitions into a prairie buffer. The banks of Hickory Creek are vegetated, but dominated by woody species. Vegetation coverage of the slope areas is approximately 100%, and no significant erosion was found. The vegetative community contains a diverse mix of native grass, sedge, and forb populations; however, several large populations of invasive species and non-desirable native species are established and spreading within the naturalized areas. The dominant three species encountered were: big bluestem (*Andropogon gerardi*), teasel (*Dipsacus* spp.), and reed canary grass (*Phalaris arundinacea*). Other forested natural areas to the east and west serve as possible sources of invasive plant seed contamination. Poison ivy (*Toxicodendron radicans*) was identified as a potential hazard to be addressed.

Lighthouse Point Park has well-established native plant populations, and the naturalized areas are accomplishing the core goals of stormwater management and erosion control. However, invasive species have thoroughly invaded the entire site and will outcompete the native vegetation in time. Vegetation maintenance is required to prevent the spread of invasive species and further degradation.

14.2 Recommended Management Tasks

1. Reduce trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris can be cut up and scattered onsite.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Control reed canary grass (*Phalaris arundinacea*) and encroaching turf grasses.
    a. Method:
        i. Treat reed canary grass and encroaching turf grass populations in most areas using a boom spray application or backpack application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth.
        ii. Treat reed canary grass growing in or adjacent to water using a backpack application of 2-3% glyphosate solution. Glyphosate will affect all vegetation, so care should be taken during application to avoid damage to nearby natives.

3. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a pistol-spray application or backpack application of 5% glyphosate solution.
        ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.
4. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), mugwort (*Artemisia vulgaris*), birds foot trefoil (*Lotus corniculatus*), crown vetch (*Securigera varia*), curly dock (*Rumex crispus*), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline®., or 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings, multiflora rose (*Rosa multiflora*), riverbank grape (Vitis riparia), poison ivy (*Toxicodendron radicans*) and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus* spp*.),* and prickly lettuce (*Lactuca serriola*) using brush-cutters or machine mounted mowers. If avoidance of native plant communities is not possible, mow all vegetation to a height of 8-12 inches. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.
5. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. This site contains sufficient fuels to carry a fire, and sizeable native populations to benefit from a fire regime. A prescribed burn can be used to clear prairie areas, basin buffers, and portions of the emergent wetland edges.
6. Install supplemental native seed in areas where invasive species have been eliminated, but native regeneration does not seem likely. This will help prevent invasive recolonization.
    a. Method:
        i. Use a tractor and drill seeder to install a prairie seed mix containing only grasses and sedges. Ideal timing is during the late fall before the first snowfall of the season, after a prescribed burn (Task 5) has been performed. Hand broadcast seed into any areas ground conditions do not allow the tractor/drill seeder to operate.

14.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

14.4 Recommended Enhancement Tasks

Due to the size of native populations at Lighthouse Point Park, no enhancement tasks (plug planting, seed installation, etc.) are currently recommended.

15 Lincoln-Way North Park

View of the path and savannah at Lincoln-Way North Park, facing east.

View of the ditch and prairie buffers at Lincoln-Way North Park, facing east.

15.1 Site Assessment

Lincoln-Way North Park was inspected on June 15, 2022, and July 20, 2022. The naturalized areas consist of two small savannah areas separated by a walking trail, and a stormwater management ditch with an emergent wetland edge that transitions into a prairie buffer. Vegetation coverage of the slope areas is approximately 100%, and no significant erosion was found. Vegetation coverage of the savannah areas is approximately 90%, likely due to the site previously being mulched and weeded like a garden. The vegetative community contains a diverse mix of native grasses, sedges, and forbs; however, several populations of invasive species and non-desirable native species are established and spreading within the naturalized areas. The dominant three species encountered were: Canada goldenrod (*Solidago canadensis*), Canada thistle (*Cirsium arvense*), and brown fox sedge (*Carex vulpinoidea*). Indian Boundary South Park is located to the west across the street, so significant sources of invasive plant seed exist nearby to cause contamination. Poison ivy (*Toxicodendron radicans*) was identified as a potential hazard to be addressed.

The native populations at Lincoln-Way North Park are diverse and high quality, but are in danger of being outcompeted by invasive species. Vegetation maintenance is required to prevent the spread of invasive species and further degradation of the site.

