

Vegetation Management Plan

Harmony Storage Project

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Prepared for:

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Project/File:

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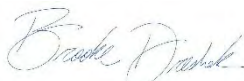
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Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
AWS	Available Water Supply
BESS	Battery Energy Storage System
CRP	Conservation Reserve Program
DNR	Department of Natural Resources
ECP	Erosion Control Plan
PLS	Pure Live Seed
NOAA	National Oceanic and Atmospheric Administration
Stantec	Stantec Consulting Services Inc.
SWPPP	Stormwater Pollution Prevention Plan
The Plan	Vegetation Management Plan
T&E	Threatened and Endangered
USDA-NRCS	United States Department of Agriculture-Natural Resource Conservation Service
USGS	United States Geological Survey
UTV	Utility Terrain Vehicle
VMP	Vegetation Management Plan



1 Project Overview

Harmony Storage, LLC (the “Client”), is proposing the Harmony Storage Project (the “Project”) a 200-megawatt (MW) battery energy storage system (BESS) with a four-hour duration (800 megawatt-hours (MWh)). The Project also includes associated inverters, transformers, underground cables, and other ancillary facilities, such as fencing, roads, stormwater facilities and a Battery Management System (BMS). The Project will connect to the Harmony Solar 230-kilovolt (kV) collector substation (see Docket No. PU-18-219) via underground 34.5 kV collection lines. The Project is located in Township 140N, Range 51W, Section 12 of Harmony Township in west central Cass County, North Dakota (**Appendix A, Figure 1**). The Project Area consists of approximately 75 acres of land currently dominated by cultivated crop land. The Project and associated facilities will be located on approximately 8 acres within the 75 acre Project Area and will be enclosed with permanent security fencing with gated access points off to 162nd Avenue SE. Access roads will be compacted gravel and approximately 20 feet wide. Project facilities outside the fenced perimeter, including buried electrical collection lines and disturbed areas associated with access road construction will be revegetated after installation. It is assumed that the majority of the Project Area outside the proposed BESS facility will be returned to agricultural production following construction. Therefore this plan pertains to vegetation seeding and management for areas within the footprint of the BESS facility, along the collection line easement and those disturbed by construction activities.

Stantec Consulting Services Inc. (Stantec) has worked with the Client to create this Vegetation Management Plan (the Plan and/or VMP) to guide vegetation strategies for the Project. The Plan provides goals, objectives, and guidelines for successfully establishing and maintaining vegetation cover within the Project over the anticipated 25-30-year Project lifecycle.

For this Plan, “appropriate” and/or “desirable” species and/or vegetation are defined as having one or more of the following characteristics:

- Species considered native to the ecoregion prior to large scale agricultural development.
- Species considered native across the Northern Hemisphere but without local genotype seed.
- Species that fill critical vegetation guilds but lack certified native genotype seed production.
- Species naturalized to the ecoregion and pose no threat to existing native plant communities.
- Species not considered invasive or noxious under North Dakota Department of Agriculture North Dakota Noxious Weed Law (North Dakota Statutes [4.1-47](#)).

Goals, objectives, and guidance provided by the Plan are intended to be consistent with regulatory standards and feasible for BESS facility economics, operations, environmental benefits, and safe energy storage.



2 Plan Goals

Goals and objectives are based on Stantec's experience writing vegetation management plans, overseeing vegetation installations, knowledge of Midwest agricultural production systems, and recommendations and guidelines gleaned from the following sources:

- Midwest Cover Crop Council - <https://www.midwestcovercrops.org>.
- Natural Resource Conservation Service (2016) how to establish vegetation covers;
- Natural Resource Conservation Service (2018, 2024) best management practices cover crops; and
- North Dakota Noxious Weed Law (North Dakota Statutes [4.1-47](#)).

The Project has four goals:

Goal 1: Establish Perennial Vegetation Within Construction Disturbance Areas

Objectives:

- Develop custom seed mixes and tree/ shrub species for site specific environmental and BESS parameters.
- Seed mixes and potted plants contain no species considered invasive or noxious under the North Dakota Noxious Weed Law (North Dakota Statutes [4.1-47](#)).
- Seed mix species are readily available from regional seed vendors.
- Tree and shrub species are readily available from regional tree nurseries.

Goal 2: Prevent Soil Erosion

Objectives:

- Establish and maintain cover crops as practicable during seasonal periods when conditions are not conducive to establishing perennial vegetation.
- Areas not vegetated with perennial seed mixes during pre-construction / construction phases are planted with perennial mixes during the soonest available optimal seeding period.

Goal 3: Implement Establishment Monitoring and Maintenance Procedures After Seeding

Objectives:

- Implement monitoring protocols to assess desirable and undesirable vegetation recruitment to inform appropriate maintenance strategies.

Goal 4: Establish Long-Term Management Strategies that are Adaptable to Emerging Issues Over the Life Cycle of the Project

Objectives:



Vegetation Management Plan

2 Plan Goals

- Use visual inspections to assess desirable and undesirable vegetation recruitment to provide appropriate maintenance strategies.
- Establish long-term maintenance strategies and annual plans with contractor.

NOTE: Vegetative screening is not proposed for this project. If following the issuance of the NDPUC siting permit screening vegetation is required, Harmony Storage will work with state and local agency personnel to develop a native tree and shrub screening plan. The plan will include information regarding the site preparation and installation of the trees and shrubs and long-term maintenance of planted species.



3 Existing Site Conditions

3.1 Topography

The existing topography within the Project Area is relatively level and only minimal grading is anticipated to occur for Project installation.

3.2 Soils

A United States Department of Agriculture (USDA)-NRCS Project soil map is found in **Appendix A, Figure 2**. The overall soil attributes are outlined below (**Table 3-1**).

