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DATE: 03/29/2021

SCALE: 1"=50'

DRAWN BY: SM REVIEWED BY: SR

ENCAP, Inc. #20-1204N USACE # LRC-2016-00054 Munic. Project # 21-002

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NATIVE PLANTING SPECIFICATIONS

PRAIRIE GROVE COMMONS UNIT 2 - PHASE 1 STORMWATER DETENTION BASIN

Prepared by ENCAP, Inc. dated March 29, 2021

1.0 PURPOSE

The purpose of this plan is to create a naturalized stormwater detention basin within the project area. The stormwater detention basin is designed to capture, slow down, and release overland stormwater runoff from surrounding commercial properties, streets, and impervious surfaces. The basin will be planted with native, deep-rooted vegetation that will aid these functions.

Expected potential benefits for this plan include: improved water quality locally and throughout the watershed, increased groundwater filtration and infiltration, improved soil stabilization, reduction in sedimentation loads on surrounding water resources, improved wildlife habitat, and improved aesthetics.

2.0 CONTRACTOR QUALIFICATIONS

- 1. The Native Landscape Contractor chosen for the establishment and enhancement of the natural areas must be experienced in the restoration, installation, and management of said areas. They must have a minimum of five years experience conducting ecological restoration and management projects.
- 2. There shall be a supervisor available at all times that can identify non-native and native plants by genus and species. The goal of installing successful native plant communities is a long-term process. Therefore, it is imperative that a qualified Native Landscape Contractor perform the initial installation and maintenance.

3.0 QUALITY AND CONDITION

- 1. Native seed shall be obtained from sources east of the Mississippi River within the same EPA Level III Ecoregion as the project site (Central Corn Belt Plains). Plant origins outside of the Ecoregion shall be approved by the Wetland Consultant and/or Owner.
- 2. Native seeds shall be blended by the vendor, and the mixture and ratio shall be guaranteed in writing to be as specified. The amount of seed indicated on the specifications shall mean the total amount of pure live seed (PLS) per acre for all species listed. It is the sole responsibility of the Native Landscape Contractor to provide approved seed that meets industry-standard PLS requirements.
- 3. Native Landscape Contractor shall provide the Wetland Consultant with the name and location of the seed supplier, origin of the various kinds of plants, and a statement of the purity of the seed.
- 4. Seed shall conform to applicable State and Federal regulations as in effect on the date of letting. Unless otherwise specified, seed shall not contain in excess of 1 percent weed seeds; 0 percent is desirable.
- 5. All storage requirements, stratification, and scarification considerations shall be the sole responsibility of the Native
- 6. Mycorrhizal inoculants shall be pelletized and mixed at 1 lb. per acre with the fine seeds before installation. The inoculants shall contain a diverse mixture of Glomales fungal species (Glomus spp.) in palletized form.
- 7. Under no circumstances shall Wheat (Triticum aestivum), Cereal Rye (Secale cereale), Perennial Rye (Lolium perenne), or Barley (Hordeum vulgare) be used as a temporary cover crop.

4.0 HANDLING

- 1. Native Landscape Contractor shall be solely responsible for the proper handling and storage of the seed according to the best seed handling and storage practices, including fungicide treatments and stratification considerations. Owner shall make no compensation for damage to the seed because of improper storage, cleaning, threshing, or screening operations.
- 2. All native seeds shall be packed and covered in such a manner as to ensure adequate protection against damage and maintain dormancy while in transit, storage, or during planting operations.
- 3. Seed shall be kept dry and unopened until needed for use. Seed shall not be stored or temporarily stored in locations or vehicles where the temperature will be in excess of 90 degrees F.

5.0 SITE PREPARATION - Stormwater Detention Basin

- 1. The General Contractor and Native Landscape Contractor shall be responsible for performing all work necessary to achieve and maintain an acceptable seedbed prior to seeding. All areas must be properly prepared before seeding begins. Underground utility location maps and plans should be reviewed prior to work. Equipment having low unit pressure ground contact shall be utilized within the planting areas.
- 2. Unless the Wetland Consultant agrees to another approach, the seedbed shall be prepared by working the topsoil to a depth of 3 inches. Site preparation equipment shall be of a design that can be utilized efficiently by the Native Landscape Contractor to meet the requirements for the work specified. The equipment proposed for use by the Native Landscape Contractor for disking and herbicide applications shall be subject to approval by the Wetland Consultant.
- 3. Prior to seeding, at least 6 inches of topsoil shall be present and free of all clods, stones, roots, sticks, rivulets, gullies, crusting, and cracking. The soil aggregate size will be no greater than 2 inches in the largest diameter.
- 4. If present, compacted soils shall be disked or raked prior to seeding. Remedial measures for the access area may, at the direction of the Wetland Consultant, involve ripping from 12 to 18 inches of the soil horizon prior to disking. If compaction is not a concern and the seedbed needs to be loosened prior to seeding to ensure good seed-soil contact, disking or raking shall be performed using equipment and the approach recommended by the Native Landscape Contractor, subject to approval by the Wetland Consultant.
- 5. If needed, cultivation shall occur within 24 hours prior to seeding. Seeding should occur immediately after the last cultivation preferably before a rain.