15.2 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method 1:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris should be removed from the site.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Control reed canary grass (*Phalaris arundinacea*) and encroaching turf grasses.
    a. Method:
        i. Treat reed canary grass and encroaching turf grass populations using a backpack application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth.
        ii. Treat reed canary grass growing in or adjacent to water using a backpack application of 2-3% glyphosate solution. Glyphosate will affect all vegetation, so care should be taken during application to avoid damage to nearby natives.

3. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        ii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.
4. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), mugwort (*Artemisia vulgaris*), crown vetch (*Securigera varia*), curly dock (Rumex crispus), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings, stump re-sprouts, poison ivy (*Toxicodendron radicans),* multiflora rose (*Rosa multiflora*), and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus spp*.), and prickly lettuce (*Lactuca serriola*) using brush-cutters or other mowing equipment. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.
5. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. This site does not currently contain sufficient fuels to carry a fire, but a prescribed burn could be used to clear vegetation in the future.

15.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

15.4 Recommended Enhancement Tasks

Due to the quality of native plants at Lincoln-Way North Park, no enhancement tasks (plug planting, seed installation, etc.) are currently recommended.

16 Lincoln-Way North Park—EAC Garden

View of the EAC Garden at Lincoln-Way North Park from the east.

16.1 Site Assessment

The EAC Garden at Lincoln-Way North Park was inspected on July 20, 2022. The naturalized areas consist of a prairie garden and outdoor classroom planted in 2009/2010 by the high school's Environmental Action Club. Vegetation coverage of the area is approximately 100%, and no significant erosion was found. The vegetative community contains a diverse mix of native grasses, sedges, and forbs; however, several populations of invasive species and non-desirable native species are established and spreading within the naturalized areas. The dominant three species encountered were: foxglove beard tongue (*Penstemon digitalis*), common mountain mint (*Pycnanthemum virginianum*), and teasel (*Dipsacus* spp.). No significant sources of invasive plant seed exist nearby to cause contamination. Overgrown vegetation in the pathways was identified as a hazard to be addressed.

The native populations at the EAC Garden are diverse and high quality, but are in danger of being outcompeted by invasive species. Vegetation maintenance is required to prevent the spread of invasive species and further degradation of the site.

16.2 Recommended Management Tasks

Follow the management recommendations for the primary Lincoln-Way North Park location, and perform the maintenance on the same time frame, if possible.

16.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

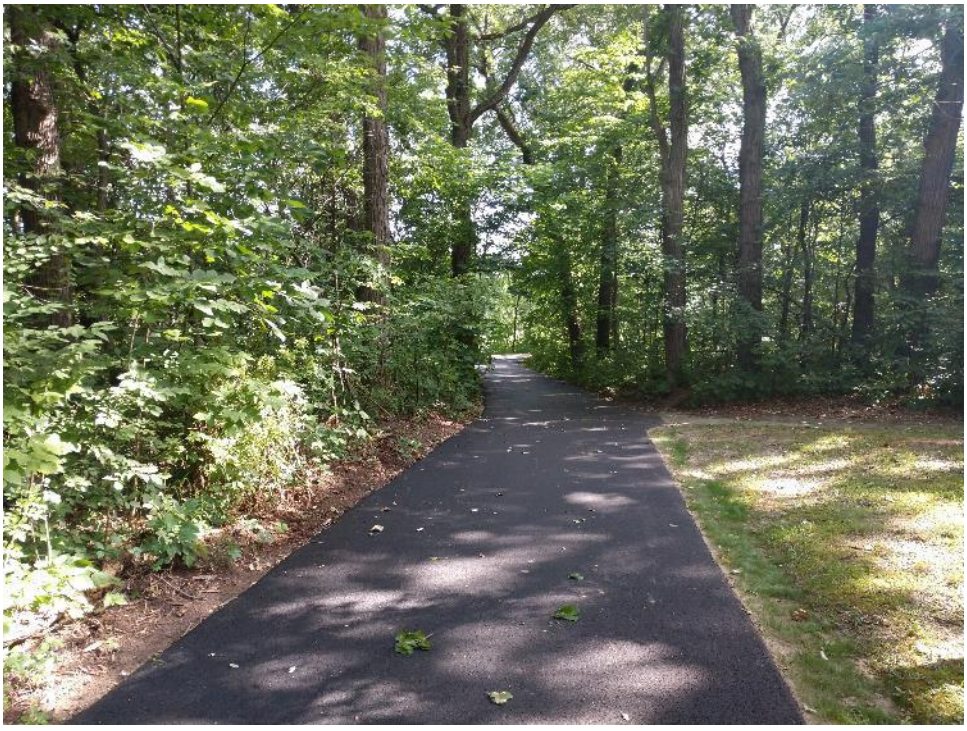
1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

16.4 Recommended Enhancement Tasks:

Due to the quality of native plants in the EAC Garden, no enhancement tasks (plug planting, seed installation, etc.) are currently recommended.

