Wetland Delineation Report

Northern Sands Wisconsin, LLC

Northern Sands Wisconsin - Phase I Mine

Town of Howard

Chippewa County, Wisconsin

July 22, 2018

WETLAND DELINEATION REPORT

NORTHERN SANDS WISCONSIN, LLC
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TOWN OF HOWARD
CHIPPEWA COUNTY, WISCONSIN

July 22, 2018

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Introduction

Northern Sands Wisconsin, LLC contracted Wetlands and Waterways, LLC to delineate wetlands on a parcel of land located approximately 1 mile west of Albertville, Wisconsin. The property is located on the Chippewa-Dunn County line with CTH N to the northeast and east, 90th Avenue to the northwest, 80th Avenue to the south and Frazier Road (13th Street) running through the center of the property. The Wisconsin Central LTD Railroad also runs through the property from northwest to southeast. The study area associated with this study consists of approximately 684 acres and is describe as being located in the Northeast ¼ of the Southeast ¼, Southeast ¼ of the Northeast ¼, Part of the Southwest ¼ of the Southeast ¼, Part of the Southeast ¼ of the Southwest ¼ and Part of the Southwest ¼ of the Southwest ¼ of Section 19, Part of the Northwest ¼ of the Northwest ¼ and Part of the Southwest ¼ of the Northwest ¼ of Section 29 and Part of the Northeast ¼ of the Northeast ¼, Part of the Northwest ¼ of the Northeast ¼, the northwest ¼ of the Northeast ¼, the Southwest ¼ of the Northeast ¼, the Southeast ¼ of the Northeast ¼, Part of the Northwest ¼ of the Southeast ¼, the Northeast ¼ of the Southeast ¼, the Southwest ¼ of the Southeast ¼, the Southeast ¼ of the Southeast ¼, the Northwest ¼ of the Northwest ¼, Part of the Northeast ¼ of the Northwest ¼, the Southwest ¼ of the Northwest ¼, Part of the Southeast ¼ of the Northwest ¼, the Northwest ¼ of the Southwest ¼ and the Southwest ¼ of the Southwest ¼ of Section 30, Township 29 North, Range 10 West, Town of Howard, Chippewa County, Wisconsin. Much of the study area is comprised of upland deciduous forest and the remainder, other than identified wetland areas, is comprised primarily of actively cropped fields. A few residential homes are located throughout the property. See Figure 1 for the property location and local topography.

The wetland delineation was conducted on various dates between June 19, 2018 and June 28, 2018 by Ms. Ann Key, a Wisconsin Department of Natural Resources (WDNR) Professionally Assured Delineator. The intent of the wetland study was to identify wetlands for avoidance or permitted impacts associated with a proposed frac sand mine on this property.

The WDNR Wetland Inventory Map (WWI) was reviewed and indicates the presence of one larger wetland complex along the east and southeast portion of the study area. Two other large wetlands (> 2 acres) are identified on the WWI map, as well as four (4) small wetlands (< 2 acres) and one pond. The larger mapped wetlands are identified as the following wetland communities; T3K (Forested, Broad-Leaved Deciduous, Wet Soil, Palustrine), T3/E1K (Forested, Broad-Leaved Deciduous/Emergent-Wet Meadow, Persistent, Wet Soil, Palustrine), T3/S3K (Forested, Broad-Leaved Deciduous/Scrub-Shrub, Broad-Leaved Deciduous, Wet Soil, Palustrine) and E1Kf (Emergent-Wet Meadow, Persistent, Wet Soil, Palustrine, Farmed).

Wetland indicator soils are mapped within the same general areas as the mapped wetlands, as well as along swales to the southeast and east and three areas along the northwest portion of the study area in the vicinity of the northwest agricultural field. The wetland indicator layer also identifies one small NRCS "wet spot" in the central portion of the study area to the east of Frazier Road and southwest of the railroad. Wetland indicator soils are soils that are commonly found in wetlands or soils that have inclusions of soils commonly found in wetlands.

The WDNR Surface Water Data Viewer (SWDV) waterway layer was also reviewed and identifies two mapped waterways on the property. An unnamed tributary to Elk Creek is located in the southeastern portion of the study area and is classified as a Class I Area of Special Natural Resources Interest (ASNRI) waterway. One unnamed intermittent drainageway is also identified in the southern portion of the study area and is located within a farm swale and is mapped as ultimately draining to the east into the tributary to Elk Creek. Although drainage patters were observed in both areas during the site visit, no indications of actual stream beds were observed.

Fifteen wetlands (Wetlands 1 through 15) were delineated during the site visit. The Wetland Data Sheets classify the wetlands according to the Cowarden *Classification of Wetlands and Deepwater Habitats of the United States*

(U.S. Fish and Wildlife Service, 1979) classification system with the delineated wetland being classified primarily as the following community types or a combination thereof;

- Palustrine, Emergent, Persistent (PEM1)
- Palustrine, Emergent, Persistent, Farmed (PEM1f)
- Palustrine, Emergent, Persistent, Excavated (PEM1x)
- Palustrine, Forested, Broad-Leaved Deciduous (PFO1)
- Palustrine, Scrub-Shrub, Broad-Leaved Deciduous (PSS1)

The earliest available aerial photo from 1938 indicates that the land use of the property has changed very little since that time, with the same general areas having been farmed and much of the same areas still forested today. The most noticeable changes include areas to the southwest and northeast that were farmed at one time but today are forested. It appears there were two homesteads on the property in 1938. Since that time the property appears to have been divided and is now under the ownership of various landowners. The two original homesteads still remain today, plus four other residential homes which have since been established on the property.

As stated above, several portions of the property that are actively cropped and were therefore considered to have Significantly Disturbed vegetation and soils. Vegetation in cropped areas is considered to be Significantly Disturbed for purposes of wetland evaluations since the natural vegetation has been removed and is managed through cropping, which is not the normal circumstance. Soils in cropped areas are also considered to be Significantly Disturbed for purposes of wetland evaluation due to ongoing tilling practices, which disrupts the normal soil profile. In order to make an accurate determination of wetlands versus uplands within cropped areas, all available crop slides and aerial photos were reviewed prior to the site visit for signs of wetness signatures and/or vegetative stress. In addition, on-site observations of volunteer vegetation species, soils, hydrology and reference sites where available were all used to assist in making the determination of wetland versus upland in these areas. Additional sample plots (SP1 through SP23) were evaluated, many within agricultural areas and others within forested tracts, to either document typical site conditions or to document suspect areas due to topographical position, mapped indicator soils or wetness signatures on aerial photos. All crop slides and aerial photos used in the crop slide evaluation, as well as a summary of the findings of the evaluation are included in Appendix C.

An antecedent precipitation evaluation was conducted and indicates that the three months prior to the site visit (March through May 2018) to determine if hydrologic conditions were within normal, wetter than normal or drier than normal. Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded on the day prior to and during the first few days of the field study totaling 3.13 inches. Based on this information and observations of very heavy precipitation in the area, best professional judgment was applied to determine that the first several days of the field evaluation were wetter than normal and the latter evaluation days were within normal. The antecedent precipitation evaluation, WETS data, rainfall data and Palmer Drought Index reports for the area at the time of the site visit are included in Appendix B.

All wetland sample plots met wetland hydrology criteria and the following indicators were applied throughout the study area; A1 (Surface Water), A2 (High Water Table), A3 (Saturation), B7 (Inundation Visible on Aerial Imagery), B9 (Water-Stained Leaves), B10 (Drainage Patterns), C6 (Recent Iron Reduction in Tilled Soils), C9 (Saturation Visible on Aerial Imagery), D2 (Geomorphic Position) and D5 (FAC-Neutral Test). All wetland sample plots also met hydric soil criteria and the following Hydric Soil Indicators were applied at the wetland sample plots throughout the study area; A1 (Histosol), A10 (2 cm Muck), A11(Depleted Below Dark Surface), A12 (Thick Dark Surface), F1 (Loamy Mucky Mineral), F3 (Depleted Matrix), F6 (Redox Dark Surface), F7 (Depleted Dark Surface), S1 (Sandy Muck Mineral), S5 (Sandy Redox) and S6 (Stripped Matrix).

Wetland boundaries were identified using procedures outlined in the 1987 Corps of Engineering Wetland Delineation Manual and Northcentral and Northeast Regional Supplement. The areas identified as wetland

were identified based on crop slide and aerial photo review, topographical position, transitions from wetland to upland vegetation, hydrology indicators and hydric soil indicators, or lack thereof, in wetland areas versus upland areas. Best professional judgment and experience working in this part of the State and within these communities was used throughout the study. See Figure 2 for the wetland delineation limits, wetland boundaries and sample locations. Wetland data sheets are included in Appendix A.

Study Methods

Available topographic maps, survey maps, WWI maps, Chippewa County Soil Survey maps, wetland indicator soil maps and all available crop slides and aerial photos were reviewed prior to visiting the property to identify potential wetland areas. The WWI map with mapped wetlands and wetland indicator soil layers is included as Figure 3. The Chippewa County Soil Survey Map is included as Figure 4. In addition, antecedent precipitation information was evaluated through use of available local WETS data for the three months prior to the delineation to determine if conditions were within normal, wetter than normal or drier than normal at the time of the site visit. The Antecedent Precipitation Evaluation, WETS Data and the Palmer Drought Index reports are included in Appendix B. All available crop slides/aerial photos were reviewed for wetness signatures and/or crop stress and are included in Appendix C along with the aerial photo interpretation summary.

Examination of vegetation, soils and hydrology, as outlined in the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987) and the Northcentral and Northeast Regional Supplement, were used to characterize and determine wetland boundaries. The Natural Resources Conservation Service (NRCS) Field Indicators of Hydric Soils in the United States Guide was also utilized to help identify hydric soils at the site. All available information including aerial photos, antecedent precipitation analysis, volunteer vegetation and topographic position, along with best professional judgment was applied. Wetland boundaries were not flagged but all wetland boundaries and sample locations were located with a Trimble Geo7X Series Global Positioning System (GPS) with sub-meter accuracy and are shown on Figure 2.