Table 3-1 Soil Attributes

Soil Symbol, Soil Name, Soil Texture	Slope %	Soil Drainage Class	Water Table	Available Water Supply	Farmland	Acres	Approx % Project Area
I482A, Overly-Bearden silt loams	0-2	Somewhat poorly drained	36-60"	High (11")	All areas are prime farmland	2.26	3%
I473A, Hegne-Fargo silty clay loams	0-1	Poorly drained	0-18"	High (9.1")	Prime farmland if drained	5.93	8%
I229A, Fargo silty clay	0-1	Poorly drained	0-18"	High (9.3")	Prime farmland if drained	64.62	87%
I238A, Fargo-Hegne silty clays	0-1	Poorly drained	0-18"	High (9.3")	Prime farmland if drained	1.44	2%

Table 3-2 provides dominant species that historically thrived in site specific soil conditions. These species provide a framework for designing seed mixes.

Table 3-2 Soil Attributes and Corresponding Historic Grass Vegetation

Drainage Characteristics	Vegetation Types	Model Species	% Cover
Somewhat Poorly drained or poorly drained High available water supply	Wet Mesic Vegetation Tall Grass Prairie	Common Oat (<i>Avena sativa</i>) Side oats Gamma (<i>Bouteloua curtipendula</i>) Fringed Brome (<i>Bromus ciliatus</i>) Little Bluestem (<i>Schizachyrium scoparium</i>)	100%



3.3 Current Land Cover

Current landcover was digitized based on current aerial photography (**Appendix A, Figure 3**). **Table 3-3** identifies current land cover within the Project Area.

Table 3-3 Land Cover as Digitized from Current Aerial Photography.

Land Cover Type	Acres	Approximate Project Area
Developed, Open Space	3.87	Developed, Open Space
Developed, Low Intensity	2.53	Developed, Low Intensity
Cultivated Crops	67.85	Cultivated Crops
TOTAL	74.24	100%

Based on preliminary design, the Project will convert approximately 67.85 acres of cultivated crops into perennial, regionally appropriate vegetation for the Project lifecycle. Areas converted to perennial vegetation include specified areas outside of the fenced area within the Project Area, excluding areas already vegetated with appropriate vegetation and the areas that will continue to be farmed (**Appendix A, Figure 4**).



4 Seed Mixes

Cover crop seed options and two NRCS developed and approved permanent seed mixes have been developed for the Project. All seed mixes are provided in **Appendix B, Table 8-2, 8-3, 8-4**. General descriptions for each seed mix are provided below.

4.1 Temporary Seed - Cover Crops

Three annual grasses: winter wheat (*Triticum aestivum*), annual ryegrass (*Lolium multiflorum*) and seed oats (*Avena sativa*) are utilized, depending on installation timing. Cover crop seeding rates are based on season, seeding methods, and whether cover crops are installed with or without permanent seed (**Appendix B, 8-2**). Final cover crop seed selection should occur when seeding dates are known. Temporary cover crop requirements will be outlined in the Erosion Control Plan (ECP) Plan and Storm Water Pollution Protection Plan (SWPPP).

4.2 Permanent Seed

The permanent seed mix is composed of perennial, long-life, native graminoid and forb species suitable for site specific environmental conditions and BESS requirements. The forbs in the seed mix include native pollinator species. There are two permanent seed mix developed by NRCS for the Project (**Appendix B, Table 8-3, 8-4**) designed to be seeded in bare soil areas within the Project Area (**Appendix A, Figure 4**).

4.3 Seed Mix Vendors

Seed will be purchased from local vendors that supply quality local sourced seed, or at a minimum, seed proven successful under Project site environmental parameters. All seed, including temporary cover crop and permanent seed mixes are supplied with seed tags that indicate seed weight, pure live seed, region of origin, and noxious weed content. A list of potential seed vendors is provided in **Appendix C**.



5 Site Preparation

5.1 Site Preparation Framework

- Maintain compliance with the ECP and SWPPP.
- Reduce weed pressure.
- Prepare soils to create a level, smooth, friable, firm seed bed to provide good tilth for seed germination.
- Prepare soils to provide smooth, level conditions for ongoing maintenance over the Project life cycle.

The amount and type of soil preparation required depends on pre-existing vegetation before construction. **Table 5-1** summarizes the site preparation for pre-existing conditions. No site preparation is required if the preceding crop was soybean or harvested small grains. For all other preceding conditions, some form of site preparation is required.

Processes for preparing a good seedbed for graminoid dominated vegetation is two-fold. The first process is to loosen soils 3-5 inches deep to create loosen soils for root growth and water infiltration. The second process is to firm soils up so graminoid and native seeds are not planted deeper than a ¼ inch. These processes are typically achieved by two different procedures that involve two different implements and passes over the field.

Table 5-1 Soil Preparation Based on Existing Conditions

Existing Conditions	Erosion Potential	Pre-seeding Preparation	Suitable for No-till Drill Seeding	Suitable For Broadcast Seeding	Post-seeding Preparation Work
Pre-construction Site Prep and Seeding					
Harvested Soybean Field	High	None	Yes	Yes	Pack soils following seeding
Harvested Small Grain Field	Low	Reduce crop residue (e.g., bale straw) Shallow disc soils before broadcast seeding	Yes	Yes	Pack soils following seeding
Standing Forage Hay Field	Low	Final harvest to reduce biomass. Herbicide treat forage. Shallow disc soils before broadcast seeding	Yes	Yes	Pack soils following seeding
Harvested Corn Silage Field	Moderate	Shallow disc soils before broadcast seeding	Yes	Yes	Pack soils following seeding
Harvested Corn Grain Field	Moderate	Mow corn stubble. Bale corn residue. Disc soils	No Disc soils prior to drilling seed	Yes	Pack soils following seeding



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5 Site Preparation

Existing Conditions	Erosion Potential	Pre-seeding Preparation	Suitable for No-till Drill Seeding	Suitable For Broadcast Seeding	Post-seeding Preparation Work
Post Construction Site Preparation and Seeding					
Post Construction Bare Soils	High	Disc or chisel plow to reduce soil compaction (1-2 passes) Drag soils smooth firm Seed immediately	No Drill seeding not recommended in array field, inadequate seed coverage	Yes	Pack soils following seeding
Post Construction Noxious Weeds	Moderate	Treat weeds with appropriate herbicide Disc or chisel plow to reduce soil compaction (1-2 passes) Drag soils smooth firm Seed immediately	No Drill seeding not recommended in array field, inadequate seed coverage	Yes Follow herbicide label for seeding post herbicide treatment	Pack soils following seeding



6 Seeding

6.1 Seeding Timing

6.1.1 Seeding Times for Temporary Cover Crop Seeding

Cover crops are installed in both spring and fall seasons and with or without permanent seed. Cover crop species and rates vary depending on season and if planted with or without permanent seed mixes.