17 Old Plank Trail Park

View of the basin at Old Plank Trail Park, facing east.



Park pathway and adjacent woodland area leading to Old Plank Trail.

17.1 Site Assessment

Old Plank Trail Park was inspected on July 20, 2022 and August 5, 2022. The naturalized areas consist of a narrow strip of woodland in-between the park's walking trail and the Old Plank Trail. They also include a stormwater management basin with a narrow buffer that has not been planted with natives. Vegetation coverage of the shoreline areas is approximately 100%, but erosion was seen along the northern side of the basin where homeowners mow the vegetation to the water's edge. The vegetative community contains a mixture of trees, shrubs, and invasive vegetation. The dominant three species encountered were: cattail (*Typha* spp.), Queen Anne's lace (*Daucua carota*), and common ragweed (*Ambrosia artemisifolia*). The forest edges which border the park to the south contain significant sources of invasive plant seed to cause future contamination. Poison ivy (*Toxicodendron radicans*) and dead tree limbs near the walking trail were identified as potential hazards to be addressed.

The naturalized areas of Old Plank Trail Park are accomplishing the core goals of stormwater management and erosion control. However, native plants typically have larger root systems than invasive forbs and shallowly rooted trees, and they would provide superior water filtration and erosion control than the existing vegetation around the basin. The park is a low priority for management due to its lack of native plantings. Enhancement projects are recommended if the Park District wishes to install native plants.

17.2 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired around the basin buffer.
    a. Method:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris can be scattered in the woodland areas.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Control cattail (*Typha* spp.) and common reed (*Phragmites australis*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.

3. Control broadleaved invasive plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*) and curly dock (*Rumex crispus*) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. Treat poison ivy (*Toxicodendron radicans*), multiflora rose (*Rosa multiflora*), riverbank grape (*Vitis riparia*), using a backpack application of 5% triclopyr 3A solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow second year garlic mustard (*Alliaria petiolate*), second year sweet clover (*Melilotus spp*.), second year Queen Anne's lace (*Daucus carota*), prickly lettuce (*Lactuca serriola*), and common ragweed (*Ambrosia artemisifolia*) using brush-cutters. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.

17.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all non-woody vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

17.4 Recommended Enhancement Tasks

1. Install native plants in the slope and buffer areas around the basin.
    a. Method 1:
        i. Treat all existing vegetation using a boom spray application of 2% glyphosate during early-fall before most plants begin going dormant.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended. A walk-behind tiller or hand rakes may be required for areas too steep for machinery.
        iv. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall, before the first snowfall of the season.
        v. Install erosion control blanket, covering all seeded areas.
    b. Method 2:
        i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.
2. Vegetation management.
    a. Method:
        i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.
        ii. Treat the entire buffer using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.

3. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.
    a. Method:
        i. Mow existing vegetation where plugs are desired.
        ii. Plant native plugs in the early spring.
        iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.
        iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

18 Ridgefield Park

Southeastern corner of Ridgefield Park's prairie buffer.

18.1 Site Assessment

Ridgefield Park was inspected on June 15, 2022 and August 5, 2022. The naturalized areas consist of a stormwater management basin with an emergent wetland edge that transitions into a prairie buffer. Vegetation coverage of the shoreline areas is approximately 100%, and no significant erosion was found. The vegetative community contains native grasses, sedges, and forbs. However, approximately 40-50% of the existing vegetation is invasive or undesirable, and several large stretches of bank are dominated by trees and shrubs. The dominant three species encountered were: sandbar willow (*Salix interior*), teasel (*Dipsacus* spp.), and common reed (*Phragmites australis*). The basin and buffer are surrounded by a vegetated ditch on two sides, so some significant sources of invasive plant seed exist near the park to cause contamination. Poison hemlock (Conium maculatum) was identified as a hazard to be addressed.

The naturalized areas of Ridgefield Park are accomplishing the core goals of stormwater management and erosion control. However, if the buffer continues to receive no maintenance, it will soon be completely dominated by invasive species and lose all aesthetic benefits. Enhancement projects are recommended if the Park District wishes to install additional native plants.