6.0 PLANT MATERIALS

Table 1: Tall Mesic Prairie with Flowers Mix

Scientific Name	Common Name	Lbs/A
Andropogon gerardii	Big Bluestem	1.500
Amorpha canescens	Leadplant	0.125
Aster laevis	Smooth Blue Aster	0.063
Aster novae-angliae	New England Aster	0.063
Baptisia leucantha	White Indigo	0.063
Bouteloua curtipendula	Side Oats	2.000
Carex bicknellii	Bicknell's Sedge	0.062
Cassia fasciculata	Partridge Pea	0.125
Dalea purpureum	Purple Prairie Clover	0.063
Echinacea purpurea	Purple Coneflower	0.281
Elymus canadensis	Canada Wild Rye	1.000
Eryngium yuccifolium	Rattlesnake Master	0.188
Heliopsis helianthoides	Early Sunflower	0.125
Lespedeza capitata	Roundhead Bushclover	0.125
Liatris aspera	Button Blazing Star	0.125
Liatris pycnostachya	Prairie Blazingstar	0.188
Monarda fistulosa	Bergamot	0.031
Panicum virgatum	Switch Grass	0.250
Parthenium integrifolium	Wild Quinine	0.063
Penstemon digitalis	Foxglove Beardtongue	0.063
Physostegia virginiana	False Dragonhead	0.063
Potentilla arguta	Prairie Cinquefoil	0.063
Ratibida pinnata	Yellow Coneflower	0.125
Rosa blanda	Early Wild Rose	0.063
Rudbeckia hirta	Black-eyed Susan	0.250
Rudbeckia subtomentosa	Sweet Coneflower	0.031
Schizachyrium scoparius	Little Bluestem	3.000
Silphium integrifolium	Rosinweed	0.188
Silphium laciniatum	Compass Plant	0.188
Solidago nemoralis	Old-field Goldenrod	0.125
Solidago rigida	Stiff Goldenrod	0.063
Sorghastrum nutans	Indian Grass	3.000
Verbena stricta	Hoary Vervain	0.125
Vernonia fasciculata	Common Ironweed	0.188
Veronicastrum virginicum	Culver's Physic	0.006
	Total	16.97

Table 2: Wet Mesic Prairie with Flower Mix

Scientific Name	Common Name	Lbs/Ac
Andropogon gerardii	Big Bluestem	3.000
Asclepias Species	Milkweed	0.063
Aster laevis	Smooth Blue Aster	0.016
Aster novae-angliae	New England Aster	0.031
Calamagrostis canadensis	Blue Joint Grass	0.063
Carex annectens xanthocarpa	Yellow-fruited Sedge	0.063
Carex bebbii	Bebb's Sedge	0.063
Carex normalis	Normal Sedge	0.063
Carex vulpinoidea	Fox Sedge	0.125
Cassia fasciculata	Partridge Pea	0.250
Elymus virginicus	Virginia Wild Rye	2.000
Epilobium coloratum	Cinnamon Willow Herb	0.015
Eupatorium perfoliatum	Boneset	0.015
Hypericum pyramidatum	Great St. John's Wort	0.063
ris virginica shrevei	Blue Flag Iris	0.125
Liatris pycnostachya	Prairie Gayfeather	0.313
₋iatris spicata	Spiked Gayfeather	0.188
Lobelia siphilitica	Great Blue Lobelia	0.031
Mimulus ringens	Monkey Flower	0.031
Monarda fistulosa	Bergamot	0.063
Panicum virgatum	Switch Grass	0.750
Parthenium integrifolium	Wild Quinine	0.125
Petalostemum (Dalea) purpureum	Purple Prairie Clover	0.250
Physostegia virginiana	False Dragonhead	0.063
Pycnanthemum virginicum	Common Mt. Mint	0.063
Ratibida pinnata	Yellow Coneflower	0.250
Rudbeckia hirta	Black-eyed Susan	0.250
Schizachyrium scoparium	Little Bluestem	2.000
Scirpus atrovirens	Dark Green Rush	0.500
Silphium laciniatum	Compass Plant	0.188
Silphium perfoliatum	Cup Plant	0.250
Solidago (Oligoneuron) riddellii	Riddell's Goldenrod	0.063
Solidago (Oligoneuron) rigida	Stiff Goldenrod	0.125
Sorghastrum nutans	Indian Grass	2.000
Spartina pectinata	Cord Grass	1.000
Vernonia fasciculata	Common Ironweed	0.031
Veronicastrum virginicum	Culver's Physic	0.063
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Zizia aurea	Golden Alexander	0.031