Sample transects were established in a representative wetland to upland transition zone. The transects were comprised of two sample points located along a line running perpendicular to the wetland edge, with one point in obvious wetland and one point in obvious upland. A field data form was completed for each of the upland and wetland sample points. The sample locations were also located with a GPS and are indicated on Figure 2. Field data forms are included in Appendix A.

Wetland classification was performed according to Cowarden *Classification of Wetlands and Deepwater Habitats of the United States* (U.S. Fish and Wildlife Service, 1979) systems. Vegetation was identified using suitable keys (Eggers and Reed, 2014; Knopt, 1980; Courtenay/Zimmerman, 1972; Fassett, 1951; Chadde, 1998) and a plant's hydrophytic status was determined using the most recent Northcentral and Northeast Region – National Wetland Plant List (U.S. Army Corps of Engineers, 2016).

Results

OFF-SITE SURVEY

Prior to the site visit, all available maps including the United States Geological Survey (USGS) Topographical map, WWI map, Chippewa County Soil Survey, Hydric Soil maps and all available crop slides and aerial photos were reviewed.

The USGS topographical map (Figure 1) identifies the property as having well defined topographic variations with high ridges surrounded by gently rolling fields in the lower lying areas. Elevations throughout the property vary from approximately 1250 feet above sea level at the highest elevations to approximately 1000 feet above sea level at the lowest elevations.

The WDNR WWI (Figure 3) was reviewed and indicates the presence of one larger wetland complex along the east and southeast portion of the study area. Two other large wetlands (> 2 acres) are identified on the WWI map, as well as four (4) small wetlands (< 2 acres) and one pond. The larger mapped wetlands are identified as the following wetland communities; T3K (Forested, Broad-Leaved Deciduous, Wet Soil, Palustrine), T3/E1K (Forested, Broad-Leaved Deciduous/Emergent-Wet Meadow, Persistent, Wet Soil, Palustrine), T3/S3K (Forested, Broad-Leaved Deciduous/Scrub-Shrub, Broad-Leaved Deciduous, Wet Soil, Palustrine) and E1Kf (Emergent-Wet Meadow, Persistent, Wet Soil, Palustrine, Farmed).

Wetland indicator soils (Figure 3) are mapped within the same general areas as the mapped wetlands, as well as along swales to the southeast and east and three areas in along the northwest portion of the study area in the vicinity of the northwest agricultural field. The wetland indicator layer also identifies one small NRCS "wet spot" in the central portion of the study area to the east of Frazier Road and southwest of the railroad. Wetland indicator soils are soils that are commonly found in wetlands or soils that have inclusions of soils commonly found in wetlands.

The WDNR SWDV waterway layer was also reviewed and identifies two mapped waterways on the property. An unnamed tributary to Elk Creek is located in the southeastern portion of the study area and is classified as a Class I ASNRI waterway. One unnamed intermittent drainageway is also identified in the southern portion of the study area and is located within a farm swale and is mapped as ultimately draining to the east into the tributary to Elk Creek. Although drainage patters were observed in both areas during the site visit, no indications of actual stream beds were observed. Locations of the waterways are shown on Figure 2.

The Chippewa County Soil Survey (Figure 4) indicates that the following soil series are present within the study area:

AoA – Arenzville Silt Loam, 0 to 3% slopes (6.2 acres - 0.9% of Area of Interest) - These soils consist primarily of moderately well drained silt loam overlying stratified silt loam to very fine sand. These soils are typically formed on linear and convex baseslopes and toeslopes of floodplains and drainageways with level to nearly level terrain. These soils are classified as Mesic Typic Udifluvents. These soils are listed on the Wisconsin Hydric Soil list as Predominantly Non-Hydric with the following hydric inclusions;

- Arenzville-Occassionally Flooded, 90 to 99% of unit – found in floodplains and drainageways
- Ettrick-Frequently Flooded, 0 to 5% of unit – found in depressions on floodplains

ApB – Arland Sandy Loam, 2 to 6% slopes (2.7 acres – 0.4% of Area of Interest) – These soils consist primarily of well drained sandy loam soils overlying bedrock. These soils are typically formed on convex summits of hills with nearly level to gently rolling terrain. These soils are classified as Frigid Haplic Glossudalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

ApC2 – Arland Sandy Loam, 6 to 12% slopes, Eroded (24.6 acres – 3.6% of Area of Interest) - These soils consist primarily of well drained sandy loam soils overlying bedrock. These soils are typically formed on convex backslopes and shoulders of hills with gently rolling to moderately steep terrain. These soils are classified as Frigid Haplic Glossudalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

ApD2 – Arland Sandy Loam, 12 to 20% slopes, Eroded (21.9 acres – 3.2% of Area of Interest) - These soils consist primarily of well drained sandy loam soils overlying bedrock. These soils are typically formed on convex backslopes and shoulders of hills with moderately steep to steep terrain. These soils are classified as Frigid Haplic Glossudalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

AsC2 – Arland Loam, 6 to 12% slopes, Eroded (9.6 acres – 1.4% of Area of Interest) - These soils consist primarily of well drained loam overlying sandy loam soils overlying bedrock. These soils are typically formed on convex backslopes and shoulders of hills with gently rolling to moderately steep terrain. These soils are classified as Frigid Haplic Glossudalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

BlA – Billett Sandy Loam, 0 to 2% slopes (49.2 acres – 7.2% of Area of Interest) - These soils consist primarily of well drained sandy loam soils overlying loamy sand. These soils are typically formed on linear summits of outwash plains with level to nearly level terrain. These soils are classified as Mesic Mollic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

BlB – Billett Sandy Loam, 2 to 6% slopes (26.0 acres – 3.8% of Area of Interest) - These soils consist primarily of well drained sandy loam soils overlying loamy sand. These soils are typically formed on convex summits of outwash plains with nearly level to gently rolling terrain. These soils are classified as Mesic Mollic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

BmA – Billet Sandy Loam, Moderately Well Drained, 0 to 3% slopes (0.1 acres – 0.01% of Area of Interest) - These soils consist primarily of moderately well drained sandy loam soils overlying fine sandy loam over fine sand. These soils are typically formed on concave and linear summits of outwash plains with level to nearly level terrain. These soils are classified as Mesic Mollic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

BoE – Boone Fine Sand, 20 to 45% slopes (8.9 acres – 1.3% of Area of Interest) - These soils consist primarily of excessively drained fine sand soils overlying bedrock. These soils are typically formed on convex backslopes and shoulders of hills with steep to very steep terrain. These soils are classified as Typic Quartzipsamments. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

CkC2 – Chetek Sandy Loam, 6 to 12% slopes (6.8 acres – 1.0% of Area of Interest) - These soils consist primarily of somewhat excessively drained sandy loam soils overlying gravelly loamy sand over stratified coarse sand to sand. These soils are typically formed on convex backslopes and shoulders of end moraines, outwash plains and stream terraces with gently rolling to moderately steep terrain. These soils are classified as Frigid Inceptic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

CkD2 – Chetek-Mahtomedi Complex, 12 to 25% slopes, Eroded (23.2 acres – 3.4% of Area of Interest) - These soils consist primarily of somewhat excessively to excessively drained sandy loam, gravelly loamy sand and stratified coarse sand to sand. These soils are typically formed on convex backslopes and shoulders of end moraines and outwash plains with moderately steep to steep terrain. These soils are

classified as Frigid Inceptic Hapludalfs and Frigid Typic Udipsamments. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

ElB – Eleva Sandy Loam, 2 to 6% slopes (21.9 acres – 3.2% of Area of Interest) - These soils consist primarily of well drained sandy loam soils overlying sand over bedrock. These soils are typically formed on convex and linear summits and footslopes of hills with nearly level to gently rolling terrain. These soils are classified as Mesic Typic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

ElC2 – Eleva Sandy Loam, 6 to 12% slopes, Eroded (39.0 acres – 5.7% of Area of Interest) - These soils consist primarily of well drained sandy loam soils overlying sand over bedrock. These soils are typically formed on convex backslopes and shoulders of hills with gently rolling to moderately steep terrain. These soils are classified as Mesic Typic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

ElD2 – Eleva Sandy Loam, 12 to 20% slopes, Eroded (7.5 acres – 1.1% of Area of Interest) - These soils consist primarily of well drained sandy loam soils overlying sand over bedrock. These soils are typically formed on convex backslopes and shoulders of hills with moderately steep to steep terrain. These soils are classified as Mesic Typic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

EmC2 – Elkmound Loam, 6 to 12% slopes, Moderately Eroded (10.3 acres – 1.5% of Area of Interest) - These soils consist primarily of well drained loam overlying bedrock. These soils are typically formed on convex shoulders and summits of ridges with gently rolling to moderately steep terrain. These soils are classified as Typic Dystrudepts. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

EmD2 – Elkmound Loam, 12 to 20% slopes, Moderately Eroded (30.8 acres – 4.5% of Area of Interest) - These soils consist primarily of well drained loam overlying bedrock. These soils are typically formed on convex sideslopes and backslopes of valley sides with moderately steep to steep terrain. These soils are classified as Typic Dystrudepts. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

EmE – Elkmound Loam, 20 to 45% slopes (90.3 acres – 13.2% of Area of Interest) - These soils consist primarily of well drained loam overlying bedrock. These soils are typically formed on convex sideslopes and backslopes of valley sides with steep to very steep terrain. These soils are classified as Typic Dystrudepts. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