18.2 Recommended Management Tasks

1. Control reed canary grass (*Phalaris arundinacea*), cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat reed canary grass, cattail, and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for all three plants are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-June to early-July for reed canary grass, mid-July to early-August for cattail, and late-July to mid-August for common reed.
2. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings, riverbank grape (*Vitis riparia*), poison hemlock (*Conium maculatum*), and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus spp*.), and prickly lettuce (*Lactuca serriola*) using brush-cutters or other mowing equipment. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.
3. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. This site contains insufficient fuels to fully carry a fire, but a prescribed burn can be used to clear portions of the prairie buffer and emergent wetland edge.

18.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Treat monoculture populations of common reed (*Phragmites australis*) using a backpack application of 5% glyphosate solution in early-August. Common reed is the tallest, most aggressive plant found onsite. Treatment of large patches will prevent it taking over the area and improve park aesthetics.

2. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

18.4 Recommended Enhancement Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired.
    a. Method:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris should be removed from the site.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
2. Reinstall native plants in the entire emergent wetland and prairie buffer.
    a. Method 1:
        i. Treat all existing vegetation using a boom spray application of 2% glyphosate during early-fall before most plants begin going dormant.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended. A walk-behind tiller or hand rakes may be required for areas too steep for machinery.
        iv. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall, before the first snowfall of the season.
        v. Install erosion control blanket, covering all seeded areas.
    b. Method 2:
        i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.
3. Vegetation management.
    a. Method:
        i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.
        ii. Treat the entire buffer using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.

4. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.
    a. Method:
        i. Mow existing vegetation where plugs are desired.
        ii. Plant native plugs in the early spring.
        iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.
        iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

19 Square Links Golf Course Plantings

Rain gardens near Tee #1.

19.1 Site Assessment

Square Links Golf Course was inspected on June 10, 2022 and July 20, 2022. The naturalized areas consist of native plugs planted in two small gardens near Tee #1, and a portion of the ditch near Hole #1. Vegetation coverage of the areas is approximately 100%, and no significant erosion was found. The vegetative community contains a diverse mix of native grasses, sedges, and forbs; however, invasive species are invading and will eventually crowd out the area if no management is performed. No poison ivy or other hazards were identified.

The naturalized areas of Tee/Hole #1 are accomplishing the core goal of stormwater management while providing aesthetic benefits to the golf course. The areas should be maintained like a garden in order to prevent the spread of invasive species and further degradation.

19.2 Recommended Management / Minimal Management Tasks

1. Reduce trees and shrubs that are not desired or were not part of the installation plan.
    a. Method:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws.
        ii. All brush debris should be removed from the site.
        iii. Treat the cut stumps of targets using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
2. Control reed canary grass (*Phalaris arundinacea*), cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat reed canary grass, cattail, and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        ii. Treatments for all three plants are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-June to early-July for reed canary grass, mid-July to early-August for cattail, and late-July to mid-August for common reed.

Planted ditch line near Hole #1.

3. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and curly dock (*Rumex crispus*) using a backpack application of 0.5% Transline®. Treat purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Hand weed giant ragweed (*Ambrosia trifida*), second year sweet clover (*Melilotus spp*.), and all other non-native plants that were not part of the site's installation plan. Perform 3-4 weeding events throughout the growing season, timed so target species do not produce seed.
4. Reduce vegetation load during the dormant season (late fall to early spring).
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. This site contains sufficient fuels to carry a fire, and native populations which could benefit from a fire regime. A prescribed burn can be used to clear the rain gardens.

19.3 Recommended Enhancement Tasks

Due to the stable populations of native plants, no enhancement tasks are currently recommended. However, additional, similar native plantings could be added anywhere throughout the golf course.

20 Union Creek Park

View of the eastern basin at Union Creek Park, facing south.

View of the western basin at Union Creek Park, facing south.

20.1 Site Assessment

Union Creek Park was inspected on June 15, 2022 and July 20, 2022. The naturalized areas consist of two stormwater basins, both with an emergent wetland edge that transitions into a prairie buffer. Vegetation coverage of the slope areas is approximately 100%, and no significant erosion was found. The vegetative community contains a diverse mix of native grasses, sedges, and forbs; however, a large population of sandbar willow (salix interior) and some smaller populations of invasive species are established and spreading within the naturalized areas. The dominant three species encountered were: big bluestem (*Andropogon gerardi*), sandbar willow (*Salix interior*), and cattail (*Typha spp*.). The basins are contained within a housing subdivision, so only nearby Frankfort Square Park District properties such as the adjacent creek corridor and Lake of the Glens Park basins serve as possible sources of invasive plant seed contamination. No poison ivy or other hazards were identified.