Table 3: Shallow Emergent Plug Mix

Scientific Name	Common Name		Plugs/Ac
Acorus americanus	Sweetflag		750
Carex comosa	Bristly Sedge		250
Carex lacustris	Lake Sedge		250
Carex vulpinoidea	Fox Sedge		500
Iris virginica	Blue Flag Iris		250
Juncus effusus	Soft Rush		250
Scirpus atrovirens	Dark Green Rush		500
Scirpus acutus	Hardstem Bulrush		500
Scirpus cyperinus	Wool Grass		250
Scirpus fluviatilis	River Bulrush		250
Scirpus pungens	Chairmaker's Rush		250
Scirpus validus creber	Softstem Bulrush		500
Sparganium eurycarpum	Burr Reed		500
		Total	5000

Table 4: Temporary Matrix Seed Mixture to be Planted with Tables 1 & 2 Above

Scientific Name	Common Name	lbs per acre
Avena sativa	Seed Oats	32.0
Elymus canadensis	Canada Wild Rye	2.00
Elymus virginicus	Virginia Wild Rye	2.00
Lolium multiflorum	Italian Rye Grass	4.00
Total	· · · · · · · · · · · · · · · · · · ·	40.0

7.0 SEED INSTALLATION

1. Except where site conditions preclude their use, seeding shall be performed using a Truax drill, Truax Trillion seeder, or comparable equipment designed specifically for installation of native seed. For areas where site conditions preclude the use of specialized equipment, seed may be installed through hand broadcasting and lightly raking in the seed. Hand broadcast seed shall be spread at twice the specified rate. Other methods of seed installation may be used with prior approval from the Wetland Consultant.

2. Seasonal Considerations:

November 1 through February 28: Seed must be protected from displacement due to water and wind erosion. Seeding on bare, graded surfaces must be protected with double netted erosion control blankets on slopes. Less cover crop will be observed during the following spring due to frost damage.

March 1 through June 29: Seeding during this period is appropriate but germination of a portion of the seed may not occur until the following season due to lack of cold stratification to break seed dormancy. Cover crop generally germinates within 2-3 weeks of seeding operation. Seeding on bare, graded surfaces must be protected with erosion control blankets on slopes.

June 30 through September 15: Installation of native seed should be suspended unless irrigation can be provided or unseasonably cool conditions persist. Also, any annual forbs planted with the mix during this time period may germinate but not have sufficient time to flower before fall senescence. Seeding on bare, graded surfaces must be protected with erosion control blankets on slopes.

September 15 through October 31: Seeding on bare, graded surfaces must be protected with double netted erosion control blankets on slopes. Less cover crop will be observed during the following spring due to frost damage.

- 3. Prior to starting work, all seeding equipment shall be calibrated and adjusted to sow seeds at the proper seeding rate. In general, the optimum seeding depth is 0.25 inch below the soil surface. Areas where the seed has not been incorporated into the soil to the proper depths will not be accepted, and no compensation for materials or labor for the rejected work will be made by the Owner.
- 4. Equipment shall be operated in a manner to ensure complete, uniform coverage of the entire area to be seeded and to avoid damage to existing woody plants. Any area inadequately covered, as solely determined by the Wetland Consultant, shall be retreated at no additional cost to the Owner.
- 5. Seeding and soil tracking/firming shall not be done during periods of rain, severe drought, high winds, excessive moisture, frozen ground, or other conditions that preclude satisfactory results.
- 6. To achieve best results, seed boxes should be kept more than one-quarter full at all times and ground speed should be no more than 2 to 3 mph.
- 7. Seeding operations must occur when soil moisture is appropriate for seeding operation.
- 8. Native plant seed shall not receive fertilizer.
- 9. Wet seed that is moldy or otherwise damaged in transit or storage shall not be used.
- 10. After seeding operation is completed, install erosion control blanket per manufacturer's specifications as necessary.