- If bare soils are required to be cover crop seeded in spring, the cover crop consists of oats and annual ryegrass at the recommended rates and timing provided in **Appendix B, Table 8-2**.
- If bare soils are required to be cover crop seeded in fall, the cover crop consists of winter wheat and annual ryegrass at the recommended rates provided in **Appendix B, Table 8-2**.
- If permanent seed is installed during the spring, the cover crop consists of oats and annual ryegrass, at the recommended rates provided in **Appendix B, Table 8-2**.
- If permanent seed is installed in the fall, the cover crop consists of winter wheat and annual ryegrass as described in **Appendix B, Table 8-2**.

6.1.2 Optimal Seeding Periods

Seeding dates are based on cool and warm season species. Optimal window for cool season grasses (wet prairie mix) are spring, late summer and fall - prior to May 10, August 10 to September 15. Warm season species are recommended to be planted in the spring from May 10-June 25. Warm/Cool Season mix (short prairie mix) is recommended to be planted in the spring from April 20-June 1. Plantings that have forbs and grass mixtures will be seeded during the appropriate seeding window for the grass component of the mixture to ensure optimal germination and establishment.

Dormant season seeding is less optimal. The most favorable conditions for dormant seeding occur just before freeze-thaw cycles or ahead of a snowfall, which can help lock seed into the soil through insulation and hoar-frost formation. Dormant broadcast seeding carries risks, including seed washing during early spring rains on partially thawed soils, which may create bare patches requiring overseeding. Seed survival during the dormant season may also be reduced by pathogen exposure and rainfall-related erosion. For these reasons, it is recommended to increase the seed application rate by 20% when using dormant seeding.

6.2 Seeding Methods

Three common seeding methods can be utilized: 1) drill seeding, 2) broadcast seeding, and 3) cultipacker seeding, (e.g., Brillion). The following sections specify how each seeding method should be applied.



6.2.1 Drill Seeding

Given the Project conditions, drill seeding is the preferred method for seed installation, especially when crop residue or grass and thatch is present. The seed mix should be seeded at 1/8 – 1/4 inches deep, and never deeper than 1/2 inch. Inert fillers, such as fine wood shavings, rice hulls, or cracked wheat may be used to assist with mixing and calibrating seed spread to prevent running out of seed.

6.2.2 Broadcast Seeding

Broadcast seeding requires soil preparation that creates a friable bare soil surface. If the soils are overly friable for successful installation (seeds will fall greater than 1 inch below the soil), they should be packed before seeding. Broadcasting of native seed may be done in the winter in areas of mostly bare soils without packing. In almost every other case, broadcasted seed should be packed after seeding to enhance seed-soil contact and reduce erosion potential.

If post construction seeding becomes the default seeding scenario, seeding rates should be increased by 20%. For broadcast seeding post construction, the following sequence is recommended:

1. Site preparation, including soil ripping or deep discing.
2. Soil firming with a drag harrow or packer.
3. Broadcast seed.
4. Finishing with an additional packing or light drag-harrowing.

Mechanical broadcasters are acceptable if device manufacturer specifies use for evenly spreading seeds that are very small and bearded native grass seeds (those with attached appendages such as awns, pappus, hulls, etc.). Inert fillers, such as fine wood shavings, rice hulls, or cracked wheat may be used to assist with mixing and calibrating seed spread to prevent running out of seed.

6.2.3 Cultipacker Seeding

Cultipacker seeding is preferred method for soils with low crop residue and finely textured soils such as pre-construction scenarios, perimeter seed mixes in soybean stubble, or bare soils with little crop residue and finely tilled soils. Cultipacker seeders modified to plant native seed, (e.g., Trillion seeder by Truax) may be used. Inert fillers, such as fine wood shavings, rice hulls, or cracked wheat may be used to assist with mixing and calibrating seed spread to prevent running out of seed.



6.3 Mulching

Mulch may be required in erosion prone areas. Certified weed-free straw is preferred, but clean, weed-free straw mulch is acceptable. Hay should not be used for mulch to prevent introduction of undesirable seeds. Erosion control mats are a suitable substitute for straw mulch in areas that are too steep for traditional seeding and mulching methods. Broadcast seeding at 20% greater than recommended rates should be followed by erosion control mats when they are used.

Hydromulching is a suitable substitute for straw mulch and erosion control mats. Seed can be broadcasted at 20% above recommended rates or included in the hydromulch and applied over bare soils.



7 Management During Establishment

Vegetation establishment in the first 3-5 years must focus on control of noxious weeds and other invasive vegetation. There are 13 species currently listed as noxious in North Dakota that should be eradicated; 10 of those species, plus one additional species not listed under North Dakota Law NDCC Chapter 4.1-47 (Spotted Hemlock) are listed as noxious weeds in Cass County (Table 7-1). Harmony will monitor the state and county lists for changes. Based on information from the North Dakota Department of Agriculture, the agency is concerned about the spread of Palmer amaranth, which looks similar to Black-eyed Susan, a native species included in the Perimeter Native Seed Mix (**Appendix B**). Harmony will ensure seeds are tested by an independent lab certified by the Association of Official Seed Certifying Agencies (AOSCA). Results from an AOSCA lab will verify Palmer amaranth is not present in the seed mix used at Harmony.