Fm – Fordum Loam, 0 to 2% slopes (13.7 acres – 2.0% of Area of Interest) - These soils consist primarily of poorly drained loam overlying silt loam over sand. These soils are typically formed on concave and linear toeslopes of floodplains with level to nearly level terrain. These soils are classified as Frigid Mollic Fluvaquents. These soils are listed on the Wisconsin Hydric Soil list as Hydric with the following hydric components;

- Fordum, 100% of unit – found in floodplains

GaC2 – Gale Silt Loam, 6 to 12% slopes, Eroded (2.0 acres – 0.3% of Area of Interest) - These soils consist primarily of well drained silt loam overlying sand over bedrock. These soils are typically formed on convex backslopes and shoulders of hills with gently rolling to moderately steep terrain. These soils are classified as Mesic Typic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

GaD2 – Gale Silt Loam, 12 to 20% slopes, Eroded (1.4 acres – 0.2% of Area of Interest) - These soils consist primarily of well drained silt loam overlying sand over bedrock. These soils are typically formed on convex backslopes and shoulders of hills with moderately steep to steep terrain. These soils are classified as Mesic Typic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

HnB – Hixton Loam, 2 to 6% slopes (2.0 acres – 0.3% of Area of Interest) - These soils consist primarily of well drained loam overlying sand over bedrock. These soils are typically formed on concave and linear backslopes and footslopes of hills with nearly level to gently rolling terrain. These soils are classified as Mesic Typic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

HuB – Humbird Sandy Loam, 2 to 6% slopes (2.7 acres – 0.4% of Area of Interest) - These soils consist primarily of moderately well drained sandy loam overlying silty clay over bedrock. These soils are typically formed on convex summits of hills with nearly level to gently rolling terrain. These soils are classified as Frigid Oxyaquic Ultic Haplorthods. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

KeB – Kert Silt Loam, 1 to 6% slopes (14.4 acres – 2.1% of Area of Interest) - These soils consist primarily of somewhat poorly drained silt loam overlying silty clay loam over bedrock. These soils are typically formed on concave and linear footslopes of hills with nearly level to gently rolling terrain. These soils are classified as Frigid Aquic Glossudalfs. These soils are listed on the Wisconsin Hydric Soil list as Predominantly Non-Hydric with the following hydric inclusions;

- Vesper – found in depressions

La – Lows Loam, 0 to 2% slopes (10.3 acres – 1.5% of Area of Interest) - These soils consist primarily of poorly drained loam soils overlying sand. These soils are typically formed on concave and linear toeslopes of depressions and drainageways on stream terraces with level to nearly level terrain. These soils are classified as Frigid Mollic Endoaquepts. These soils are listed on the Wisconsin Hydric Soil list Hydric with the following hydric components;

- Lows, 100% of Unit – found in depressions and drainageways on stream terraces

MkB – Menhaga Loamy Sand, 0 to 6% slopes (39.0 acres – 5.7% of Area of Interest) - These soils consist primarily of excessively drained loamy sand overlying coarse sand. These soils are typically formed on convex and linear rises of outwash plains with level to gently rolling terrain. These soils are classified as Frigid Typic Udipsamments. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

MkC – Menhaga Loamy Sand, 6 to 12% slopes (56.8 acres – 8.3% of Area of Interest) - These soils consist primarily of excessively drained loamy sand overlying coarse sand. These soils are typically formed on convex and linear sideslopes, backslopes and shoulders of outwash plains with gently rolling to moderately steep terrain. These soils are classified as Frigid Typic Udipsamments. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

MrB – Merrillan Sandy Loam, 1 to 6% slopes (6.2 acres – 0.9% of Area of Interest) - These soils consist primarily of somewhat poorly drained sandy loam overlying clay loam over bedrock. These soils are typically formed on concave and linear footslopes of hills with nearly level to gently rolling terrain. These soils are classified as Frigid Ultic Epiaquods. These soils are listed on the Wisconsin Hydric Soil list as Predominantly Non-Hydric with the following hydric inclusions;

- Elm Lake – found in depressions

Oe – Oesterle Sandy Loam, 0 to 3% slopes (23.3 acres – 3.4% of Area of Interest) - These soils consist primarily of somewhat poorly drained sandy loam overlying stratified sand to very gravelly coarse sand. These soils are typically formed on concave and linear treads of terraces and flats with level to nearly level terrain. These soils are classified as Frigid Aquic Glossudalfs. These soils are listed on the Wisconsin Hydric Soil list as Predominantly Non-Hydric with the following hydric inclusions;

- Minocqua, 0 to 10% of unit – found in depressions and drainageways

Or – Orion Silt Loam, 0 to 3% slopes (4.1 acres – 0.6% of Area of Interest) - These soils consist primarily of somewhat poorly drained silt loam overlying stratified silt loam. These soils are typically formed on linear toeslopes of floodplains and drainageways with level to nearly level terrain. These soils are classified as Mesic Aquic Udifluvents. These soils are listed on the Wisconsin Hydric Soil list as Predominantly Non-Hydric with the following hydric inclusions;

- Ettrick, Frequently Flooded, 1 to 5% of unit – found in depressions on floodplains

PdB – Plainbo Loamy Sand, 2 to 6% slopes (4.1 acres – 0.4% of Area of Interest) - These soils consist primarily of excessively drained loamy sand overlying sand over bedrock. These soils are typically formed on convex treads and summits of outwash plains and stream terraces with nearly level to gently rolling terrain. These soils are classified as Frigid Typic Udipsamments. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

PdC – Plainbo Loamy Sand, 6 to 12% slopes (23.3 acres – 3.4% of Area of Interest) - These soils consist primarily of excessively drained loamy sand overlying sand over bedrock. These soils are typically formed on concave and linear footslopes of hills with gently rolling to moderately steep terrain. These soils are classified as Frigid Typic Udipsamments. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

PdD – Plainbo Loamy Sand, 12 to 20% slopes (46.5 acres – 6.8% of Area of Interest) - These soils consist primarily of excessively drained loamy sand overlying sand over bedrock. These soils are typically formed on convex backslopes of hills with moderately steep to steep terrain. These soils are classified as Frigid Typic Udipsamments. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

RoB – Rosholt Sandy Loam, 2 to 6% slopes (33.5 acres – 4.9% of Area of Interest) - These soils consist primarily of well drained sandy loam overlying gravelly loamy sand over stratified sand to very gravelly coarse sand. These soils are typically formed on convex summits, shoulders and backslopes of terraces, flats and hillslopes with nearly level to gently rolling terrain. These soils are classified as Frigid Haplic Glossudalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

RoC2 – Rosholt Sandy Loam, 6 to 15% slopes (9.6 acres – 1.4% of Area of Interest) - These soils consist primarily of well drained sandy loam overlying gravelly loamy sand over stratified sand to very gravelly coarse sand. These soils are typically formed on convex shoulders and backslopes of hillslopes with gently rolling to moderately steep terrain. These soils are classified as Frigid Haplic Glossudalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

SeD2 – Seaton Silt Loam, Driftless Valley, 12 to 20% slopes, Moderately Eroded (5.8 acres – 0.8% of Area of Interest) - These soils consist primarily of well drained silt loam soils. These soils are typically formed on convex linear summits of knolls with moderately steep to steep terrain. These soils are classified as Mesic Typic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Non-Hydric.

So – Shiffer Loam, 0 to 2% slopes (4.1 acres – 0.6% of Area of Interest) - These soils consist primarily of somewhat poorly drained loam overlying sandy loam over sand. These soils are typically formed on concave and linear toeslopes of depressions and drainagways on valley floors with level to nearly level terrain. These soils are classified as Mesic Aquollic Hapludalfs. These soils are listed on the Wisconsin Hydric Soil list as Predominantly Non-Hydric with the following hydric inclusions;

- Lows – found in depressions

Ve – Vesper Silt Loam, 0 to 2% slopes (4.1 acres – 0.6% of Area of Interest) - These soils consist primarily of poorly drained silt loam overlying loam over silty clay loam over sand. These soils are typically formed on concave and linear footslopes of drainageways on pediments with level to nearly level terrain. These soils are classified as Frigid Humic Epiaqueps. These soils are listed on the Wisconsin Hydric Soil list as Predominantly Non-Hydric with the following hydric inclusions;

- Vesper, 80 to 100% of unit – found in drainageways on pediments
- Veedum, 0 to 10% of unit – found in depressions and drainageways on pediments

The hydric soils report for the study area, including minor components, indicates the following;