8.0 PLUGGING IMPLEMENTATION

- 1. Plugs shall be installed in the spring or other date guaranteed by the Native Landscape Contractor.
- 2. Plugs shall be planted in a hole dug with a trowel, spade, planting bar, or suitable instrument such that the hole is of a minimum diameter and depth to accommodate the plug, with its roots, without damage.
- 3. The soil excavated from the planting hole should be used to backfill around the plant and lightly packed to secure the
- 4. If planting is delayed more than six hours after delivery, store plugs in the shade, protect from the weather and mechanical damage, and keep them moist and cool. All plugs should be planted within 24 hours of delivery.
- 5. Plugs shall be obtained from a reputable nursery or grown from seed. Plugs shall not be collected from wild populations of plants.
- 6. Plugs shall be installed in areas approximately 8 feet by 12 feet in size. Waterfowl exclusion shall be constructed around plug areas in a manner to protect new plantings from depredation. Fencing shall be constructed of 1" wire mesh or comparable material two feet in width. Posts shall be metal t-post or 2"x 2" wood stakes. Posts shall be 4 to 6 feet in length dependant on soil structure within the emergent planting area. String shall be strung across the tops of the exclusion structures to prevent aerial entry by waterfowl.

9.0 EROSION CONTROL

- 1. The Native Landscape Contractor shall be fully responsible for implementing erosion control measures within prescribed
- 2. All areas are recommended to be covered with erosion control blanket; North American Green S-150 or equivalent will be used at a minimum. Fall-winter plantings and/or 3:1 slopes require North American Green S150 or equivalent. 3 feet above and below (i.e. half of the blanket width) the normal water line (NWL) of the stormwater detention basin will be stabilized with North American Green C125 or equivalent. Erosion control blanket shall be installed within 24 hours after an area is seeded. See manufacturer's specifications for erosion control blanket composition.

10.0 CLEAN-UP AND PROTECTION

- 1. During landscape work, store materials and equipment where directed. Keep pavements clean and work areas and adjoining areas in an orderly condition.
- 2. Protect landscape work and materials from damage due to landscape operations or operations by other trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed by the Wetland Consultant.

11.0 INSPECTIONS AND ACCEPTANCE

- 1. Owner reserves the right to inspect all seeds and plants either at place of growth or at site before planting for compliance with requirements for name, variety, size, quantity, quality or mix proportion.
- 2. Native Landscape Contractor is to keep records of the certificates of composition or invoices of seed mixtures and integrity of plant materials with respect to species, variety, and source after purchase.
- 3. Native Landscape Contractor is to notify Owner within five days after completing initial and/or supplemental plantings in each area.

MANAGEMENT AND MONITORING PLAN

PRAIRIE GROVE COMMONS UNIT 2 - STORMWATER DETENTION BASIN

Prepared by ENCAP, Inc. dated March 29, 2021

1.0 MONITORING METHODOLOGY

The planted areas will be monitored annually for a three-year period to ensure successful establishment of the plantings. The primary objective of the monitoring program is to track the success of the planted species over the 3-year period of regularly scheduled monitoring sessions. The monitoring documents changes in plant community composition and reveals the need for management changes to improve floristic quality. Specific goals of the monitoring are to determine the vegetative species present, the percent cover by vegetation, and identify hydrology and erosion problems.

Monitoring within the planted areas shall be conducted annually utilizing a meander survey methodology. The monitoring

- 1) the dominant vegetative species within each planting zone,
- 2) the approximate percent vegetative coverage by native and non-native species within each designed planting zone, and 3) water level or drainage problems,
- Observations shall be made during the monitoring to identify specific management strategies necessary to reach design goals. Site conditions shall be photo documented during monitoring sessions.

2.0 PERFORMANCE CRITERIA

by non-native or invasive species.