Table 7-1 Noxious Weeds Listed in North Dakota and Cass County

Species	Common Name	State ¹	Cass County ²
<i>Artemisia absinthium</i>	Absinth Wormwood	X	X
<i>Cirsium arvense</i>	Canada Thistle	X	X
<i>Linaria genistifolia</i>	Dalmatian Toadflax	X	
<i>Centaurea diffusa</i>	Diffuse Knapweed	X	X
<i>Euphorbia esula</i>	Leafy Spurge	X	X
<i>Carduus nutans</i>	Musk Thistle	X	X
<i>Lythrum salicaria</i>	Purple Loosestrife	X	X
<i>Acroptilon repens</i>	Russian Knapweed	X	
<i>Tamarix chinensis</i> , <i>T. parviflora</i> , <i>T. ramosissima</i>	Saltcedar	X	X
<i>Centaurea maculosa</i>	Spotted Knapweed	X	X
<i>Linaria vulgaris</i>	Yellow Toadflax	X	
<i>Cynoglossum officinale</i> L.	Houndstongue	X	X
<i>Amaranthus palmeri</i>	Palmer Amarath	X	X
<i>Conium maculatum</i>	Spotted Hemlock		X

¹ Lym, R.G. 2018. *A Guide to North Dakota Noxious and Troublesome Weeds*. [A Guide to North Dakota Noxious and Troublesome Weeds](#)

² Cass county Noxious Weed Identification <https://www.casscountynod.gov/our-county/weed-control/noxious-weed-identification>

The primary establishment management tasks are site-wide mowing (to reduce shading of native seed and prevent invasive weeds from developing seed) and control of invasive weeds.



8 Vegetation Maintenance

8.1 Cutting and Mowing

Cutting, by mowing or hand-trimming, is the primary management tool used to aid in the establishment of desirable vegetation because it reduces the height of aggressive weeds allowing sunlight to reach desirable species. Mowing using a deck mower is applicable in areas that are accessible with a small tractor and mower. Flail mowers are preferred but rotary mowers are acceptable if significant clumping of grass clippings is minimized.

8.1.1 Frequency and Timing

Mowing is appropriately timed to reduce weed competition for sunlight and reduce weed seed production. During the first three years after seeding, mowing should occur when vegetation is between six and eight inches tall. Once vegetation establishes (after year three), mowing frequency can be reduced to target areas based upon weed growth and height and should be timed to avoid disturbance of ground-nesting birds and other wildlife. The allowable vegetation height can be increased (**Table 8-1**). All mowing should cut standing vegetation to a height of three inches to prevent damage to desirable vegetation.

Table 8-1 General Mowing Frequency Framework

Growing Season	Triggers	Mowing Frequency (times per growing season)	Herbicide
Growing season 1	Vegetation Height 6"-8" Weeds flowering	3 - 5	Fall herbicide. Injure weeds first by mowing. Mower identifies weed locations & types
Growing season 2	Vegetation Height 6"-8" Weeds flowering	2 - 3	Fall herbicide. Injure weeds first by mowing. Mower identifies weed locations & types
Growing Season 3	Vegetation Height <8" Weeds flowering	2 - 3	Fall herbicide. Injure weeds first by mowing. Mower identifies weed locations & types
Growing Season 4	Vegetation Height <10" Weeds flowering	1 - 2	Fall herbicide. Injure weeds first by mowing. Mower identifies weed locations & types
Growing Season 5	Vegetation Height <12" Weeds flowering	1 - 2	Fall herbicide. Injure weeds first by mowing. Mower identifies weed locations & types
Growing Season 6+	Vegetation Height <12" Weeds flowering	Once per year – once per two years	Fall herbicide. Injure weeds first by mowing. Mower identifies weed locations & types



8.2 Herbicides

Herbicide treatments are recommended for management of perennial noxious species, as mowing alone is not typically sufficient for adequate control. Ongoing management of noxious species may be required for compliance with noxious and invasive plant species regulations. Herbicides can also be used to remove undesirable vegetation to prepare seeding areas for permanent seed installation. No herbicide should be applied to seeded areas until grass seedlings have matured for at least 90 days or flowered at least once. Specific instructions are provided on the herbicide label for application restrictions. The herbicides and application protocols below will also be used to control weeds that germinate and grow within the BESS fence in and around the containers and compacted gravel base.

8.2.1 Non-Selective Herbicides

Non-selective herbicides injure or kill all types of vegetation, including broadleaves, grasses and grass-like plants, and woody plants. Glyphosate is a non-selective herbicide that is commonly used to remove all vegetation to prepare areas for permanent seeding.

8.2.2 Broadleaf-Selective Herbicides

Broadleaf-selective herbicides are intended to injure or kill only broadleaf plants. Two types commonly used in natural settings include 2,4-D and triclopyr. Both 2,4-D and triclopyr are used to remove broadleaf plants from grass-stands and turf lawns. Some broadleaf herbicides are highly selective, for example, the active ingredient clopyralid is highly effective for controlling weedy asters (*Asteraceae*) and legumes (*Fabaceae*).

8.2.3 Grass-Selective Herbicides

Grass-selective herbicides are intended to injure or kill only grasses. The most common grass-selective herbicide is clethodim. It is used to selectively target undesirable grasses growing among desirable broadleaf plants. These herbicides may be appropriate for controlling certain invasive grasses in areas with pollinator-friendly vegetation.

8.2.4 Herbicide Application Methods and Timing

8.2.4.1 Low Volume/Spot Applications

Low volume and spot application of herbicide with hand-held sprayers should be used to manage discrete populations of weedy and invasive species after construction. Backpack sprayers are suitable for small areas while pistol sprayers mounted to an all-terrain vehicle or utility terrain vehicle (UTV) are suitable for larger areas or large clumps of vegetation. Wicks may be used for ultra-low volume delivery of herbicide to undesirable plants growing in sensitive ecological areas.



