

STORMWATER MANAGEMENT SYSTEM MAINTENANCE PLAN FOR BRIARGATE, LINDENHURST, ILLINOIS

PURPOSE AND OBJECTIVE

The stormwater management facilities have been designed to prevent damage to property and to minimize the impact on the environment. The only way to keep the system operating as designed is with proper maintenance. Maintenance items can typically be broken down into short-term and long-term maintenance tasks but all tasks should be conducted on an as-needed basis if necessary.

Short Term Maintenance Program – Significant Elements and Aspects provided as an attachment hereto. Please note that the attachment is not intended to cover all possible maintenance issues, only those most common.

Long Term Maintenance Program – Significant elements and aspects are provided as an attachment hereto. The maintenance is supplemented by repair as required or replacement as the case may be, depending on the wear and tear of the components of the drainage system. Please note that the attachment is not intended to cover all possible maintenance issues, only those most common.

The Final Plat and Final Engineering for the project shall illustrate all stormwater management areas including wetlands, detention ponds, storm sewer system, and deed restricted areas.

RESPONSIBILITIES

Adequate provisions for Short Term and Long Term Maintenance are an essential aspect for continued proper operation of the stormwater management system.

Responsibility for the short and long term overall maintenance of the stormwater management system is put on the property owner or Home Owners Association (HOA) as applicable. Responsibility for the maintenance of the stormwater management system shall include the pipes, outlet control structure and other structures within the stormwater management outlot areas. Responsibility for both the short and long-range maintenance of the grassy surface areas (including native vegetation) within the outlots designated for stormwater management shall be the specific responsibility of the property owner or HOA as applicable.

MAINTENANCE OF DRAINAGE SYSTEM

Cleaning and repairing culverts, outflow pipes, inlets, catch basins and manholes are particularly important because these elements are not visually obvious, as are the surface area elements. If these subsurface elements become clogged, then water may flood the pavement surface and may cause extensive erosion damage or water flow blockage. Cleaning of culverts, outflow

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pipes, inlets, catch basins and manholes must be made a routine maintenance activity scheduled for several times a year and on an as needed basis. Cleaning and repairing of overland flow routes and swales is important to preserve surface drainage and protect the subdivision from flooding. Experience will show the required cleaning frequencies for specific drainage items.

Cost Considerations

Maintenance and replacement needs and costs should be part of the economic analysis. All maintenance costs will be covered by a maintenance budget sustained by the property owner. Keep records of all maintenance costs in order to determine typical annual costs that would be the basis for the annual maintenance fund. Frequent maintenance program work execution will lead to less frequent and less costly long term maintenance and repair, possibly requiring replacement. The attached short term and long term maintenance provisions may need to be adjusted based on experience recorded over the initial period of occupancy.

Surface/Subsurface Drainage

As previously mentioned, cleaning and repairing overland flow routes, swales, culverts, outflow pipes, inlets, catch basins, drain tile connection structures, and manholes is particularly important because flooding is likely if they are obstructed. Frequent walk-through inspections should be conducted to see if any obstructions are present including garbage, wood, branches, cut grass, dirt, leaves, etc. Remember that these drainage structures were placed there for a reason and they can only operate as designed if they are properly maintained.

Detention Basin Earth Embankment

Berms shall be repaired if signs of settlement, erosion, piping (leakage, seepage, or wet spots appear). A Registered Professional Engineer shall be hired for design resolution of any breaks in the berm. Walk the top of berm, side slopes, downstream toe and upstream toe or at the waterline of the embankment concentrating on surface erosion, seepage, cracks, settlements, slumps, slides and animal burrow.

Surface Erosion. Removal or loss of vegetative cover can cause the formation of deep ruts or gullies in the embankment. These areas should be filled, compacted, and reseeded. Erosion control measures should be implemented while vegetation is being reestablished.

Seepage. The passage of water through and/or underneath the earth embankment abutment and natural groundline or at the contact between the embankment and outlet works can be indicated by cattails or other wet environmental vegetation, erosion channelization, or slumping on the embankment face.

Cracks. Deep cracks usually indicate the movement of the dam and/or the foundation and can be either the longitudinal (along the length of the embankment) or transverse (across the embankment) directions. Cracking can be an indicator of slumps. Shallow cracks may develop during the summer when the surface soils of the embankment become severely dried and are typically of no concern in regard to the safety of the embankment.

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Settlement. Settlement is indicated by depressions or low spots and can be signs of consolidation of the embankment or foundation of the loss of material beneath the settlement area.

Slumps/Slides. Slow or sudden movements of the earth embankment slope on either face toward the toe of the embankment. If seepage indicates the presence of soil particles, or if deep cracks, settlement, slumps, or slides are noticed, a qualified engineer should be contacted immediately for consultation.