- 1. By the end of the third growing season, all proposed vegetative areas shall achieve eighty-five percent (85%) vegetative
- 2. All proposed native vegetated areas shall achieve a minimum FQI of ten (10) within the three (3) year monitoring period;
- 3. All proposed native vegetated areas shall not be dominated or contain cumulatively more than ten percent (10%) cover

3.0 REPORTING

An annual vegetation monitoring report will be submitted to the Owner, Village of Sugar Grove, and Kane County by February 15th following the monitoring season each year. This report will be used to determine if the natural areas are meeting performance standards. The report shall include information on site location; permit numbers; methodology used (including monitoring dates); data results; summary relative to performance criteria; a summary of the annual monitoring observations; a description of the management performed during the year; a list of recommendations for management during the upcoming year; and representative photographs of the natural areas. The naturalized Stormwater Detention Basin shall meet certification requirements, associated performance standards, and will be monitored and maintained for a period of three years or until performance standards have been met to ensure successful establishment.

4.0 MANAGEMENT PLAN

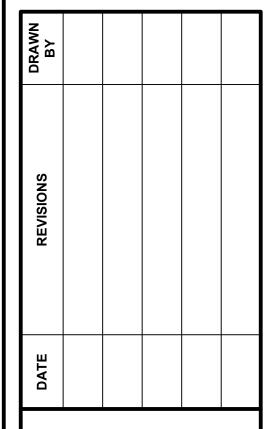
1. First Year. Mow the planted areas to a height of 6-8 inches 2-4 times during the early growing season and as needed to control non-native and invasive species. Mowing (including weed whipping) shall take place prior to or when non-native and invasive species are flowering so as to prevent seed set. Control undesirable plant species, when present in small quantities, by hand pulling prior to the development and maturity of the plant. Hand removal shall include the removal of all aboveground and belowground stems, roots and flower masses prior to development of seeds. Apply herbicide (as necessary) to non-native and invasive species within the naturalized areas with appropriate herbicide. Management site visits should be conducted at a minimum of 3-4 times annually.

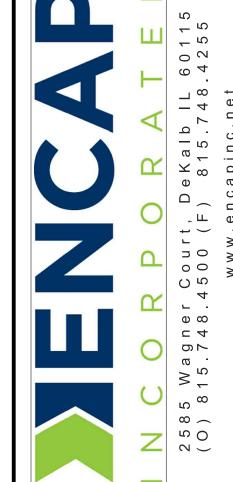
Herbicide should be applied by a trained and licensed applicator. Non-selective herbicides can be used but with utmost caution. Non-selective herbicides are absorbed through the plant tissues and work their way into the root system, effectively killing the plant. The only acceptable non-selective herbicides are glyphosate based such as RoundUp, Rodeo, or Razor. The only acceptable selective herbicides (i.e. targeting broad leaf and woody plants) are 2,4-D (2,4-Dichlorophenoxyacetic acid) based or triclopyr based such as Garlon 4.

- 2. Second Year. Control of undesirable plant species during the second growing season shall consist primarily of herbicide application. Mowing (including weed whipping) shall be conducted two to four times during the early growing season and as needed to a height of 6 to 8 inches to prevent annual weeds from producing seed. Management site visits should be conducted at a minimum of 3-4 times annually.
- 3. Third Year. Undesirable plant species will be controlled (as necessary) by mowing (including weed whipping), hand pulling, and/or spot herbicide application. At the completion of the third growing season (dependent on fuel availability; dominance of graminoid species, i.e. grasses and sedges, is required for successful burning), fire may be introduced to the planted areas as the primary management tool. Trained professionals experienced in the fuel types present shall conduct burning. State and local permits shall be obtained prior to prescribed burning. Prior to a prescribed burn, surrounding property owners as well as local police and fire departments will be notified. A burn plan designating the preferred wind direction and speed, location of firebreaks, and necessary personnel and equipment shall be prepared and utilized in planning and burn implementation.

The initial burn shall be dependent on fuel availability that is directly related to the quantity and quality of grasses, sedges, and forbs present within the planting area. The burn season runs from November 1 through April 30 and burns shall be conducted whenever conditions are suitable. Generally, a new prairie/wetland area shall be burned annually for two years after the third growing season and then every other year thereafter, burning approximately 50-75% of the area. Undesirable plant species will be controlled (as necessary) by spot mowing (including weed whipping), hand pulling, and/or spot herbicide application. Continue to performance management site visit 3-4 times annually during the

4. Long Term. As the planted areas mature, required supplemental management will be significantly reduced. The plant communities will stabilize and be effectively managed through prescribed burning. Mowing to prevent seed set of undesirable species and spot herbicide application are recommended when and where applicable. Management site visits should be conducted at a minimum of 1-2 times annually. Prescribed burning should be conducted every 2-5 years depending on site conditions and fuel availability.





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