8.2.4.2 Broadcast Applications

Broadcast application of herbicide is appropriate to remove weedy and invasive vegetation from large areas using a non-selective herbicides. Application utilizes a boom or boomless sprayer tanks mounted to a UTV or tractor to broadcast herbicide to large areas. This method

8.2.5 Herbicide Adjuvants

Adjuvants to improve herbicide performance can be added to herbicides according to herbicide label recommendations on the types and volumes of adjuvants to add to a mix. Typical adjuvants include hard water treatment additives, surfactants, and penetrants. In general, aquatic-approved adjuvants should be used to minimize potential impacts on wildlife, including pollinators. Aquatic-approved adjuvants should always be used in and near areas of standing water.

8.2.6 Herbicide Standard Industry Practices

Herbicides should be used according to manufacturers' instructions and following standard industry practices. The following practices are recommended when using herbicides to manage undesirable vegetation:

- Herbicide labels and Safety Data Sheets should be read prior to transport, mixing, loading, and application.
- The appropriate volume and concentration of herbicides and adjuvants necessary to complete a vegetation management task should be utilized. This includes targeted application techniques when practicable and properly calibrated equipment to minimize environmental effects.
- Persistent noxious weeds typically require several treatments to adequately control re-growth and spread.
- Herbicide applications should be conducted during favorable weather conditions to maximize herbicide efficiency and minimize off-site drift and run-off.
- Herbicide should be applied to plants when plants are most physiologically prone to injury by active ingredients (i.e. when they are actively growing). Plants that have senesced following flowering or are inactive due to high heat or drought should not be treated.

8.2.7 Herbicide Permitting

Herbicide treatments should be performed by individuals with a current Commercial Pesticide Applicator certification and license issued through the North Dakota Department of Agriculture Pesticide Applicator Training Program ([North Dakota Department of Agriculture Certification Process](#)) and in accordance with all applicable laws, regulations, and herbicide label instructions (North Dakota Statutes [4.1-33](#), [4.1-34](#) and [4.1-35](#)).



Appendices



Appendix A Figures

Figure 1 Project Location and Layout

Figure 2 Project Soils Classifications

Figure 3 Project Land Cover

Figure 4 Seed Mix Zones



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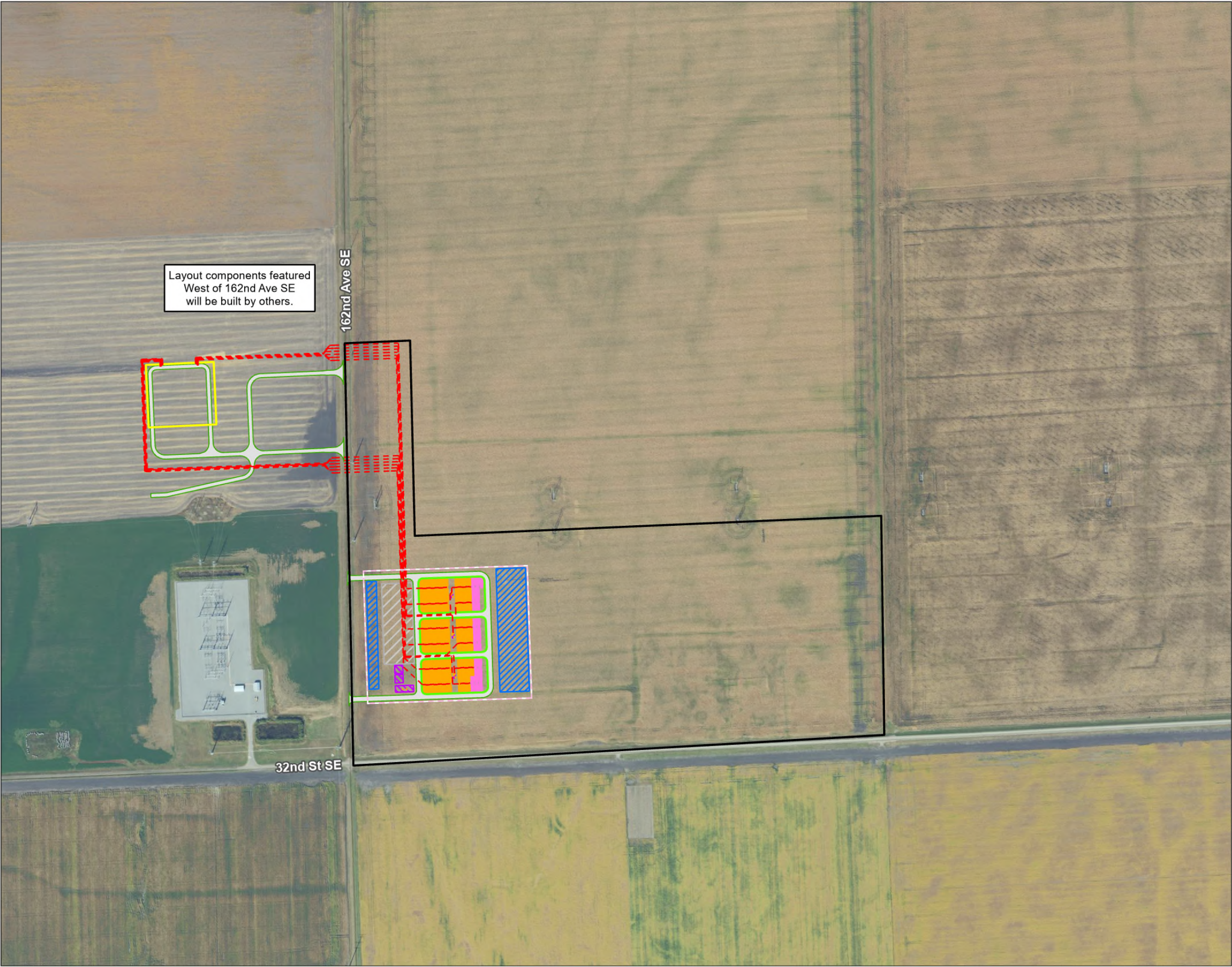