Report — Hydric Soil List - All Components

WI017-Chippewa County, Wisconsin

Map symbol and map unit name	Component/Local Phase	Comp. pct.	Landform	Hydric status	Hydric criteria met (code)
AoA: Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded	Arenzville-Occassionally flooded	90-99	Flood plains,drainageways	No	—
	Orion-Occassionally flooded	1-5	Flood plains,drainageways	No	—
	Ettrick-Frequently flooded	0-5	Depressions on flood plains	Yes	2
ApB: Arland sandy loam, 2 to 6 percent slopes	Arland	100	Hills	No	—
ApC2: Arland sandy loam, 6 to 12 percent slopes, eroded	Arland	100	Hills	No	—
ApD2: Arland sandy loam, 12 to 20 percent slopes, eroded	Arland	100	Hills	No	—
AsC2: Arland loam, 6 to 12 percent slopes, eroded	Arland	100	Hills	No	—
BlA: Billett sandy loam, 0 to 2 percent slopes	Billett	100	Outwash plains	No	—
BlB: Billett sandy loam, 2 to 6 percent slopes	Billett	100	Outwash plains	No	—
BmA: Billett sandy loam, moderately well drained, 0 to 3 percent slopes	Billett-Moderately well drained	100	Outwash plains	No	—
BoE: Boone fine sand, 20 to 45 percent slopes	Boone	100	Hills	No	—
CkC2: Chetek sandy loam, 6 to 12 percent slopes, eroded	Chetek	100	End moraines,outwash plains,stream terraces	No	—
CkD2: Chetek-Mahtomedi complex, 12 to 25 percent slopes, eroded	Chetek	55	End moraines,outwash plains	No	—
	Mahtomedi	45	End moraines,outwash plains	No	—
ElB: Eleva sandy loam, 2 to 6 percent slopes	Eleva	100	Hills	No	—
ElC2: Eleva sandy loam, 6 to 12 percent slopes, eroded	Eleva	100	Hills	No	—
ElD2: Eleva sandy loam, 12 to 20 percent slopes, eroded	Eleva	100	Hills	No	—
EmC2: Elkmound loam, 6 to 12 percent slopes, moderately eroded	Elkmound-Moderately eroded	85-98	Ridges	No	—
	Hixton-Thin solum	1-5	Ridges	No	—
	Elevasil-Moderately eroded	1-5	Ridges	No	—
	Boone	0-5	Ridges	No	—
EmD2: Elkmound loam, 12 to 20 percent slopes, moderately eroded	Elkmound-Moderately eroded	90-98	Valley sides	No	—
	Hixton-Thin solum	1-5	Valley sides	No	—
	Elevasil-Moderately eroded	1-5	Valley sides	No	—
EmE: Elkmound loam, 20 to 45 percent slopes	Elkmound	90-98	Valley sides	No	—
	Hixton-Thin solum	1-5	Valley sides	No	—
	Elevasil-Moderately eroded	1-5	Valley sides	No	—
Fm: Fordum loam, 0 to 2 percent slopes	Fordum	100	Flood plains	Yes	2,3,4
GaC2: Gale silt loam, 6 to 12 percent slopes, eroded	Gale	100	Hills	No	—
GaD2: Gale silt loam, 12 to 20 percent slopes, eroded	Gale	100	Hills	No	—
HnB: Hixton loam, 2 to 6 percent slopes	Hixton	100	Hills	No	—
HuB: Humbird sandy loam, 2 to 6 percent slopes	Humbird	100	Hills	No	—

HnB: Hixton loam, 2 to 6 percent slopes	Hixton	100	Hills	No	—
HuB: Humbird sandy loam, 2 to 6 percent slopes	Humbird	100	Hills	No	—
KeB: Kert silt loam, 1 to 6 percent slopes	Kert	100	Hills	No	—
	Vesper		Depressions	Yes	2,3
La: Lows loam, 0 to 2 percent slopes	Lows	100	Depressions on stream terraces,drainageways on stream terraces	Yes	2,3
MkB: Menahga loamy sand, 0 to 6 percent slopes	Menahga	90-98	Outwash plains	No	—
	Friendship	0-5	Outwash plains,stream terraces	No	—
	Plainbo	0-5	Outwash plains,stream terraces	No	—
MkC: Menahga loamy sand, 6 to 12 percent slopes	Menahga	90-98	Outwash plains	No	—
	Plainbo	2-10	Outwash plains	No	—
MrB: Merrillan sandy loam, 1 to 6 percent slopes	Merrillan	100	Hills	No	—
	Elm Lake		Depressions	Yes	2,3
Oe: Oesterle sandy loam, 0 to 3 percent slopes	Oesterle	80-100	Terraces,flats	No	—
	Minocqua	0-10	Depressions,drainageways	Yes	2,3
	Scott Lake	0-5	Terraces,flats	No	—
	Rosholt	0-5	Terraces,flats	No	—
Or: Orion silt loam, 0 to 3 percent slopes, occasionally flooded	Orion-Occassionally flooded	80-95	Flood plains,drainageways	No	—
	Arenzville-Occassionally flooded	3-10	Flood plains,drainageways	No	—
	Ettrick-Frequently flooded	1-5	Depressions on flood plains	Yes	2
	Bearpen-Rarely flooded	1-5	Flood plains	No	—
PdB: Plainbo loamy sand, 2 to 6 percent slopes	Plainbo	100	Outwash plains,stream terraces	No	—
PdC: Plainbo loamy sand, 6 to 12 percent slopes	Plainbo	100	Hills	No	—
PdD: Plainbo loamy sand, 12 to 20 percent slopes	Plainbo	100	Hills	No	—
RoB: Rosholt sandy loam, 2 to 6 percent slopes	Rosholt	70-100	Terraces,flats,hillslopes	No	—
	Scott Lake	0-15	Terraces,flats,hillslopes	No	—
	Antigo	0-10	Terraces,flats,hillslopes	No	—
	Chetek	0-5	Terraces,flats,hillslopes	No	—
	Cress	0-5	Terraces,flats,hillslopes	No	—
RoC2: Rosholt sandy loam, 6 to 15 percent slopes	Rosholt	75-100	Terraces,hillslopes	No	—
	Chetek	0-15	Terraces,hillslopes	No	—
	Cress	0-5	Terraces,hillslopes	No	—
	Antigo	0-5	Terraces,hillslopes	No	—
	Scott Lake	0-5	Terraces,flats,hillslopes	No	—
SeD2: Seaton silt loam, driftless valley, 12 to 20 percent slopes, moderately eroded	Seaton	90-100	Knolls	No	—
	Council	0-3	Knolls	No	—
	Greenridge	0-4	Knolls	No	—
	Lambeau	0-3	Knolls	No	—
So: Shiffer loam, 0 to 2 percent slopes	Shiffer	100	Depressions on stream terraces,drainageways on valley floors	No	—
	Lows		Depressions	Yes	2,3
Ve: Vesper silt loam, 0 to 2 percent slopes	Vesper	80-100	Drainageways on pediments	Yes	2
	Veedum	0-10	Depressions on pediments,drainageways on pediments	Yes	2
	Kert	0-10	Pediments	No	—

The Hydric Criteria codes 1, 2, 3 and 4 are described as follows;

1. All Histels except for Folistels and Histosols except for Folists.

2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   b. Show evidence that the soil meets the definition of a hydric soil;

3. Soils that are frequently ponded for long or very long duration during the growing season.
   a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   b. Show evidence that the soil meets the definition of a hydric soil;

4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:

   a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   b. Show evidence that the soil meets the definition of a hydric soil;

An antecedent precipitation evaluation was conducted and indicates that the three months prior to the site visit (March through May 2018) to determine if hydrologic conditions were within normal, wetter than normal or drier than normal. Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded on the day prior to and during the first few days of the field study totaling 3.13 inches. Based on this information and observations of very heavy precipitation in the area, best professional judgment was applied to determine that the first several days of the field evaluation were wetter than normal and the latter evaluation days were within normal. The antecedent precipitation evaluation, WETS data, rainfall data and Palmer Drought Index reports for the area at the time of the site visit are included in Appendix B.

In order to make an accurate determination of wetlands versus uplands within cropped areas, all available crop slides and aerial photos were reviewed prior to the site visit for signs of wetness signatures and/or vegetative stress. In addition, on-site observations of volunteer vegetation species, soils, hydrology and reference sites where available were all used to assist in making the determination of wetland versus upland in these areas. Additional sample plots (SP1 through SP23) were evaluated, many within agricultural areas and others within forested tracts, to either document typical site conditions or to document suspect areas due to topographical position, mapped indicator soils or wetness signatures on aerial photos. All crop slides and aerial photos used in the crop slide evaluation, as well as a summary of the findings of the evaluation are included in Appendix C.

FIELD DELINEATION

Fifteen wetlands (Wetlands 1 through 15) were delineated during the site visit. The following section describes the wetlands identified at the property and the basis for determining the wetland boundaries. See Appendix A for Wetland Data Forms. Refer to Figure 2 for the location of the wetlands and each sample transect or sample plot. Site photos are included in Appendix D.

The Wetland Data Sheets classify the wetlands according to the Cowarden classification system. The wetland boundaries were identified using procedures identified in the 1987 Corp of Engineers Wetlands Delineation Manual and Northcentral and Northeast Regional Supplement, including observations of transitions in wetland hydrology, vegetation and soils, as well as topographical position, crop slide/aerial photo review and best professional judgment.

DELINEATED WETLAND BASINS

Wetland 1 comprises approximately 9.33 acres of the study area and is primarily classified as a Palustrine, Forested, Broad-Leaved Deciduous (PFO1) wetland community on the southwest side of the railroad and as a Palustrine, Emergent, Persistent (PEM1) wetland community to the northeast of the railroad, with both areas connected by a culvert located under the railroad. This wetland is located in the southeast portion of the study area and is located in a hardwood forest depressional area. An unnamed tributary to Elk Creek flows through this wetland community although a defined stream channel was observed in the field.

There are two excavated ditches and what appears to be a historic railroad spur down the middle of this wetland. Any disturbances that occurred were conducted many years ago with the spur evident on the 1938 aerial photo. The area has reestablished new normal circumstances since that time and no recent disturbances were observed.

Only areas adjacent to the northeast portion of Wetland 1 were considered to have significantly disturbed vegetation and soils due to ongoing agricultural activities in that area. Natural vegetation in the area of sample plot Up 1-5 has been removed and replaced with managed crops and soils have been tilled recently, which disturbs the natural soil profile. All available information including crop slide reviews, volunteer

vegetation observed, reference sites, hydric soils or lack thereof, hydrology indicators or lack thereof, and topographical position were taken into consideration and best professional judgment was used to identify the wetland boundary in that area. A crop slide review was conducted for cropped areas and identified wetness or crop stress signatures 0% of normal precipitation years in adjacent uplands and in the wetland area that extends into the field. This is due to the area having been forested up until recently so crop slide review was not useful in that area. The topographical transition between wetland and upland was also relatively evident in most areas. All wetland areas met wetland vegetation criteria while all uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The adjacent upland areas consisted of hardwood upland forest with gently rolling to moderately steep terrain to the southwest of the railroad. Areas to the northeast of the railroad consisted of upland hardwood forest and agricultural lands with nearly level to gently rolling terrain. Agricultural areas were planted in soybeans at the time of the site visit. The cropped areas were considered to have significantly disturbed vegetation and soils as discussed above and procedures identified in the Northcentral and Northeast Regional Supplement were used to identify wetlands versus uplands in cropped areas.