Animal Burrows. Animal burrows result in a loss of earth embankment material and can provide seepage paths for water through the embankment. Burrows should be promptly repaired and vegetation reestablished.

Vegetation. The design plans call for the embankment to be covered with native vegetation. The native vegetation cover should be a thick and vigorous growth to stabilize embankment soils and prevent erosion from occurring. There should be no trees on the earth embankment and none within a minimum of 20-feet of the embankment toes or concrete structures. There should be no trees in the emergency spillway. Any woody vegetation (trees, brush) found should be promptly removed.

Outlet Structure. The pond outlet control structure shall be checked for any debris or other obstructions which may block or restrict the free flow of water. Check for the development of any rusty areas on the concrete, and seepage, cracking, breaking, or spalling of the concrete.

The detention basin shall be re-graded if any reduction in volume shall occur. In the case of a wet bottom pond the sediment bottom shall be dredged out every 5 years or when 50 percent of the volume has been lost.

Vegetative Growth

One of the most common maintenance problems is that of dying vegetation. The responsible party shall determine the cause of problem and correct it either by modifying the environment so the selected vegetation can grow or changing the type of vegetation planted to meet environmental requirements. For example, turf grass often dies in the bottoms of swales and ditches because the environment is too wet. These areas can be planted with wet-tolerant native vegetation that grow well in that type of environment and require little, if any, care.

Portions of the site have been planted with native vegetation. Native vegetation is an important part of the stormwater management system. Many native species have deep roots that help prevent erosion and also remove nutrients and other impurities from the stormwater runoff helping to minimize impacts to surface waters including streams, rivers and lakes. See monitoring and maintenance requirements for all native vegetation, in the “Village of Lindenhurst Isolated Wetland WDO Permit Application Report”, prepared by: V3 Companies, Ltd.

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RECORD KEEPING

Separate and distinct records shall be maintained by the owner or HOA, to record the specific activities and costs thereof for the Short Term and Long Term Maintenance Plan implementation. The records shall include the dates of maintenance inspections and the specific work performed. The records can be used to document maintenance history and as a basis for annual budgeting.

CONCLUSION

The stormwater management plan for this development was designed to convey stormwater runoff without damage to structures or the environment. The only way the stormwater management system can operate as designed is if it is maintained properly over time. Failure to properly maintain the system can result in flooding, poor aesthetics, increased pest populations and poor water quality leaving the site.

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Long Term Maintenance Program – Significant Elements and Aspects¹

Stormwater Conveyance Elements	Periodic Inspections	Significant Aspects	Repair Work
Grassy areas – Swales, Other Erosion Prone Areas	Annually	Erosion	Seed or Sod, Ditch Checks to reduce flow velocities or plant native vegetation
Grassy areas – Periphery	Annually, 5 year intervals	Erosion	Groom Seed
Tree Trimming	5 year intervals	Prescribed Management	Cut back
Native Vegetation Areas	2 to 3 year intervals	Prescribed Management	Controlled Burn
At Culvert and Swales Outfalls, Detention Ponds	5 year intervals	Flooding, Erosion	Remove Siltation, Re-seed, Restore Riprap
Outlet Control Structure Pipes	5 year intervals	Flooding, Erosion	Restore/Replace Inflow & Outflow Openings
Storm Structures, and Pond Outlet Control Structure	As needed basis	Decrease storm sewer capacity	Remove blockage, Repair as needed
Detention Basin Berms	Annually	Surface Erosion Seepage Cracks Settlement Slumps/Slides Animal Burrows Piping (Leakage) Vegetation	See prescribed maintenance for “Detention Basin Earth Embankments” listed above on pages 2-3.
Detention Basins	5 year intervals 5 year intervals	Detention Volume Sediment Volume	Re-grade Basin as required Dredge Basin Bottom
Drain Tile Connection Structures	Annually	Check for blockage	Clean out accordingly, Repair as needed

¹ Long range maintenance activities are those required that are typically conducted every several years. The maintenance intervals stated are typical but all are on an as-needed basis as well. This list is to be used as an example only and is not intended to be all inclusive.