Figure No.
1
Title
Project Layout

Client/Project
Harmony Storage LLC
Harmony Storage Project
Vegetation Management

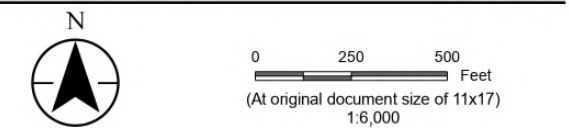
193711746

Project Location
140N, 51W, S12 & 14
Twp. of Harmony, Cass Co., ND

Prepared by DP on 2026-05-21

TR by BD on 2026-06-17

IR by NP on 2026-06-17



- Legend
- Project Area
 - Boundary Fence
 - Project Substation
 - BESS Boundary
 - Electric Equipment
 - Aug Electric Equipment
 - Access Road
 - OMI Area
 - Stormwater Basin
 - Laydown Yard
 - Collection Line (MV)



Notes
1. Coordinate System: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet
2. Data Sources: Stantec, Harmony Storage LLC, USGS, USCB
3. Background: NAIP 2023



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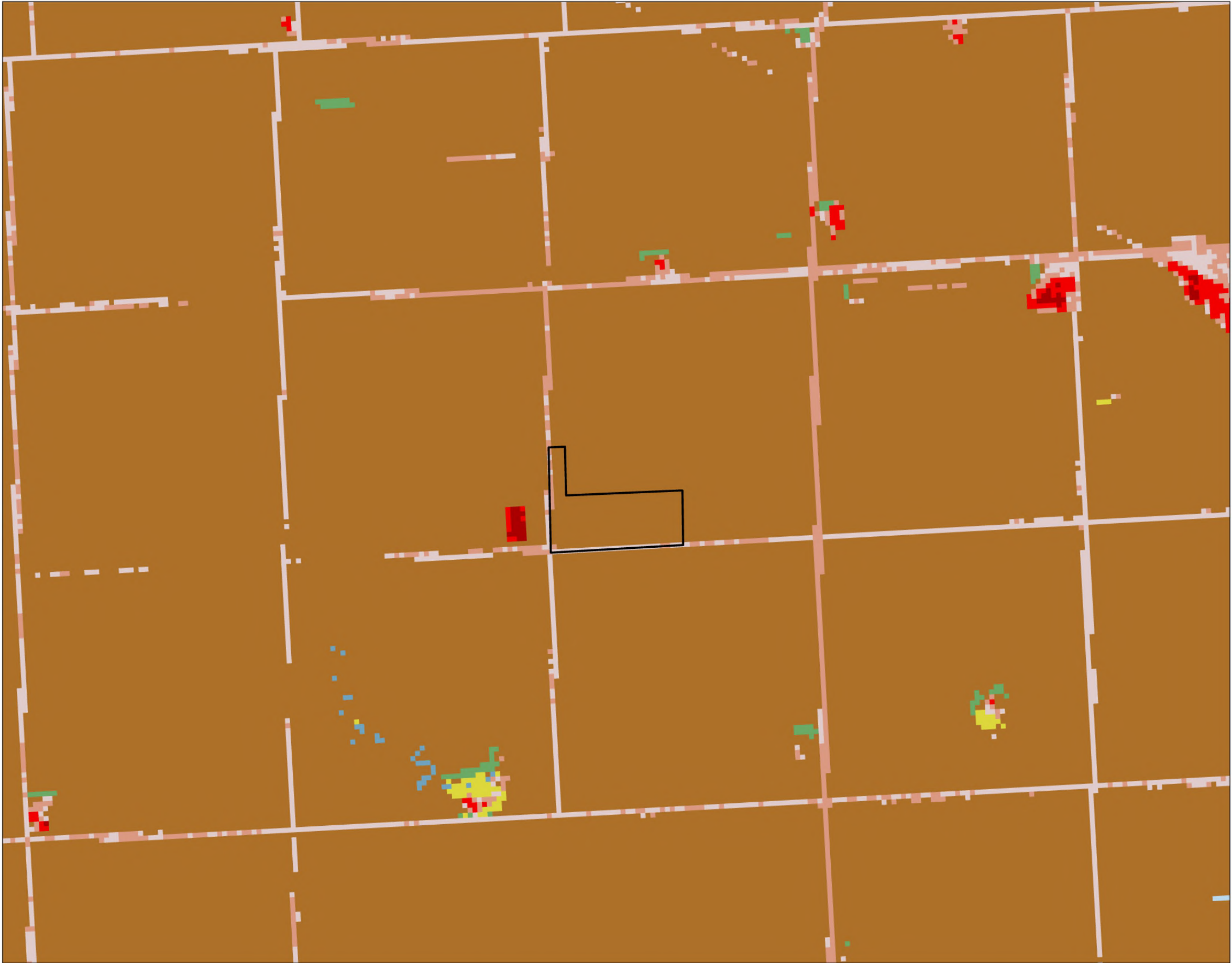


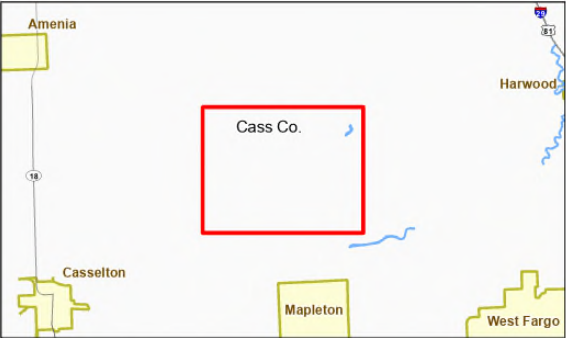
Figure No.
2
Title
Land Cover

Client/Project
Harmony Storage LLC
Harmony Storage Project
Vegetation Management
193711746