The wetland soils within Wetland 1 consist primarily of silt loam or fine sandy loam soils with redoximorphic features and depleted matrices. The A11 (Depleted Below Dark Surface), A12 (Thick Dark Surface), F1 (Loamy Mucky Mineral), F3 (Depleted Matrix), F6 (Redox Dark Surface) and F7 (Depleted Dark Surface) hydric soil indicators were applied at the wetland sample plots where applicable.

All wetland sample plots met wetland hydrology criteria with saturation and water table within the upper 12 inches of the soil profile, as well several other hydrology indicators. The following hydrology indicators were observed at Wetland 1 sample plots where applicable; A2 (High Water Table), A3 (Saturation), B9 (Water-Stained Leaves), B10 (Drainage Patterns), C9 (Saturation Visible on Aerial Imagery), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The upland soils consisted primarily of higher chroma/value loamy sand and sandy loam soils lacking redoximorphic features. None of the upland soil sample plots met hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and crop slide review did not indicate any wetness or crop stress in those areas.

Wetland 2 is approximately 0.55 acres in size and is classified as a Palustrine, Forested, Broad-Leaved Deciduous (PFO1) wetland community. This wetland is located on the east side of the study area and to the northeast of the railroad in a forested hardwood depressional area.

The wetland/upland boundary consists of a gradual transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils, several hydrology indicators in wetlands to lack thereof in adjacent uplands and a gradual topographical break from upland to wetland.

No disturbances were observed and the wetland and adjacent uplands were considered to have normal circumstances. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 2 consist primarily of dark silt surface soils overlying depleted silt soils with redoximorphic features. The A12 (Thick Dark Surface) hydric soil indicator was applied at the wetland sample plot.

The wetland sample plot had saturation and high water table within the upper 12 inches of the soil profile at the time of the site visit. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of gently rolling upland hardwood forest. The upland soils consisted primarily of higher chroma/value fine sandy loam soils lacking redoximorphic features. Upland soils did

not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

A dense herbaceous cover of *Impatiens capensis,* a Facultative Wetland (FACW) species, was observed in the adjacent uplands as well as several other areas on this property that were ultimately determined to be upland. The other vegetation observed consists predominantly of non-hydrophytic species, soils did not show any indications of hydric conditions and no hydrology indicators were observed despite wetter than normal conditions. Best professional judgment was used to identify this area and others as upland despite a thick herbaceous layer of *Impatiens capensis*.

Wetland 3 is approximately 1.18 acres in size and is classified as a Palustrine, Forested, Broad-Leaved Deciduous (PFO1) wetland community. This wetland is located on the east side of the study area and to the northeast of the railroad in a forested hardwood swale.

The wetland/upland boundary consists of a gradual transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils, several hydrology indicators in wetland areas to lack thereof in adjacent uplands and an obvious topographical break from upland to wetland.

No disturbances were observed and the wetland and adjacent uplands were considered to have normal circumstances. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 3 consist primarily of dark silt surface soils overlying depleted silt loam soils with redoximorphic features. The A11 (Depleted Below Dark Surface) and F3 (Depleted Matrix) hydric soil indicators were applied at the wetland sample plot.

The wetland sample plot had saturation and high water table within the upper 12 inches of the soil profile at the time of the site visit. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), B9 (Water-Stained Leaves), B10 (Drainage Patterns), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of moderately steep upland hardwood forest. The upland soils consisted primarily of higher chroma/value fine sandy loam soils lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

A dense herbaceous cover of *Impatiens capensis*, a FACW species, was observed in the adjacent upland areas as well as several other areas on this property that were ultimately determined to be upland. The other vegetation observed was dominated by non-hydrophytic species, soils did not show any indications of hydric conditions and no hydrology indicators were observed despite wetter than normal conditions. Best professional judgment was used to identify this area and others as upland despite a thick herbaceous layer of *Impatiens capensis*.

Wetland 4 comprises approximately 17.17 acres of the study area and is classified as a combination Palustrine, Forested, Broad-Leaved Deciduous (PFO1) and Palustrine, Emergent, Persistent, Farmed (PEM1) wetland communities. This wetland is located in the southern-most portion of the study area with 80th Avenue bordering the south edge of the delineated wetland.

An unnamed tributary to Elk Creek flows through this wetland community from north to south, although to the east of the study area. Another mapped unnamed intermittent waterway is mapped in this wetland running west to east and was observed during the field study as a farm drainage ditch.

The western and northern extensions of this wetland community have evidently been disturbed in the past by ditching and cropping activities. However, the majority of the wetland areas identified during the site visit did not have any recent disturbances and were considered to have normal circumstances.

Upland areas adjacent to Wetland 4 in the areas of sample plots Up 4-2, Up 4-3 and Up 4-4 were cropped at the time of the site visit and were considered to have significantly disturbed vegetation and soils. Natural vegetation has been removed and replaced with managed crops and soils have been tilled, which disturbs the natural soil profile. However, all available information including crop slide reviews, other hydrology indicators, volunteer vegetation observed, reference sites, hydric soils or lack thereof and topographical position were taken into consideration and best professional judgment was used to identify the wetland boundary in that area. The topographical transition between wetland and upland was also relatively evident in most areas. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The adjacent upland areas consist of hardwood upland forest to the southwest of Wetland 4 and agricultural lands planted in corn at the time of the site visit in areas to the northwest, north and northeast of the wetland. A residential driveway runs along the east edge of the delineated wetland and the wetland continues to the east of the driveway beyond the study area. Some upland areas to the southeast were not forested, likely cleared for farming many years ago, but not cropped and were considered to have normal circumstances. The cropped areas were considered to have significantly disturbed vegetation and soils as discussed above and procedures as identified in the Northcentral and Northeast Regional Supplement were used to identify wetlands versus uplands in cropped areas.

The wetland soils within Wetland 4 vary with areas to the south consisting primarily of muck soils and areas further west and north consisting primarily of depleted silt soils with redoximorphic features. The A1 (Histosol), A10 (2 cm Muck), A11 (Depleted Below Dark Surface), F1 (Loamy Mucky Mineral), F3 (Depleted Matrix) and F6 (Redox Dark Surface) hydric soil indicators were applied at the wetland sample plots where applicable.

All wetland sample plots met wetland hydrology criteria with saturation and water table within the upper 12 inches of the soil profile and inundation in some areas, as well several other hydrology indicators. The following hydrology indicators were observed at Wetland 4 sample plots; A1 (Surface Water), A2 (High Water Table), A3 (Saturation), B9 (Water-Stained Leaves), B10 (Drainage Patterns), C9 (Saturation Visible on Aerial Imagery), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The upland soils consisted primarily of higher chroma/value loamy sand, sandy loam and silt loam soils mostly lacking redoximorphic features. Only sample plot Up 4-5 displayed redoximorphic features but hydric soil indicators were not met due to matrix chroma colors. None of the upland soil sample plots met hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and crop slide review did not indicate any wetness or crop stress in those areas.

Wetland 5 is approximately 0.20 acres in size and is classified as a Palustrine, Emergent, Persistent, Excavated (PEM1x) wetland community.

This wetland is a man-made pond located in the southeast portion of the study area. The pond is surrounded by upland hardwood forest to the north and by agricultural fields to the west, south and east. The wetland/upland boundary consists of an abrupt transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils and several hydrology indicators in wetland areas to lack thereof in uplands and a very steep topographical break from upland to wetland.

Although the pond was excavated and the activities resulted in disturbance at that time, it appears the pond was excavated in the 1980's and no recent disturbances were observed. Therefore, the wetland and adjacent upland sample plot areas were considered to have normal circumstances. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 5 consist of depleted loamy sand soils with redoximorphic features overlying rock. The S5 (Sandy Redox) hydric soil indicator was applied at the wetland sample plot.

The pond was inundated at the time of the site visit and several hydrology indicators were present. The area met wetland hydrology criteria with the following indicators observed; A1 (Surface Water), A2 (High Water Table), A3 (Saturation), B7 (Inundation Visible on Aerial Imagery), B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of gently rolling to moderately steep upland hardwood forest and agricultural fields. The upland soils consisted primarily of silt loam overlying higher chroma/value gravelly silt loam, all lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 6 is approximately 0.27 acres in size and is classified as a Palustrine, Forested, Broad-Leaved Deciduous (PFO1) wetland community.

This wetland is located in the western portion of the study area to the west of Frazier Road. The wetland is located in a shallow depressional area surrounded by upland hardwood forest. The wetland/upland boundary consists of a gradual transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils and several hydrology indicators in wetland areas to lack thereof in uplands and a gradual topographical break from upland to wetland.

No disturbances were observed within the wetland or adjacent uplands and the area was considered to have normal circumstances. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 6 consist primarily of dark silt loam overlying depleted silt loam and sandy loam soils with redoximorphic features. The A11 (Depleted Below Dark Surface) and F3 (Depleted Matrix) hydric soil indicators were applied at the wetland sample plot.

The sample plot had saturation within the upper 12 inches of the soil profile but no water table was observed. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A3 (Saturation), B9 (Water-Stained Leaves) and D2 (Geomorphic Position).

The adjacent upland areas consisted of gently rolling upland hardwood forest. The upland soils consisted of silt loam soils lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 7 is approximately 0.92 acres in size and is classified as a Palustrine, Forested, Broad-Leaved Deciduous (PFO1) wetland community.