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Short Term Maintenance Program – Significant Elements and Aspects²

Stormwater Conveyance Elements	Periodic Inspection	Significant Aspects	Repair Work
General – All Areas	March through November	Disturbed surface areas	Seed Area with grass or native vegetation Mulch to Protect
Residential Lot Areas	Weekly	Floatable Items that could wash into stormwater system	Dispose of Refuse Store Useable Items
Swales on site	March & June & October	Branches & Leaves/Trash	Collect & Dispose
Culverts under Roads	March through November	Branches & Leaves/Trash Pipe Condition	Collect & Dispose Repair/Replace
Emergency Outflow Structure/Weir	March through November	Branches & Leaves/Trash Pipe or Weir Condition	Collect & Dispose Repair/Replace
Manholes	March & June & October	Branches & Leaves/Trash Manhole Condition	Collect & Dispose Repair/Replace
Stormwater Storage Area	March, June, July, Aug., Sept., Oct., & Nov.	Mow non-native vegetation	Remove/Dispose Refuse/Grass clippings
Roadway Drainage System	Public Works Department	Standard procedure	Prescribed Process

Source: Modified Sample Maintenance Plan from Lake County Stormwater Management Commission.

² Maintenance of Grassy Areas shall require application of fertilizer and related treatment to assure substantial grass growth and avoidance of soil erosion of barren or sparsely grassed soil surface areas. The prescribed periodic inspections for the short term maintenance program are to be supplemented by additional inspections and maintenance work on an as-needed basis such as at times following periods of substantial rainfall or storm activities, such as high winds.

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LEGEND

ISOLATED WETLAND BOUNDARY

PLANTING LEGEND

EMERGENT PLUG MIX

= 0.22 AC

NATIVE MESIC PRAIRIE SEED MIX

= 14.94 AC

WET PRAIRIE SEED MIX

= 2.90 AC

PICKEREL WEEDS (2' SHELF)

= 3,429 LF
0.16 AC

SHORELINE PLUGS (1' WIDE)

= 5,174 LF
0.12 AC

TOTAL NATIVE PLANTING AREA

= 18.34 AC

ALL SEEDED AREAS WITH SLOPE LESS THAN 3:1 WILL BE COVERED WITH S75BN BIODEGRADABLE EROSION CONTROL BLANKET OR COMPARABLE, SLOPES GREATER THAN 3:1 WILL BE COVERED WITH HYDROMULCH.

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Woodridge, IL 60517
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DRAWING NO.
EX-C

EXHIBIT C: NATIVE BMP & BUFFER
PLANTING PLAN
BRIARGATE SUBDIVISION

LINDENHURST
LAKE COUNTY
ILLINOIS

PROJECT NO.: 19573
PROJECT MANAGER: SB
DESIGNED BY: MI
DRAWN BY: MI

ORIGINAL ISSUE DATE: 02/12/2020

REVISIONS

NO.	DATE	DESCRIPTION

N:\2019\19573\Drawings\ACAD\NR\IE01\Misc Drawings\Wetlands exhibits.dwg 2/13/2020

CONSTRUCTION AND PLANTING

This section of the plan details construction and revegetation of the naturalized BMPs/Wetland Buffer areas.

CONSTRUCTION, SOILS AND TOPDRESSING SPECIFICATIONS

Grading and excavation of the proposed naturalized BMP/Wetland Buffer will be completed in accordance with the engineering plans in order to achieve the goals of the project.

The following specifications will be followed to minimize impacts to the ground surface during the excavation and grading activities to provide a suitable medium for the vegetation establishment.

- All areas to be planted or seeded with native vegetation will be over-excavated a minimum of 1-foot below final grade to allow for the placement of top dress material, unless a one-foot thick topsoil layer is present following excavation to proposed final grade.
- On-site topsoil can be used for top dress material. If additional topsoil is required from an off-site location, these soils shall contain an organic matter content of 3% or more and a clay content of 27% or less.
- Wheel-based vehicles (scrapers, end loaders, etc.) shall not be used for topdressing work. Only low ground pressure wide-track equipment (quadtrack tractor, wide track dozer, backhoe, or approved by Engineer) shall haul, move and spread top dress material.
- Following the 1-foot of top dress placement, the surface shall be thoroughly disked using a small farm type disc (not a large construction disc) or Harley raked. Top dress material shall not be handled or the surface disked when wet.
- No wheeled traffic shall occur in the area after the final diskng is complete, with the exception of a small farm type tractor if used for seeding.
- All construction activities must be done under dry conditions.
- All trash, construction debris, sticks, roots, rocks, and other deleterious materials shall be removed prior to seeding and planting.

PRE-SEEDING AND PLANTING WEED CONTROL

Any areas within the wetland buffer that are not disturbed as a result of grading activities shall be treated for non-native invasive species including but not limited to: reed canary grass (*Phalaris arundinacea*), cattails (*Typha sp.*), common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*) prior to any seeding or planting activities.