The naturalized areas of Union Creek Park are accomplishing the core goals of stormwater management and erosion control, and native plant populations are numerous and stable. Vegetation maintenance is required to prevent the spread of invasive species and further degradation.

20.2 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method:
        i. Mow all areas containing targets during the late fall after native plants have produced seed and gone dormant.
        ii. Treat all stump re-sprouts using a backpack application of 5% triclopyr 3A solution during the following spring.
2. Control reed canary grass (*Phalaris arundinacea*) and encroaching turf grasses.
    a. Method:
        i. Treat reed canary grass and encroaching turf grass populations located on the slopes using a backpack application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth.
        ii. Treat reed canary grass growing in or adjacent to water using a backpack application of 2-3% glyphosate solution. Glyphosate will affect all vegetation, so care should be taken during application to avoid damage to nearby natives.
3. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.

4. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), crown vetch (*Securigera varia*), curly dock (*Rumex crispus*), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, 3% triclopyr if found in standing water. Treat tree/shrub saplings, stump re-sprouts, riverbank grape (*Vitis riparia),* and purple loosestrife (*Lythrum salicaria*) using a backpack application of 5% triclopyr 3A solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus spp*.), and prickly lettuce (*Lactuca serriola*) brush-cutters or other mowing equipment. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.
5. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. This site contains sufficient fuels to carry a fire, and sizeable native populations to benefit from a fire regime. A prescribed burn can be used to clear the prairie buffer and portions of the emergent wetland edge.

20.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

20.4 Recommended Enhancement Tasks

Due to the stable populations of native plants at Union Creek Park, no enhancement tasks (plug planting, seed installation, etc.) are currently recommended.

21 Union Creek Park—Creek Corridor

21.1 Site Assessment

The creek corridor at Union Creek Park was inspected on July 20, 2022. The bank on both sides of the creek is dominated by trees and shrubs, and has not been planted or managed previously. Vegetation coverage of the slope areas is approximately 100%, and no significant erosion was found. The dominant three species encountered were: sandbar willow (*Salix interior*), maples (*Acer* spp.), and reed canary grass (*Phalaris arundinacea*). Poison ivy (*Toxicodendron radicans*) growing near the turf grass edges was identified as a potential hazard to be addressed.

The creek corridor of Union Creek Park is accomplishing the core goals of stormwater management and erosion control. The area is a low priority for management due to its lack of native plantings.

21.2 Recommended Management / Minimal Management Tasks

1. Control poison ivy along routes used by park visitors and broadleaved invasive plants adjacent to both Union Creek Park basins to prevent seed contamination.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*) and teasel (*Dipsacus fullonum*) using a backpack application of 0.5% Transline® solution. Treat poison ivy (*Toxicodendron radicans*) using a backpack application of 5% triclopyr 3A solution. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow second year sweet clover (*Melilotus spp*.) using brush-cutters. Perform 1-2 mowing events throughout the growing season, timed so target species do not produce seed.

21.3 Recommended Enhancement Tasks

No enhancement recommendations were requested by the Frankfort Square Park District.

22 Union Creek Park—Sled-hill

View of the Union Creek Park sled-hill, facing northwest.

22.1 Site Assessment

The sled-hill at Union Creek Park was inspected on June 15, 2022 and July 20, 2022. The southern side of the small hill was planted with native plugs and regularly maintained in the past. Currently, greater than 70% of the area is dominated by invasive species. Vegetation coverage of the sled-hill is approximately 100%, and no significant erosion was found. The dominant three species encountered were: Canada thistle (*Cirsium arvense*), teasel (*Dipsacus fullonum*), and prickly lettuce (*Lactuca serriola*). No poison ivy or other hazards were identified.

The naturalized areas of the Union Creek Park sled-hill are not providing the intended level of erosion control, nor meeting aesthetic goals. The area is a low priority for management due to its small native populations. Enhancement projects are recommended if the Park District wishes to install additional native plants.