Project Location
140N, 51W, S12 & 14
Twp. of Harmony, Cass Co., ND
Prepared by DP on 2026-05-21
TR by BD on 2026-06-17
IR by NP on 2026-06-17



- Legend
- Project Area
 - NLCD Land Cover
 - Cultivated Crops
 - Deciduous Forest
 - Developed, High Intensity
 - Developed, Low Intensity
 - Developed, Medium Intensity
 - Developed, Open Space
 - Emergent Herbaceous Wetlands
 - Pasture/Hay
 - Woody Wetlands



Notes
1. Coordinate System: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet
2. Data Sources: Stantec, Harmony Storage LLC, USGS, USCB
3. Background: 2024 NLCD



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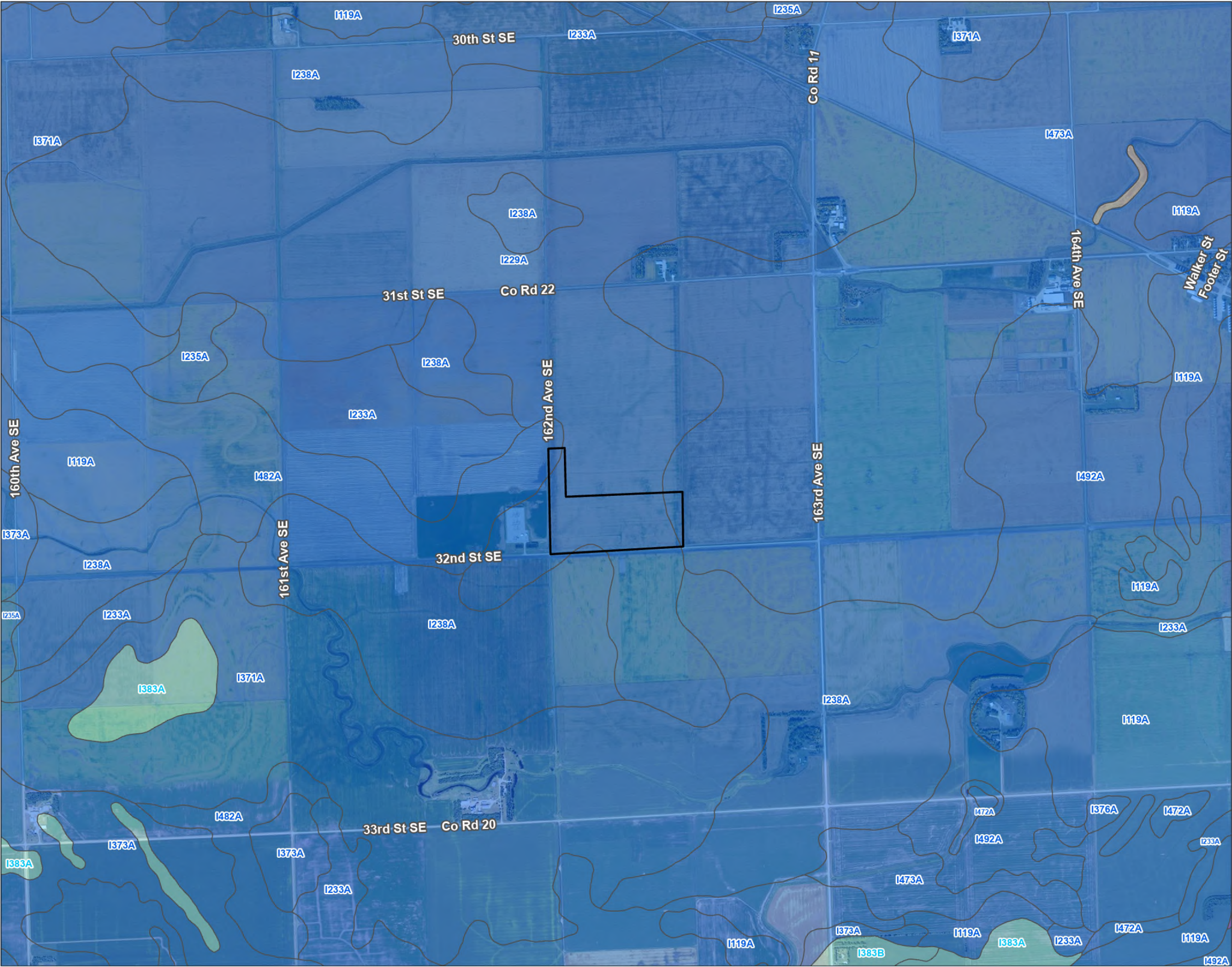


Figure No. **3**

Title **Soils**

Client/Project **Harmony Storage LLC
Harmony Storage Project
Vegetation Management** 193711746

Project Location **140N, 51W, S12 & 14
Twp. of Harmony, Cass Co., ND** Prepared by DP on 2026-05-21
TR by BD on 2026-06-17
IR by NP on 2026-06-17

N

0 1,000 2,000 Feet
(At original document size of 11x17)
1:24,000

Legend

- Project Area
- NRCS Soil Survey Data
- Drainage Class
 - Very Poorly Drained
 - Poorly & Somewhat Poorly Drained
 - Moderately Well Drained
 - Well Drained*
 - Excessively Drained*
 - N/A

*No features within data frame

Notes

1. Coordinate System: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet
2. Data Sources: Stantec, Harmony Storage LLC, USGS, USCB, NRCS
3. Background: NAIP 2023