SEEDING SPECIFICATIONS

- The seeding contractor shall furnish, transport, and install the native seed mixes as specified for the respective areas shown on the planting plan.
- Seeding activities of the permanent matrices shall be performed after the seed bed has been properly prepared and following tree and shrub installation, as applicable, between March 15 and June 15 or between November 1 after the first frost and ending when snow cover exceeds 2-inches in depth or areas are covered with ice.
- If construction activities are finished outside the permanent seeding window, the area can be stabilized with a temporary cover crop or permanent seeded with a supplemental seeding during the prescribed window the following year.
- Seed shall be surface sown with a broadcast seeder and lightly raked in or with a native drop seeder.
- All seed sources shall be within a 200-mile radius of the project site and be true to name and variety.
- Seeding shall only occur in areas that will receive erosion blanket installation on the same day (see section below).

EROSION CONTROL BLANKET INSTALLATION SPECIFICATIONS

North American Green (NAG) S75BN BioNet shall be installed over all native seeding areas as shown on the planting plan with slopes less than 3:1, slopes greater than 3:1 will be covered with hydromulch. The blanket and/or hydromulch shall be installed on the same day as seeding, so no seeded area remains unprotected for more than 8 hours. Therefore, the area seeded per day shall be based on whatever can be blanketed on that same day. The erosion control blanket and hydromulch shall be installed and following the manufacture's specifications.

WETLAND PLANTING SPECIFICATIONS

- The planting contractor shall furnish, transport and install all container grown plants for all planting zones as specified on plans.
- Herbaceous planting activities shall be performed no earlier than May 15th and no later than August 1st under favorable conditions (i.e., proper hydrology).
- All plugs shall be container grown in open bottom pots with the following minimum dimensions: 2 3/8 inches square by 3-inches deep or a minimum root area of 11 cubic inches. At time of planting, all plant plugs shall have minimum shoot heights of 12-inches and well-developed root systems that hold planting soil together when removed from the container. Soil saturation shall be maintained for all container plants until installation.
- Plant material shall not be provided as dormant (i.e., sprouted tubers, sprouted rhizomes or bare root) unless specified in the planting plan.

PLANTING ZONES

The hydrographs provided in Appendix 3 show a typical draw down time for all of the basins in which they return close to normal water level (NWL) in three to four days. Shallow inundation within the emergent and pickerel weed zones will likely be the general condition throughout the majority of the year. The proposed plant mixes are detailed below and in Appendix 2.

Mesic Prairie Seed Mix (14.95 acres). A Prairie Seed Mix, a mix that contains native grasses, sedges and forbs, will be installed on all the slopes of the detention basin as specified on the planting plan. The Mesic Prairie Seed Mix will also be installed around the existing wetland buffers. Following seeding activities, a biodegradable erosion blanket (i.e. North American Green S75BN) and/or hydromulch will be installed to stabilize the seed prior to cover crop germination and establishment of the permanent prairie community.

Wet Prairie Seed Mix (2.89 acres). A Wet Prairie Seed Mix, a mix that contains native grasses, sedges, rushes and forbs will be installed from the NWL up to three feet in elevation on all stormwater basins. This zone of wetter species will accommodate the typical hydrologic bounce for a precipitation event. This same seed mix will be planted from the existing wetland edge, and act as a transition zone to the mesic prairie seed mix. Following seeding activities, a biodegradable erosion blanket (i.e. North American Green S75BN) and/or hydromulch will be installed to stabilize the seed prior to cover crop germination and establishment of the permanent prairie community.

Shoreline Plug Mix (5,174 LF). Wetland plugs (Shoreline Plug Mix) will also be installed around the shoreline of the naturalized basins to provide additional shoreline stabilization. Plant plugs in the Shoreline Plug Mix shall be installed after the prairie has been seeded and blanket has been installed. Plant plugs for the Shoreline Plug Mix shall be established on the toe slope in two rows parallel to the entire shoreline into the erosion control blanket. Plugs in the "Shoreline Row" shall be established in one row parallel with the shoreline with plugs ~2-foot on center at the NWL elevation. Plugs in the

"Upper Shoreline Row" shall be established in one row parallel with the shoreline with plugs ~2-foot on center on the slope 1.0 vertical foot above the "Shoreline Row".

Emergent Plug Mix (0.22 acres). The emergent plug mix will be installed in the areas shown on the Planting Plan. The emergent zone is designed 3-4-inches below the normal water level and will likely be inundated for most of the growing season. A total of 5,000 emergent plant plugs will be installed per acre within this zone under suitable hydrologic conditions during spring (April 15 – July 15).

Pickerel Weed Plugs (3,429 LF). Pickerel weed plants are proposed along the two-foot wetland ledge just below the NWL at a depth of approximately 4 to 9 inches of water depth under normal conditions. Pickerel weed will be installed ~4-5-foot on center for all areas identified on the planting plan. The wetland ledge will help buffer the shoreline from wave action and reduce erosion.