22.2 Recommended Management / Minimal Management Tasks

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

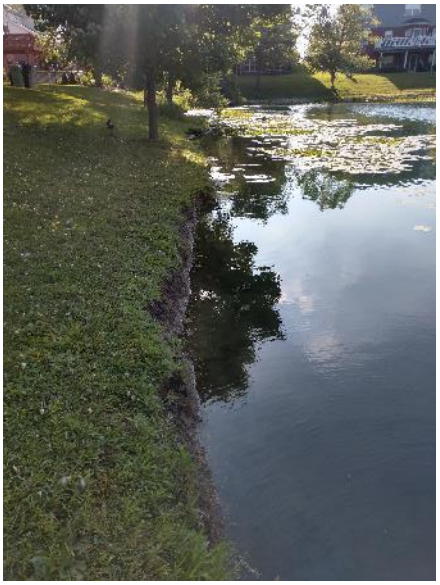
22.3 Recommended Enhancement Tasks

1. Reinstall native plants across the entire southern slope of the sled-hill.
    a. Method 1:
        i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution during early-fall before most plants begin going dormant.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended. A walk-behind tiller or hand rakes may be required for areas too steep for machinery.
        iv. Hand broadcast a slope seed mix containing only grasses and sedges. Ideal timing is during the late fall, before the first snowfall of the season.
        v. Install erosion control blanket, covering all seeded areas.
    b. Method 2:
        i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.
2. Vegetation management.
    a. Method:
        i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.
        ii. Treat the entire area using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.
3. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.
    a. Method:
        i. Mow existing vegetation where plugs are desired.
        ii. Plant native plugs in the early spring.
        iii. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

23 White Oak Park

Southwestern corner of White Oak Park's prairie buffer.

View of White Oak Park's southwestern basin, facing north.



View of the erosion on the northern side of White Oak Park's northwestern basin.

23.1 Site Assessment

White Oak Park was inspected on June 10, 2022 and July 20, 2022. The naturalized areas consist of three stormwater management basins. The primary basin near the playground has an emergent wetland edge that transitions into a prairie buffer. Vegetation coverage of the basin bottom is approximately 100%, and is dominated by common arrowhead (*Sagittaria latifolia*). Vegetation coverage of the slope areas is approximately 100%, and no significant erosion was found. The two western basins are located across the street from the park, and have not been planted with natives. The vegetation coverage of the slope areas is approximately 85-90%, and the north side of the northern basin is eroding where no rock or vegetation exists. The vegetative community of the park contains a diverse mix of native grasses, sedges, and forbs; however, several populations of invasive species and non-desirable native species are established and spreading within the naturalized areas. The dominant three species encountered were: rosinweed (*Silphium integrifolium*), common arrowhead, and Canada goldenrod (*Solidago canadensis*). The primary basin and buffer are surrounded by a walking trail and housing subdivisions. The other two basins are bordered by a wooded ditch line on the south and west, so significant sources of invasive plant seed do exist nearby to cause contamination. Poison ivy (*Toxicodendron radicans*) growing near the bases of mature trees was identified as a potential hazard to be addressed.

White Oak Park has one of the highest quality native plant populations among sites at the Frankfort Square Park District, and it is recommended as a high priority for management. Vegetation maintenance is required to prevent the spread of invasive species and further degradation of the primary basin. Enhancement projects are recommended if the Park District wishes to install additional native plants around the western two basins.

23.2 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method 1:
        i. Cut targets approximately 2 inches above the ground using chainsaws and brush-saws. This can be performed any time of the year, but is easiest during the late fall and winter when other vegetation is not actively growing.
        ii. All brush debris should be removed from the site.
        iii. Treat the cut stumps of targets near or in water using a wick application of 50% glyphosate solution within 1-hour of being cut.
        iv. Treat the cut stumps of targets located on the slopes using a wick application of 25% triclopyr 4E and 25% basal oil emulsion within 24-hours of being cut.
        v. Treatment of stump re-sprouts using a backpack application of 5% triclopyr 3A solution may be required during the following growing season for any targets that did not die during the winter.
    b. Method 2:
        i. Mow all areas containing targets during the late fall after native plants have produced seed and gone dormant.
        ii. Treat all stump re-sprouts using a backpack application of 5% triclopyr 3A solution during the following spring.
2. Control reed canary grass (*Phalaris arundinacea*) and encroaching turf grasses.
    a. Method:
        i. Treat reed canary grass and encroaching turf grass populations located on the slopes using a backpack application of 0.5% clethodim solution. Clethodim will only affect grass species, so it should be applied during early spring before native grasses show evidence of active growth.
        ii. Treat reed canary grass growing in or adjacent to water using a backpack application of 2-3% glyphosate solution. Glyphosate will affect all vegetation, so care should be taken during application to avoid damage to nearby natives.
3. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.

4. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat tree/shrub saplings, stump re-sprouts, poison ivy (*Toxicodendron radicans*), riverbank grape (*Vitis riparia*), and oriental bittersweet (*Celastrus orbiculatus*) using a backpack application of 5% triclopyr 3A solution. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), curly dock (*Rumex crispus*), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), and second year Queen Anne's lace (*Daucus carota*) using brush-cutters. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.
5. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.
    b. Method 2:
        i. Although the site is forb dominated, it contains sufficient fuels to carry a fire in most areas. It also has sizeable native populations to benefit from a fire regime. A prescribed burn can be used to clear the prairie buffer and portions of the emergent wetland edge.

23.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

23.4 Recommended Enhancement Tasks

Due to the stable populations of native plants at White Oak Park, no enhancement tasks are currently recommended for the primary basin. The below recommendations apply to the two eastern basins only.

1. Install native plants in the slope and buffer areas around the basins.
    a. Method 1:
        i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution during early-fall before most plants begin going dormant.
        ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
        iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended. A walk-behind tiller or hand rakes may be required for areas too steep for machinery.

iv. Hand broadcast a slope seed mix containing only grasses, sedges, and rushes. Ideal timing is during the late fall, before the first snowfall of the season.

v. Install erosion control blanket, covering all seeded areas.

b. Method 2:

i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.

2. Vegetation management.

a. Method:

i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.

ii. Treat the entire buffer using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.

3. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.

a. Method:

i. Mow existing vegetation where plugs are desired.

ii. Plant native plugs in the early spring.

iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.

iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

24 Woodlawn Park

Southeastern corner of Woodlawn Park's prairie buffer.

24.1 Site Assessment

Woodlawn Park was inspected on June 10, 2022, and July 20, 2022. The naturalized areas consist of a stormwater management basin with an emergent wetland edge that transitions into a prairie buffer. Vegetation coverage of the shoreline areas is approximately 100%, and no significant erosion was found. The vegetative community contains a small number of native grasses, sedges, and forbs. However, a majority of the existing vegetation is invasive or undesirable. The dominant three species encountered were: Canada thistle (*Cirsium arvense*), reed canary grass (*Phalaris arundinacea*), and sandbar willow (*Salix interior*). The basin and buffer are surrounded by a walking trail and housing subdivisions, so no significant sources of invasive plant seed exist near the park to cause contamination. Poison ivy (*Toxicodendron radicans*) growing near the bases of mature trees was identified as a potential hazard to be addressed.

The naturalized areas of Woodlawn Park are accomplishing the core goals of stormwater management and erosion control. However, if the buffer receives no maintenance, it will eventually be completely dominated by invasive species, crowded with tall tree and shrub saplings, and lose many aesthetic benefits. As an additional concern, a large portion of the vegetative community is made up of reed canary grass (*Phalaris arundinacea*), other cool season grass species, and Canada goldenrod (*Solidago*

canadensis). Removal of these species is typical, but would leave the slopes bare and encourage erosion. It is not recommended to treat them if no native replanting is planned. See Recommended Enhancement Tasks below.

24.2 Recommended Management Tasks

1. Reduce sandbar willow (*Salix interior*) and other trees and shrubs that are not desired or were not part of the park's installation plan.
    a. Method:
        i. Mow all areas containing targets during the late fall after native plants have produced seed and gone dormant.
        ii. Treat all stump re-sprouts using a backpack application of 5% triclopyr 3A solution during the following spring.
2. Control cattail (*Typha* spp.*)* and common reed (*Phragmites australis*).
    a. Method:
        i. Treat monoculture populations of cattail and common reed using a backpack application of 5% glyphosate solution.
        ii. Treat cattail and common reed that is intermixed with native plants using a wick application of 10% glyphosate solution.
        iii. Treatments for cattail and phragmites are most effective when performed at the height of each plants growing season, right before flowering. Approximate time frames are mid-July to early-August for cattail and late-July to mid-August for common reed.
3. Control broadleaved invasive and undesirable native plants.
    a. Method:
        i. Treat Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), curly dock (Rumex crispus), and teasel (*Dipsacus* spp.) using a backpack application of 0.5% Transline® solution, or 3% triclopyr 3A if found in standing water. Treat tree/shrub saplings, stump re-sprouts, poison ivy (*Toxicodendron radicans*), multiflora rose (*Rosa multiflora*), and riverbank grape (*Vitis riparia*) using a backpack application of 5% triclopyr 3A. These treatments will not damage sedges and grasses, and should be performed before targets produce seed.
        ii. Selectively mow common ragweed (*Ambrosia artemisiifolia*), giant ragweed (*Ambrosia trifida*), second year Queen Anne's lace (*Daucus carota*), second year sweet clover (*Melilotus spp*.), and prickly lettuce (*Lactuca serriola*) using brush-cutters or other mowing equipment. Avoid impact on native plant communities. Perform 3-4 mowing events throughout the growing season, timed so target species do not produce seed.
4. Reduce vegetation load during the dormant season (late fall to early spring). This task removes dead plant material, improving the aesthetics of a park. It also promotes the regeneration of young plants in the spring, helps to keep the height of unwanted trees/shrubs in check, and reduces the difficulty of early spring herbicide treatments.
    a. Method 1:
        i. Mow all vegetation after native plants have produced seed and gone dormant, but before regrowth occurs. Vegetation will have more time to decompose the earlier the mow is performed.