This wetland is located in the western portion of the study area to the west of Frazier Road. The wetland is located in a shallow depressional area surrounded by upland hardwood forest. The wetland/upland boundary consists of a gradual transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils and several hydrology indicators wetland areas to lack thereof in adjacent uplands and a gradual topographical break from upland to wetland to the north and east and a steep topographic break to the south and west.

It is apparent that some historic activities occurred in this area including excavation of a small pond and deposition of stockpiles or sidecast material. However, it is evident the activities occurred many years ago based on the size of trees and other vegetative growth throughout. No recent disturbances were observed within the wetland or adjacent uplands and the area was considered to have normal circumstances. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 7 consist primarily of dark silt loam with redoximorphic features overlying depleted sandy loam soils with redoximorphic features. The A11 (Depleted Below Dark Surface), F3 (Depleted Matrix) and F6 (Redox Dark Surface) hydric soil indicators were applied at the wetland sample plot.

The sample plot had saturation and high water table within the upper 12 inches of the soil profile. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test)

The adjacent upland areas consisted of gently rolling upland hardwood forest to the north and east and very steep upland hardwood forest to the south and west. The upland soils consisted of silt loam soils lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 8 is approximately 0.08 acres in size and consists primarily of Palustrine, Emergent, Persistent, Farmed (PEM1f) wetland community.

Wetland 8 is located on the west side of the property along the south edge of an actively cropped agricultural field. The wetland/upland boundary consists of fairly abrupt transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils, several hydrology indicators in wetlands to lack thereof in uplands and an obvious topographical break from upland to wetland.

Because the wetland and adjacent uplands consist of actively cropped fields, vegetation and soils were considered significantly disturbed since native vegetation has been removed and replaced with crops and the natural soil profile has been disturbed by tilling. All available information including crop slide review, reference areas, observations of non-hydric soils, volunteer vegetation, reference areas, lack of hydrology indicators and topographic position were taken into consideration and best professional judgment was used to identify the upland areas as such. Crop slide review of this area indicated wetness or crop stress signatures in 60% of normal precipitation years. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 8 consist primarily of dark silt loam soils with redoximorphic features overlying depleted loamy sand soils with redoximorphic features. The A11 (Depleted Below Dark Surface) and F6 (Redox Dark Surface) hydric soil indicators were applied at the wetland sample plot.

Saturation and high water table were observed within the upper 12 inches of the soil profile at the wetland sample plot. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), C6 (Recent Iron Reduction in Tilled Soils), C9 (Saturation Visible on Aerial Imagery), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of gently rolling agricultural fields and were considered to have significantly disturbed vegetation and soils as described above. Procedures as identified in the Northcentral and Northeast Regional Supplement were used to identify wetlands versus uplands in cropped areas. Soils consisted of higher chroma/value sandy loam lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 9 comprises approximately 2.57 acres of the study area and is classified as a Palustrine, Emergent, Persistent (PEM1) wetland community with fringe areas to the east being actively farmed.

This wetland is a depressional area located on a sideslope, which is higher in elevation than uplands to the east. The wetland appears to have historically been farmed but appears to be fallow in most years, likely

due to wetness. The wetland/upland boundary consists of an abrupt transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils, several hydrology indicators in wetlands to lack thereof in adjacent uplands.

Because the adjacent uplands consist of actively cropped fields, vegetation and soils were considered significantly disturbed in those areas since native vegetation has been removed and replaced with crops and the natural soil profile has been disturbed by tilling. All available information including crop slide review, reference areas, observations of non-hydric soils, volunteer vegetation, reference areas, lack of hydrology indicators and topographic position were taken into consideration and best professional judgment was used to identify the upland areas as such. Crop slide review of this area indicated wetness or crop stress signatures in 60% of normal precipitation years. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 9 consist primarily of silt loam soils with redoximorphic features throughout the soil profile. The F6 (Redox Dark Surface) hydric soil indicator was applied at the wetland sample plot.

Saturation and high water table were observed within the upper 12 inches of the soil profile at the wetland sample plot. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), C9 (Saturation Visible on Aerial Imagery), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of gently rolling agricultural fields and were considered to have significantly disturbed vegetation and soils as described above and procedures as identified in the Northcentral and Northeast Regional Supplement were used to identify wetlands versus uplands in cropped areas. Soils consisted of higher chroma/value very fine sandy loam lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 10 comprises approximately 0.23 acres of the study area and is classified as a Palustrine, Emergent, Persistent (PEM1) wetland community with fringe areas to the east being actively farmed.

This wetland is a depressional area located on the western edge of the study area. The wetland appears to have historically been farmed but is fallow in many years, likely due to wetness. The wetland/upland boundary consists of an abrupt transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils, several hydrology indicators in wetlands to lack thereof in adjacent uplands. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

Because the adjacent uplands consist of actively cropped fields, vegetation and soils were considered significantly disturbed in those areas since native vegetation has been removed and replaced with crops and the natural soil profile has been disturbed by tilling. All available information including crop slide review, reference areas, observations of non-hydric soils, volunteer vegetation, reference areas, lack of hydrology indicators and topographic position were taken into consideration and best professional judgment was used to identify the upland areas as such. Crop slide review of this area indicated wetness or crop stress signatures in 50% of normal precipitation years.

The wetland soils within Wetland 10 consist primarily of silt loam soils with redoximorphic features overlying depleted coarse sand soils with redoximorphic features. The A11 (Depleted Below Dark Surface), S5 (Sandy Redox) and F6 (Redox Dark Surface) hydric soil indicator were applied at the wetland sample plot.

Saturation and high water table were observed within the upper 12 inches of the soil profile at the wetland sample plot. Several hydrology indicators were present and the area met wetland hydrology criteria with

the following indicators observed; A2 (High Water Table), A3 (Saturation), C9 (Saturation Visible on Aerial Imagery), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of gently rolling agricultural fields and were considered to have significantly disturbed vegetation and soils as described above above and procedures as identified in the Northcentral and Northeast Regional Supplement were used to identify wetlands versus uplands in cropped areas. Soils consisted of higher chroma/value very fine sandy loam with redoximorphic features observed lower in the soil profile but with matrix chroma values too high to meet hydric soil indicators. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 11 is approximately 0.02 acres in size and is classified as a Palustrine, Emergent, Persistent, Farmed (PEM1f) wetland community.

This wetland is a small depressional area located on the far northwest edge of the study area along the west edge of an actively cropped agricultural field. The wetland/upland boundary consists of an abrupt transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils, several hydrology indicators in wetlands to lack thereof in uplands and an obvious depression in the area of the identified wetland. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

Because the wetland and adjacent uplands consist of actively cropped fields, vegetation and soils were considered significantly disturbed since native vegetation has been removed and replaced with crops and the natural soil profile has been disturbed by tilling. All available information including crop slide review, reference areas, observations of non-hydric soils, volunteer vegetation, reference areas, lack of hydrology indicators and topographic position were taken into consideration and best professional judgment was used to identify the upland areas as such. A crop slide review was not conducted for this area due to how small it is making it difficult to evaluate on aerial photos. This area was not identified as wetland or having wetland indicator soils on the WWI map.

The wetland soils within Wetland 11 consist primarily of dark loam soils with redoximorphic features overlying high chroma/value coarse sand soils with redoximorphic features. The F6 (Redox Dark Surface) hydric soil indicator was applied at the wetland sample plot.

Saturation and high water table were observed within the upper 12 inches of the soil profile at the wetland sample plot. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of gently rolling agricultural fields and were considered to have significantly disturbed vegetation and soils as described above and procedures as identified in the Northcentral and Northeast Regional Supplement were used to identify wetlands versus uplands in cropped areas. Soils consisted of dark sand loam overlying higher chroma/value sandy loam soils lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 12 comprises approximately 0.17 acres of the study area and is classified as a Palustrine, Emergent, Persistent (PEM1) wetland community.

This wetland is located in the south-central portion of the study area on both sides of Frazier Road with a culvert connecting the areas. The wetland is a relatively deep swale that appears to ultimately drain into Wetland 4 to the southeast and is primarily surrounded by gently rolling to moderately steep hay fields. Although the west field had recently been hayed, no recent significant disturbances were observed within the wetland or adjacent uplands and the area was considered to have normal circumstances. Wetland areas

met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 12 consist primarily of dark silt loam soils with redoximorphic features overlying depleted silt loam soils with redoximorphic features. The A11 (Depleted Below Dark Surface), F3 (Depleted Matrix) and F6 (Redox Dark Surface) hydric soil indicators were applied at the wetland sample plot.

The wetland sample plot had saturation and high water table observed within the upper 12 inches of the soil profile. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), D2 (Geomorphic Position) and FAC-Neutral Test (D5).

The adjacent upland areas consisted of gently rolling to moderately steep hay fields primarily dominated by non-hydrophytic species. The upland soils consisted primarily of dark sandy loam overlying higher chroma/value sandy loams soils lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 13 is approximately 0.98 acres in size and is classified as a Palustrine, Forested, Broad-Leaved Deciduous (PFO1) wetland community. This wetland is located on the east central portion of the study area and to the southwest of the railroad in a hardwood forested swale.

The wetland/upland boundary consists of a gradual transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils, several hydrology indicators to lack thereof in uplands and an obvious topographical break from upland to wetland. Topographic transitions from upland to wetland were quite abrupt and obvious. No disturbances were observed and the wetland and adjacent uplands were considered to have normal circumstances. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 13 consist primarily of dark silt surface soils overlying depleted silt soils with redoximorphic features. The A11 (Depleted Below Dark Surface) and F3 (Depleted Matrix) hydric soil indicators were applied at the wetland sample plot.