MANAGEMENT & MONITORING PLAN

This MMP for Briargate establishes a means by which the native areas may be evaluated relative to pre-established goals and performance standards.

The duration of the monitoring program is three years, beginning with the completion of grading and planting. The three-year management and monitoring program will be the responsibility of Pulte Home Corporation.

VEGETATION MANAGEMENT

Proper management is critical for successful establishment of the proposed native plantings and achievement of the performance standards. Periodic mowing/weed whipping, selective herbicide application and prescribed burning are commonly used as management techniques for natural plant communities.

The invasive species that require control include, but are not limited to, the following species provided in Table 1.

Table 1: Non-Native and Invasive Species
American Silver-Berry (<i>Elaeagnus commutata</i>)
Asian Bittersweet (<i>Celastrus orbiculatus</i>)
Garden Bird's-Foot-Trefoil (<i>Lotus corniculatus</i>)
Black Locust (<i>Robinia pseudoacacia</i>)
Bull Thistle (<i>Cirsium vulgare</i>)
Lesser Burdock (<i>Arctium minus</i>)
Canadian Goldenrod (<i>Solidago canadensis</i>)
Canadian Thistle (<i>Cirsium arvense</i>)
Cat-Tail (<i>Typha</i> spp.)
Chinese Yam (<i>Discorea oppositifolia</i>)
Common Reed (<i>Phragmites australis</i>)
Crack Willow (<i>Salix fragilis</i>)
Creeping-Jenny (<i>Lysimachia nummularia</i>)
Crownvetch (<i>Securigera varia</i>)
Curly Pondweed (<i>Potamogeton crispus</i>)
Dames Rocket (<i>Hesperis matronalis</i>)
Eurasian-Buttercup (<i>Ficaria verna</i>)
Eurasian Water-Milfoil (<i>Myriophyllum spicatum</i>)
European Barberry (<i>Berberis vulgaris</i>)
European Buckthorn (<i>Rhamnus cathartica</i>)
Garlic-Mustard (<i>Alliaria petiolata</i>)
Giant Hogweed (<i>Heracleum mantegazzianum</i>)
Glossy False Buckthorn (<i>Frangula alnus</i>)
Greater Flowering-Rush (<i>Butomus umbellatus</i>)
Japanese Barberry (<i>Berberis thunbergii</i>)
Japanese Bristle Grass (<i>Setaria faberi</i>)
Japanese Honeysuckle (<i>Lonicera japonica</i>)
Japanese Hop (<i>Humulus japonica</i>)
Japanese-Knotweed (<i>Reynoutria japonica</i>)
Japanese Stilt Grass (<i>Microstegium vimineum</i>)
Jetbead (<i>Rhodotypos scandens</i>)
Leafy Spurge (<i>Euphorbia esula</i>)
Littleleaf Linden (<i>Tilia cordata</i>)
Morrow's Honeysuckle (<i>Lonicera morrowii</i>)
Nodding Plumeless-Thistle (<i>Carduus nutans</i>)
Privet (<i>Ligustrum</i> spp.)
Purple Loosestrife (<i>Lythrum salicaria</i>)
Ragweed (<i>Ambrosia</i> spp.)
Rambler Rose (<i>Rosa multiflora</i>)
Red/White Clover (<i>Trifolium</i> spp.)
Reed Canary Grass (<i>Phalaris arundinacea</i>)
Russian Olive (<i>Elaeagnus angustifolia</i>)
Sandbar Willow (<i>Salix interior</i>)
Seaside Goldenrod (<i>Solidago sempervirens</i>)
Showy Fly-Honeysuckle (<i>Lonicera x bella</i>)
Spotted knapweed (<i>Centaurea stoebe</i> subsp. <i>micranthos</i>)
Tall Goldenrod (<i>Solidago altissima</i>)
Teasel (<i>Dipsacus</i> spp.)
Twinsisters (<i>Lonicera tatarica</i>)
Watercress (<i>Nasturtium officinale</i>)
Wild Parsnip (<i>Pastinaca sativa</i>)
Yellow Sweet-Clover (<i>Mellilotus officinalis</i>)

First and Second Year High-Mowing/Weed Whipping. During the first two growing seasons after installing the Prairie/Wet Prairie Mixes on the slopes, mowing or selective weed whipping the vegetation should occur as needed to maintain a plant height of no greater than 18 to 20 inches. To accomplish this, cutting the vegetation to a height of 6 to 9 inches several times during the growing season will be needed. Cutting the vegetation will aid new plant growth as to allow more sunlight to reach young prairie seedlings. Cutting the vegetation will also aid in the control of annual weeds, which can undermine seeding efforts. Selective weed whipping can be used instead of a mower if conditions are unfit (i.e., too wet or no access) for a tractor or if only small, isolated areas of undesirable vegetation require cutting. In addition, cutting the inflorescence prior to seed set of many biennial species including teasel and sweet clover is an effective control method that can be utilized.