b. Method 2:

   i. This site contains sufficient fuels to carry a fire. A prescribed burn can be used to clear the prairie buffer and portions of the emergent wetland edge.

24.3 Minimal Management Tasks

If the above recommended management cannot be performed, the following suggestions will provide a reduced but positive impact on the park's naturalized areas:

1. Mow all vegetation twice per growing season to reduce the seed production of many invasive species. Recommended time frames: late-June/early-July and mid-August.

24.4 Recommended Enhancement Tasks

1. Reinstall native plants in the entire emergent wetland and prairie buffer.
   a. Method 1:
      i. Treat all existing vegetation using a boom spray application of 2% glyphosate solution during early-fall before most plants begin going dormant.
      ii. Mow all vegetation to the ground after the herbicide treatment effects are visible.
      iii. Prepare for planting by tilling mowed vegetation into the soil and creating as much bare soil as possible. A harley rake attachment for a mini-skid steer or skid steer is recommended. A walk-behind tiller or hand rakes may be required for areas too steep for machinery.
      iv. Hand broadcast a slope seed mix containing only grasses, sedges, and rushes. Ideal timing is during the late fall, before the first snowfall of the season.
      v. Install erosion control blanket, covering all seeded areas.
   b. Method 2:
      i. Perform the same process as above, except hydromulch can be installed as an alternative to erosion control blanket. Note that it is not recommended to mix native seed into the hydroseeder.
2. Vegetation management.
   a. Method:
      i. Mow all vegetation to a height of 8-12 inches 3-4 times per growing season for the first 2 years, or until native grasses and sedges are fully established. This will prevent forbs and invasive grasses from producing seed in the area.
      ii. Treat the entire buffer using a boom spray or backpack application of 2-3% triclopyr 3A solution as needed to control invasive broadleaved plants.

3. Install native forbs if additional diversity and color are desired. Additional maintenance must also be possible.
    a. Method:
        i. Mow existing vegetation where plugs are desired.
        ii. Plant native plugs in the early spring.
        iii. Install goose protection fencing around plug planting zones which will be left in place until plugs are fully established. Remove goose protection if not biodegradable.
        iv. Maintain the areas by treating invasive species using selective herbicide applications. Do not include in the boom spray applications used on the other portions of the site.

TOGETHER we can do great things

Community

When we say community, we don't just mean the neighborhoods that people call home. We mean everyone and everything with a stake in the work that we do—from our Stantec and industry colleagues to the clients we collaborate with and the people and places we impact.

Whether creating, sustaining, or revitalizing a community, we help diverse cultures and perspectives work together toward shared successes.

Although our work helps to create physical communities, our ultimate goal is to create something far more meaningful—a sense of community.

Creativity

For us, creativity is driven by purpose. Knowing that transformation is truly possible inspires us to approach every situation with a fresh perspective.

Our inventive and collaborative approach to problem-solving helps bring big ideas to life through creative solutions.

Whether our contribution is a design that strikes the perfect balance between function and aesthetics, a feat of engineering that redefines what's possible, or a project management approach that delivers results, we strive for outcomes that transcend the challenges they solve and shape the communities we serve for the better.

Client Relationships

We're better together. This belief shapes how we collaborate with our clients, our partners, and our communities.

We listen so we can deeply understand our clients' needs, communicate with purpose so we maintain alignment, and remain open and flexible so we never miss an opportunity to strengthen a project and positively transform a community.

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