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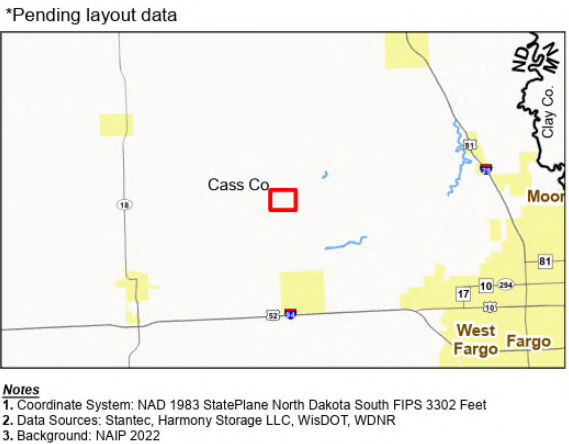
Figure No.
4
Title
Seed Mix Zones

Client/Project
Harmony Storage LLC
Harmony Storage Project
Vegetation Management
193711746

Project Location
140N, 51W, S12 & 14
Twp. of Harmony, Cass Co., ND
Prepared by DP on 2026-05-21
TR by BD on 2026-06-17
IR by NP on 2026-06-17



- Legend
- Project Area
 - Short Prairie Seed Mix (2.52 Acres)
 - Wet Prairie Seed Mix (0.16 Acres)
 - Stormwater Basin
 - Field Delineated Wetland



Notes
1. Coordinate System: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet
2. Data Sources: Stantec, Harmony Storage LLC, WisDOT, WDNR
3. Background: NAIP 2022

Appendix B Seed Mixes



Vegetation Management Plan
Appendix B Seed Mixes

Table 8-2 Temporary Cover Crop Seed Mixes¹

Nomenclature		Installation Timing	Rates without Permanent Mix	Rates with Permanent Mix
Scientific Name	Common Name			
<i>Avena sativa</i> ²	Common Oats	Mid-April-August	128 lbs./ac	30 lbs./ac.
<i>Lolium multiflorum</i> ³	Annual Rye	Year Round	10 lbs./ac.	5 lbs./ac.
<i>Triticum aestivum</i> ⁴	Winter Wheat	August-November ⁵	128 lbs./ac.	25 lbs./ac.

¹ *Final cover crop seed selection should occur when tentative seeding dates are known. All seed mixes calculated at Pure Live Seed (PLS). Seeding rates are designed for drilling seed in spring through fall. Broadcasting seed and seeding during the dormant season require at least a 20% increase in PLS rates.

² Spring (April - May) and late summer (August-early September) preferred but may be established in summer or used with native dormant seeding.

³ Mix with oats and/or winter wheat, helps establish a "quick green".

⁴ Suspected allelopathic chemicals can suppress permanent mix.

⁵ August-September preferred but may be used with native dormant seeding.

Table 8-3 Short Prairie Seed Mix

Common Name	Growth Form	A/B List	Bloom Period	Rate #/ac	% of Mix	PLS #/ac	Bulk PLS #
Grama	B/S	NR	NR	2.5	18%	0.45	645.5
Sideoats Grama	R/S	NR	NR	7.5	20%	1.5	2151.68
Prairie Junegrass	B/S	NR	NR	1	10%	0.1	143.45
Western Wheatgrass	R/M	NR	NR	10	23%	2.3	3299.24
Alfalfa	E/P	A	Early, Mid	6.5	5%	0.33	466.2
Black-Eyed Susan	E/P	A	Mid, Late	0.8	2%	0.02	22.95
Canada Milkvetch	E/P	A	Mid-season	4	5%	0.2	286.89
Lewis Flax	E/P	A	Early	3.8	5%	0.19	272.55
Plains Coreopsis	E/A	A	Early, Mid	0.7	5%	0.04	50.21
White Prairieclover	E/P	A	Mid, Late	3.9	5%	0.2	279.72
Western Yarrow	E/P	A	Early, Mid	0.4	2%	0.01	11.48
Totals				100%	5.32	7629.84	

Final seed selection should occur when tentative seeding dates are known, and actual species composition and rates should be based on availability at the time of procurement.

<u>Key for Growth Forms</u>	
A = Annual	Pr = Prostrate
B = Bunch	R = Rhizomatous
Bi = Biennial	S = Short < 18"

<u>Key for Growth Forms</u>	
E = Erect	St = Stoloniferous
M = Mid 18-36"	T = Tall > 36"
P = Perennial	NR = not rated



Vegetation Management Plan
Appendix B Seed Mixes

Table 8-4 *Wet Prairie Seed Mix*

Common Name	Growth Form	A/B List	Bloom Period	Rate #/ac	% of Mix	PLS #/ac	Bulk PLS #
Alfalfa	E/P	A	Early, Mid	6.5	10%	0.65	148.57
Cicer Milkvetch	Pr/P	A	Mid-season	10	10%	1	228.57
Meadow Bromegrass	B/M	NR	NR	16.5	40%	6.6	1508.56
Pubescent Wheatgrass	R/M	NR	NR	10	30%	3	685.71
Slender Awned Beard Wheatgrass	B/M	NR	NR	5.5	10%	0.55	125.71
Totals				100%	11.8	2697.13	

Final seed selection should occur when tentative seeding dates are known, and actual species composition and rates should be based on availability at the time of procurement.

<u>Key for Growth Forms</u>	
A = Annual	Pr = Prostrate
B = Bunch	R = Rhizomatous
Bi = Biennial	S = Short < 18"
E = Erect	St = Stoloniferous
M = Mid 18-36"	T = Tall > 36"
P = Perennial	NR = not rated



Appendix C Regional Vendors



Table 8-5 *Potential Regional Seed Vendors*

Company	Phone	Website	Specialty
Millborn	(605) 627-1901	https://www.millbornseeds.com/	Native and non-native seed mixes
Stantec	(574) 586-2412	https://www.cardnonativeplantnursery.com/seed/	Native seed mixes
MNL	763-295-0010	https://mnlcorp.com/native-seeds-and-plants/	Native and non-native seed mixes
Prairie Moon Nursery	(866) 417-8156	https://www.shootingstarnativeseed.com/	Native seed mixes





Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.



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