Herbicide Application. Management of the vegetation in all areas will include selective application of herbicide to control the invasive and non-native plant species included in Table 1. These species, including others, can displace desirable species, thereby reducing floristic diversity in the naturalized areas. Controlling these species will be required to achieve the performance standards for the project.

Natural regeneration of cattails in the naturalized BMP basins/Wetland Buffer areas will likely occur following construction. A pre-planting cattail control will be conducted if any cattails are present. Hand pulling cattails can be conducted when the cattails are small enough to ensure that the entire root is removed. Off-site disposal of cattails will be required. Larger cattails will require herbicide applications. Cattail coverage can be no greater than 5% prior to plant installation. Aggressive cattail control will be required after planting throughout the management period to ensure plant establishment. After planting, the hand-wick application method to control cattails will be required.

A determination regarding the type of herbicide to be used should be made when it is known which nuisance species are present on the site. Depending on the target weed species, a selective herbicide may be available. The choice of herbicide and timing of herbicide application will be made by a trained, experienced professional based on the target weed species and conditions.

It is recommended that a minimum of four annual weed control application periods are conducted throughout the three-year period. Below is a general guideline on the suggested schedule and target species for the application periods:

- Application Period One (early spring – April/May):** problematic species such as, but not limited to, reed canary grass, garlic mustard, Dame's rocket, red/white clover, cool season adventive grasses.
- Application Period Two (late spring to early summer – May/June):** problematic species such as, but not limited to, teasel, white/yellow sweet clover, thistle, common reed, cattail, and re-sprout control and new seedling growth of buckthorn, honeysuckle, multi-flora rose, privet.
- Application Period Three (mid to late summer – July/August):** problematic species such as, but not limited to, ragweed, cattails, purple loosestrife, common reed.
- Application Period Four (late summer and fall – September/October):** problematic species such as, but not limited to, reed canary grass, thistle, common reed, red/white clover, adventive cool season grasses.

Prescribed Burning. Prescribed burning may be conducted in the naturalized areas during the management period. If deemed safe by the contractor, the prescribed burn should be scheduled in the spring or fall of the third growing season. Prescribed burning can reduce exotic weed species that may establish from seeds or rootstock material in the topsoil that is in situ or placed in these areas. Additionally, burning encourages the growth of native plant species from the established plant mix, and existing seedbank, and inhibits the growth of non-indigenous vegetation.

PERFORMANCE STANDARDS

Performance standards are established for all proposed projects involving naturalized areas so that the relative success may be evaluated. If the performance standards are not achieved by the end of the three-year management and monitoring program, the permittee is responsible for correction of any deficiencies through further management activities, which may include replanting.

- Within 3 months of seed installation, at least 90% of the mesic/wet prairie zone, as measured by aerial coverage, shall be vegetated. A minimum 90% vegetative coverage shall be maintained throughout, and at the end of, the three-year period for this area.
- At the end of the first year of the monitoring period, all vegetated areas shall achieve a minimum 10% native vegetative coverage. None of the three most dominant species can be non-native and/or invasive.
- At the end of the second year of the monitoring period, all vegetated areas shall achieve a minimum 25% native vegetative coverage. None of the three most dominant species can be non-native and/or invasive.
- At the end of the third year of the monitoring period, all vegetated areas shall achieve a minimum 75% native vegetative coverage. None of the three most dominant species can be non-native and/or invasive.
- At the end of the third year of the monitoring period the site as a whole shall achieve a Floristic Quality Index of 20 or greater.
- Relative coverage (determined by ocular estimation) of cattails shall be less than 10% throughout, and at the end of, the three-year period.
- Relative coverage (determined by ocular estimation) of common reed, reed canary grass and purple loosestrife in aggregate shall be less than 5% throughout, and at the end of, the three-year period.
- Relative coverage (determined by ocular estimation) of thistle and teasel in aggregate shall be less than 5% throughout, and at the end of, the three-year period.

GETATION MONITORING

Annual vegetation monitoring in the naturalized BMP basins/Wetland Buffer areas will be conducted during the three-year period. Ocular estimation will be used to collect approximate vegetative coverage d relative coverage data. The vegetation monitoring inspections will be conducted twice per year (May/June and August/September). In addition, an inventory of all plant species present in the areas will be collected and will be used to calculate the native FQI values.

ANNUAL REPORTING

Annual monitoring report will be submitted to the Village of Lindenhurst by January 31 of each year during the three-year period or until performance standards are met and signoff is achieved.