The wetland sample plot had saturation and high water table within the upper 12 inches of the soil profile at the time of the site visit. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), B9 (Water-Stained Leaves), B10 (Drainage Patterns), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of moderately steep upland hardwood forest. The upland soils consisted primarily of higher chroma/value fine loamy sand soils lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 14 is approximately 0.03 acres in size and is classified as a Palustrine, Forested, Broad-Leaved Deciduous (PFO1) wetland community. This wetland is located in the central portion of the study area, to the east of Frazier Road.

The wetland/upland boundary consists of a quick transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils, several hydrology indicators to lack thereof in uplands and an obvious topographical break from upland to wetland. No disturbances were observed and the wetland and adjacent uplands were considered to have normal circumstances. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 14 consist primarily of mucky loamy sand with redoximorphic features overlying depleted loamy sand soils with redoximorphic features. The A11 (Depleted Below Dark Surface), S1 (Sandy Muck Mineral) and S6 (Stripped Matrix) hydric soil indicators were applied at the wetland sample plot.

The wetland sample plot had saturation and high water table within the upper 12 inches of the soil profile at the time of the site visit. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of moderately steep upland hardwood forest dominated primarily by non-hydrophytic vegetation. The upland soils consisted primarily of dark sandy loam overlying higher chroma/value sandy loam soils lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Wetland 15 is approximately 0.02 acres in size and is classified as a Palustrine, Forested, Broad-Leaved Deciduous (PFO1) wetland community. This wetland is located in the central portion of the study area, to the east of Frazier Road.

The wetland/upland boundary consists of a quick transition from hydrophytic vegetation to non-hydrophytic vegetation, hydric soils to non-hydric soils, several hydrology indicators to lack thereof in uplands and an obvious topographical break from upland to wetland. No disturbances were observed and the wetland and adjacent uplands were considered to have normal circumstances. Wetland areas met wetland vegetation criteria while adjacent uplands were dominated primarily by non-hydrophytic vegetation and did not meet wetland vegetation criteria.

The wetland soils within Wetland 15 consist primarily of mucky loamy sand with redoximorphic features overlying depleted loamy sand soils with redoximorphic features. The A11 (Depleted Below Dark Surface), S1 (Sandy Muck Mineral) and S5 (Sandy Redox) hydric soil indicators were applied at the wetland sample plot.

The wetland sample plot had saturation and high water table within the upper 12 inches of the soil profile at the time of the site visit. Several hydrology indicators were present and the area met wetland hydrology criteria with the following indicators observed; A2 (High Water Table), A3 (Saturation), B9 (Water-Stained Leaves), D2 (Geomorphic Position) and D5 (FAC-Neutral Test).

The adjacent upland areas consisted of moderately steep upland hardwood forest dominated primarily by non-hydrophytic vegetation. The upland soils consisted primarily of dark sandy loam overlying higher chroma/value sandy loam soils lacking redoximorphic features. Upland soils did not meet hydric soil indicators. No hydrology indicators were observed in the adjacent uplands and topographic position was indicative of upland conditions.

Sample Plots SP1 through SP23 were additional sample plots taken primarily to document typical upland conditions or suspect areas throughout the property where either a wetland indicator soils were mapped or wetness signatures were identified through crop slide review. None of the sample plots met wetland vegetation, soils or hydrology criteria and were all identified as upland.

Sample plots SP1, SP2, SP5, SP20, SP21 and SP22 were taken in areas identified as having wetland indicator soils. Some areas were agricultural fields while others were upland deciduous forest. Sample plots SP4, SP6, SP7 and SP23 were not mapped as wetlands or as being in wetland indicator soil areas but were taken due to suspect wetness signatures on crop slides and/or topographic position. Wetness or crop stress observations ranged from 0% to 40% of normal precipitation years in these areas.

Sample plots SP8, SP9, SP10, SP11, SP12, SP13, SP14, SP15, SP16, SP17, SP18 and SP19 were simply taken to document typical upland conditions throughout the study area. None of these areas were mapped as wetlands or as having wetland indicator soils.

Sample plots that were located in actively cropped fields were considered to have significantly disturbed vegetation and soils since native vegetation has been removed and replaced with crops and the natural soil profile has been disturbed by tilling. All available information including crop slide review, observations of non-hydric soils, volunteer vegetation, lack of hydrology indicators and topographic position were taken into consideration and best professional judgment was used to identify the areas as upland. Procedures as identified in the Northcentral and Northeast Regional Supplement were used to evaluate these areas.

Vegetation found within representative wetland areas throughout the site includes the following:

Scientific Name	**Common Name**	**Indicator**
Acer rubrum	Red Maple	FAC
Alnus incana ssp. rugosa	Speckled Alder	FACW
Anemone canadensis	Canada Anemone	FACW
Barbarea vulgaris	Yellow Rocket	FAC
Carex conoidea	Prairie Gray Sedge	FACW
Carex gracillima	Graceful Sedge	FACU
Carex intumescens	Bladder Sedge	FACW
Carex projecta	Necklace Sedge	FACW
Carex scoparia	Broom Sedge	FACW
Carex stipata	Common Fox Sedge	OBL
Carex stricta	Tussock Sedge	OBL
Circaea canadensis	Broad-Leaved Enchanter's Nightshade	FACU
Cornus racemosa	Gray Dogwood	FAC
Coptis trifolia	Three-Leaved Gold-Thread	FACW
Corylus cornuta	Beaked Hazelnut	FACU
Cyperus esculentus	Yellow Nut Sedge	FACW
Desmodium glutinosum	Pointed Tick Trefoil	UPL
Dryopteris intermedia	Evergreen Wood Fern	FAC
Eleocharis obtusa	Blunt Spike-Rush	OBL
Equisetum arvense	Field Horsetail	FAC
Erigeron philadephicus	Marsh Fleabane	FAC
Eupatorium perfoliatum	Common Boneset	FACW
Euthamia graminifolia	Grass-Leaved Goldenrod	FAC
Eutrochium maculatum	Joe-Pye Weed	OBL
Frangula alnus	Glossy Buckthorn	FAC
Fraxinus pennsylvanica	Green Ash	FACW
Galium asprellum	Rough Bedstraw	OBL
Geranium maculatum	Wild Geranium	FACU
Geum aleppicum	Yellow Avens	FAC
Geum canadense	White Avens	FAC
Glyceria grandis	American Manna Grass	OBL
Glyceria striata	Fowl Manna Grass	OBL
Glycine max	Soybean	UPL
Ilex verticillata	Common Winterberry	FACW
Impatiens capensis	Orange Jewelweed	FACW
Iris versicolor	Blueflag	OBL
Juncus effusus	Soft Rush	OBL
Lemna minor	Lesser Duckweed	OBL
Lonicera tatarica	Tartarian Honeysuckle	FACU
Onoclea sensibilis	Sensitive Fern	FACW

Osmunda claytoniana	Interrupted Fern	FAC
Parthenocissus quinquefolia	Virginia Creeper	FACU
Persicaria pensylvanica	Pennsylvania Smartweed	FACW
Persicaria sagittata	Arrowleaved Tearthumb	OBL
Phalaris arundinacea	Reed Canary Grass	FACW
Populus tremula	Quaking Aspen	FAC
Potentialla simplex	Common Cinquefoil	FACU
Prunus serotina	Black Cherry	FACU
Quercus bicolor	Swamp White Oak	FACW
Quercus ellipsoidalis	Northern Pin Oak	UPL
Quercus macrocarpa	Bur Oak	FACU
Rubus allegheniensis	Allegheny Blackberry	FACU
Rubus idaeus	Red Raspberry	FAC
Rumex britannica	Great Water Dock	OBL
Rumex crispus	Curly Dock	FAC
Salix nigra	Black Willow	OBL
Salix discolor	Pussy Willow	FACW
Salix petiolaris	Meadow Willow	FACW
Sambucus racemosa	Red Elderberry	FACU
Scirpus cyperinus	Wool Grass	OBL
Sium suave	Water Parsnip	OBL
Solidago canadensis	Canada Goldenrod	FACU
Solidago gigantea	Giant Goldenrod	FACW
Thalictrum dioicum	Early Meadow-Rue	FACU
Thlaspi arvense	Field Pennycress	UPL
Typha angustifolia	Narrow Leaved Cattail	OBL
Ulmus americana	American Elm	FACW
Viburnum acerifolium	Maple-Leaved Viburnum	UPL

Vegetation found within representative upland areas throughout the site includes the following:

Scientific Name	**Common Name**	**Indicator**
Acer negundo	Box Elder	FAC
Acer rubrum	Red Maple	FAC
Achillea millefolium	Common Yarrow	FACU
Ambrosia artemisiifolia	Common Ragweed	FACU
Amelanchier interior	Inland Serviceberry	UPL
Arctium minus	Common Burdock	FACU
Asclepias syriaca	Common Milkweed	UPL
Barbarea vulgaris	Yellow Rocket	FAC
Betula papyerifera	White Birch	FACU
Bromus inermis	Smooth Brome	UPL
Capsella bursa-pastoris	Shepherd's Purse	FACU
Carex intumescens	Bladder Sedge	FACW
Carex pensylvanica	Pennsylvania Sedge	UPL
Cerastium fontanum	Mouse-Ear Chickweed	FACU
Chenopodium album	Common Lamb's-Quarters	FACU
Circaea canadensis	Broad-Leaved Enchanter's Nightshade	FACU
Cirsium arvense	Field Thistle	FACU
Conyza canadensis	Canadian Horseweed	FACU
Coptis trifolia	Three-Leaved Gold-Thread	FACW
Cornus racemosa	Gray Dogwood	FAC
Corylus cornuta	Beaked Hazelnut	FACU
Cyperus esculentus	Yellow Nut Sedge	FACW