Annual report must include a review of site progression towards meeting the performance standards and propose any necessary remedial actions. More specifically, the monitoring report must contain the following information, which will be based on data collected during the monitoring inspections.

- A summary of management activities conducted during the year.
- Representative photographs depicting general site conditions.
- Calculate native FQI values and the native mean wetness coefficient for the native restoration areas.
- Provide aerial coverage and relative coverage estimates as needed to evaluate the performance standards.
- Evaluate the status of the areas relative to the performance standards.
- Recommend management activities for the following year to address any issues related to site success.

MESIC PRAIRIE SEED MIX (14.95acres)			
Type	Species	Common Name	Seeding Rate (lbs/ac)
Forbs	<i>Asclepias tuberosa</i>	Butterfly Weed	0.250
	<i>Aster laevis</i>	Smooth Blue Aster	0.250
	<i>Aster novae-angliae</i>	New England Aster	0.250
	<i>Astragalus canadensis</i>	Canadian Milk Vetch	0.250
	<i>Baptisia leucantha</i>	White Wild Indigo	0.250
	<i>Cassia fasciculata</i>	Partridge Pea	0.250
	<i>Coreopsis lanceolata</i>	Sand Coreopsis	0.125
	<i>Coreopsis palmata</i>	Prairie Coreopsis	0.063
	<i>Coreopsis tripteris</i>	Tall Coreopsis	0.125
	<i>Desmodium illinoense</i>	Illinois Tick-Trefoil	0.125
	<i>Echinacea pallida</i>	Pale Purple Coneflower	0.125
	<i>Echinacea purpurea</i>	Broad-leaved Pur. Coneflower	0.313
	<i>Eryngium yuccifolium</i>	Rattlesnake Master	0.125
	<i>Euthamia graminifolia</i>	Grass-Leaved Goldenrod	0.125
	<i>Helopsis helianthoides</i>	False Sunflower	0.188
	<i>Monarda fistulosa</i>	Wild Bergamot	0.188
	<i>Lespedeza capitata</i>	Round-Headed Bush Clover	0.125
	<i>Parthenium integrifolium</i>	Wild Quinine	0.063
	<i>Penstemon digitalis</i>	Foxglove Beard Tongue	0.188
	<i>Petalostemum purpureum</i>	Purple Prairie Clover	0.125
	<i>Petalostemum candidum</i>	White Prairie Clover	0.063
	<i>Potentilla arguta</i>	Prairie Cinquifol	0.125
	<i>Pycnanthemum virginianum</i>	Mountain Mint	0.188
	<i>Ratibida pinnata</i>	Yellow Coneflower	0.250
	<i>Rudbeckia hirta</i>	Black-eyed Susan	0.250
	<i>Rudbeckia subtomentosa</i>	Sweet Black-eyed Susan	0.250
Grasses & Sedges	<i>Silphium integrifolium</i>	Rosin Weed	0.125
	<i>Solidago speciosa</i>	Showy Goldenrod	0.063
	<i>Tradescantia ohiensis</i>	Ohio Spiderwort	0.125
	<i>Verbena stricta</i>	Hoary Vervain	0.188
	<i>Vernonia fasciculata</i>	Ironweed	0.188
	<i>Zizia aurea</i>	Golden Alexanders	0.125
		sub total	5.443
	<i>Andropogon scoparius</i>	Little Bluestem	6.000
	<i>Andropogon gerardii</i>	Big Bluestem	1.500
	<i>Bouteloua curtipendula</i>	Side-oats Grama	6.000
	<i>Carex bicknellii</i>	Bicknells Sedge	0.125
	<i>Carex brevior</i>	Shorter Sedge	0.125
	<i>Carex molesta</i>	Field Oval Sedge	0.125
	<i>Carex vulpinoidea</i>	Fox Sedge	0.250
	<i>Elymus canadensis</i>	Canada Wild Rye	3.000
	<i>Elymus virginicus</i>	Virginia Wild Rye	2.000
	<i>Spartina pectinata</i>	Prairie Cord Grass	0.375
	<i>Panicum virgatum</i>	Switch Grass	1.000
		sub total	20.500
		Total Permanent Species:	25.943
Cover	<i>Avena sativa</i>	Seed Oats	32.000

WET PRAIRIE SEED MIX (2.89acres)			
Type	Species	Common Name	Seeding Rate (lbs/ac)
Forbs	<i>Asclepias incarnata</i>	Swamp Milkweed	0.125
	<i>Bidens cernua</i>	Nodding Bur Marigold	0.125
	<i>Boironia aroides</i>	False Aster	0.125
	<i>Epilobium coloratum</i>	Cinnamon Willow Herb	0.063
	<i>Euthamia graminifolia</i>	Grass-Leaved Goldenrod	0.125
	<i>Eutrachium maculatum</i>	Joe Pye Weed	0.125
	<i>Helenium autumnale</i>	Sneezeweed	0.125
	<i>Liatris pycnostachya</i>	Prairie Blazing Star	0.125
	<i>Lobelia siphilitica</i>	Blue Lobelia	0.063
	<i>Mimulus ringens</i>	Monkey Flower	0.125
	<i>Oliganuron riddellii</i>	Riddell's Goldenrod	0.125
	<i>Physostegia virginiana</i>	Obedient Plant	0.188
	<i>Pycnanthemum virginianum</i>	Mountain Mint	0.125
	<i>Senna hebecarpa</i>	Wild Senna	0.188
	<i>Symphotrichum novae-angliae</i>	New Endland Aster	0.125
	<i>Verbena hastata</i>	Blue Vervain	0.188
	<i>Veronia fasciculata</i>	Common Ironweed	0.125
	<i>Veronicastrum virginicum</i>	Culvers Root	0.063
		sub total	2.250
	<i>Carex cristatella</i>	Crested Oval Sedge	0.125
	<i>Carex scoparia</i>	Lance-Fruited Oval Sedge	0.125
	<i>Carex tribuloides</i>	Awl-Fruited Oval Sedge	0.125
	<i>Elymus virginicus</i>	Virginia Wild Rye	3.000
	<i>Glyceria striata</i>	Fowl Manna Grass	0.125
	<i>Leersia oryzoides</i>	Rice Cut Grass	0.375
Grasses & Sedges	<i>Panicum virgatum</i>	Switch Grass	1.000
	<i>Scirpus atrovirens</i>	Dark-Green Bulrush	0.125
	<i>Scirpus cyperinus</i>	Wool Grass	0.125
	<i>Scirpus pendulus</i>	Rufous Bulrush	0.125
	<i>Spartina pectinata</i>	Prairie Cord Grass	0.500
		sub total	5.750
		Total Permanent Species:	8.000
Cover	<i>Avena sativa</i>	Seed Oats	32.000

SHORELINE PLUG ROWS			
Plants installed at toe of slope ~2' on center in two rows parallel with the shoreline (5,174LF)			
Row	Species	Common Name	Quantity
Shoreline Row	<i>Carex lacustris</i>	Lake Sedge	500
	<i>Hibiscus laevis</i>	Halberd Leaved Rose Mallow	450
	<i>Iris virginica shrevei</i>	Blue Flag	550
	<i>Physostegia virginiana</i>	Obedient Plant	500
	<i>Scirpus validus creber</i>	Great Bulrush	600
		Sub Total Plugs:	2,600
Upper Shoreline Row	<i>Asclepias incarnata</i>	Swamp Milkweed	500
	<i>Carex emoryi</i>	Riverbank Sedge	550
	<i>Carex pellita</i>	Woolly Sedge	550
	<i>Liatris pycnostachya</i>	Prairie Blazing Star	450
	<i>Spartina pectinata</i>	Prairie Cord Grass	550
		Sub Total Plugs:	2,600
		Total Plugs:	5,200

SHALLOW EMERGENT PLUG MIX (0.22 acres)		
(5,000 plugs per acre)		
Species	Common Name	Quantity
<i>Acorus calamus</i>	Sweet Flag	150
<i>Iris virginica shrevei</i>	Blue Flag	100
<i>Juncus effusus</i>	Soft Rush	50
<i>Pontederia cordata</i>	Pickereelweed	50
<i>Sagittaria latifolia</i>	Common Arrowhead	100
<i>Schoenoplectus fluviatilis</i>	River Bulrush	100
<i>Scirpus acutus</i>	Hardstem bulrush	150
<i>Scirpus pungens</i>	Chairmaker's Rush	100
<i>Scirpus validus creber</i>	Great Bulrush	150
<i>Sparganium eurycarpum</i>	Bur Reed	150
	Total:	1,100

PICKEREL WEED ZONE (3,429LF)		
(~4-5 foot on center)		
Species	Common Name	Quantity
<i>Pontederia cordata</i>	Pickereelweed	750
	Total:	750

PROJECT NO.: 19573
PROJECT MANAGER: SB
DESIGNED BY: MI
DRAWN BY: MI

ORIGINAL ISSUE DATE: 02/12/2020

REV I S I O N S

NO. DATE DESCRIPTION

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NATIVE PLANTING SPECIFICATIONS AND SEED MIXES

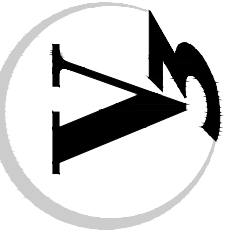
BRIARGATE SUBDIVISION

LINDENHURST

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