Danthonia spicata	Poverty Oat Grass	UPL
Desmodium glutinosum	Pointed Tick Trefoil	UPL
Dichanthelium depauperatum	Poverty Panic Grass	UPL
Dryopteris intermedia	Evergreen Wood Fern	FAC
Elymus repens	Quackgrass	FACU
Erigeron strigosus	Daisy Fleabane	FACU
Erucastrum gallicum	Common Dog Mustard	UPL
Eurybia macrophylla	Large-Leaved Aster	UPL
Euphorbia corollata	Flowering Spurge	UPL
Festuca pratensis	Meadow Fescue	FACU
Fragaria virginiana	Virginia Strawberry	FACU
Frangula alnus	Glossy Buckthorn	FAC
Fraxinus americana	White Ash	FACU
Gaultheria procumbens	Wintergreen	FACU
Gaylussiaca baccata	Huckleberry	FACU
Geranium maculatum	Wild Geranium	FACU
Geum aleppicum	Yellow Avens	FAC
Glycine max	Soybean	UPL
Hieracium canadense	Canada Hawkweed	UPL
Ilex verticillata	Common Winterberry	FACW
Impatiens capensis	Orange Jewelweed	FACW
Leucanthemum vulgare	Ox-Eye Daisy	UPL
Lonicera tatarica	Tartarian Honeysuckle	FACU
Lotus corniculatus	Birds-Foot Trefoil	FACU
Maianthemum canadense	Canada Mayflower	FACU
Maianthemum racemosum	False Solomon's Seal	FACU
Malus pumila	Cultivated Apple	UPL
Medicago sativa	Alfalfa	UPL
Osmunda claytoniana	Interrupted Fern	FAC
Oxalis stricta	Tall Wood Sorrel	FACU
Parthenocissus quinquefolia	Virginia Creeper	FACU
Persicaria pensylvanica	Pennsylvania Smartweed	FACW
Phalaris arundinacea	Reed Canary Grass	FACW
Phleum pratense	Timothy	FACU
Pinus banksiana	Jack Pine	FACU
Pinus resinosa	Red Pine	FACU
Pinus strobus	Eastern White Pine	FACU
Plantago major	Common Plantain	FACU
Poa pratensis	Kentucky Bluegrass	FACU
Populus grandidentata	Big-Tooth Aspen	FACU
Populus tremula	Quaking Aspen	FAC
Potentialla simplex	Common Cinquefoil	FACU
Prunus serotina	Black Cherry	FACU
Prunus virginiana	Choke Cherry	FACU
Pteridium aqualinum	Bracken Fern	FACU
Quercus alba	White Oak	FACU
Quercus ellipsoidalis	Northern Pin Oak	UPL
Quercus rubra	Northern Red Oak	FACU
Rhus typhina	Staghorn Sumac	UPL
Ribes cynosbati	Eastern Prickly Gooseberry	FACU
Rosa blanda	Wild Rose	FACU
Rubus allegheniensis	Allegheny Blackberry	FACU
Rubus idaeus	Red Raspberry	FAC
Rudbeckia hirta	Black-Eyed Susan	FACU
Rumex crispus	Curly Dock	FAC

Sambucus racemosa	Red Elderberry	FACU
Silene pratensis	White Campion	UPL
Solidago canadensis	Canada Goldenrod	FACU
Solidago missouriensis	Missouri Goldenrod	UPL
Stellaria graminea	Common Stitchwort	UPL
Taraxacum officinale	Common Dandelion	FACU
Tragopogon dubius	Greater Goat's Beard	UPL
Trifolium repens	White Clover	FACU
Ulmus americana	American Elm	FACW
Uvularia sessiilifolia	Wild Oats	FACU
Viburnum acerifolium	Maple-Leaved Viburnum	UPL
Viola tricolor	Pansy Violet	UPL
Zanthoxylum americanum	Common Prickly-Ash	FACU
Zea mays	Corn	UPL

The wetland edges were flagged based on the transition from upland vegetation to wetland vegetation and transitions in soil and hydrology observed at upland and wetland sample points.

Conclusions

The wetland delineation was conducted on various dates between June 19, 2018 and June 28, 2018 by Ms. Ann Key, a WDNR Professionally Assured Delineator. The intent of the wetland study was to identify wetlands for avoidance or permitted impacts associated with a proposed frac sand mine on this property.

The WDNR WWI was reviewed and indicates the presence of one larger wetland complex along the east and southeast portion of the study area. Two other large wetlands (> 2 acres) are identified on the WWI map, as well as four (4) small wetlands (< 2 acres) and one pond. The larger mapped wetlands are identified as the following wetland communities; T3K (Forested, Broad-Leaved Deciduous, Wet Soil, Palustrine), T3/E1K (Forested, Broad-Leaved Deciduous/Emergent-Wet Meadow, Persistent, Wet Soil, Palustrine), T3/S3K (Forested, Broad-Leaved Deciduous/Scrub-Shrub, Broad-Leaved Deciduous, Wet Soil, Palustrine) and E1Kf (Emergent-Wet Meadow, Persistent, Wet Soil, Palustrine, Farmed).

Wetland indicator soils are mapped within the same general areas as the mapped wetlands, as well as along swales to the southeast and east and three areas along the northwest portion of the study area in the vicinity of the northwest agricultural field. The wetland indicator layer also identifies one small NRCS "wet spot" in the central portion of the study area to the east of Frazier Road and southwest of the railroad. Wetland indicator soils are soils that are commonly found in wetlands or soils that have inclusions of soils commonly found in wetlands.

The WDNR SWDV waterway layer was also reviewed and identifies two mapped waterways on the property. An unnamed tributary to Elk Creek is located in the southeastern portion of the study area and is classified as a Class I ASNRI waterway. One unnamed intermittent drainageway is also identified in the southern portion of the study area and is located within a farm swale and is mapped as ultimately draining to the east into the tributary to Elk Creek. Although drainage patters were observed in both areas during the site visit, no indications of actual stream beds were observed.

Fifteen wetlands (Wetlands 1 through 15) were delineated during the site visit. The Wetland Data Sheets classify the wetlands according to the Cowarden *Classification of Wetlands and Deepwater Habitats of the United States* (U.S. Fish and Wildlife Service, 1979) classification system with the delineated wetland being classified primarily as the following community types or a combination thereof;

- Palustrine, Emergent, Persistent (PEM1)
- Palustrine, Emergent, Persistent, Farmed (PEM1f)
- Palustrine, Emergent, Persistent, Excavated (PEM1x)
- Palustrine, Forested, Broad-Leaved Deciduous (PFO1)
- Palustrine, Scrub-Shrub, Broad-Leaved Deciduous (PSS1)

The earliest available aerial photo from 1938 indicates that the land use of the property has changed very little since that time, with the same general areas having been farmed and much of the same areas still forested today. The most noticeable changes include areas to the southwest and northeast that were farmed at one time but today are forested. It appears there were two homesteads on the property in 1938. Since that time the property appears to have been divided and is now under the ownership of various landowners. The two original homesteads still remain today, plus four other residential homes which have since been established on the property.

As stated above, several portions of the property that are actively cropped and were therefore considered to have Significantly Disturbed vegetation and soils. Vegetation in cropped areas is considered to be Significantly Disturbed for purposes of wetland evaluations since the natural vegetation has been removed and is managed through cropping, which is not the normal circumstance. Soils in cropped areas are also considered to be

Significantly Disturbed for purposes of wetland evaluation due to ongoing tilling practices, which disrupts the normal soil profile. In order to make an accurate determination of wetlands versus uplands within cropped areas, all available crop slides and aerial photos were reviewed prior to the site visit for signs of wetness signatures and/or vegetative stress. In addition, on-site observations of volunteer vegetation species, soils, hydrology and reference sites where available were all used to assist in making the determination of wetland versus upland in these areas. Additional sample plots (SP1 through SP23) were evaluated, many within agricultural areas and others within forested tracts, to either document typical site conditions or to document suspect areas due to topographical position, mapped indicator soils or wetness signatures on aerial photos.

An antecedent precipitation evaluation was conducted and indicates that the three months prior to the site visit (March through May 2018) to determine if hydrologic conditions were within normal, wetter than normal or drier than normal. Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded on the day prior to and during the first few days of the field study totaling 3.13 inches. Based on this information and observations of very heavy precipitation in the area, best professional judgment was applied to determine that the first several days of the field evaluation were wetter than normal and the latter evaluation days were within normal.

All wetland sample plots met wetland hydrology criteria and the following indicators were applied throughout the study area; A1 (Surface Water), A2 (High Water Table), A3 (Saturation), B7 (Inundation Visible on Aerial Imagery), B9 (Water-Stained Leaves), B10 (Drainage Patterns), C6 (Recent Iron Reduction in Tilled Soils), C9 (Saturation Visible on Aerial Imagery), D2 (Geomorphic Position) and D5 (FAC-Neutral Test). All wetland sample plots also met hydric soil criteria and the following Hydric Soil Indicators were applied at the wetland sample plots throughout the study area; A1 (Histosol), A10 (2 cm Muck), A11(Depleted Below Dark Surface), A12 (Thick Dark Surface), F1 (Loamy Mucky Mineral), F3 (Depleted Matrix), F6 (Redox Dark Surface), F7 (Depleted Dark Surface), S1 (Sandy Muck Mineral), S5 (Sandy Redox) and S6 (Stripped Matrix).

Wetland boundaries were identified using procedures outlined in the 1987 Corps of Engineering Wetland Delineation Manual and Northcentral and Northeast Regional Supplement. The areas identified as wetland were identified based on crop slide and aerial photo review, topographical position, transitions from wetland to upland vegetation, hydrology indicators and hydric soil indicators, or lack thereof, in wetland areas versus upland areas. Best professional judgment and experience working in this part of the State and within these communities was used throughout the study.

The findings of this wetland delineation report are only valid for the site conditions which existed at the time of this investigation. All wetland boundaries and jurisdictional determinations presented in this report are preliminary and subject to verification by USACE. The final authority for wetland boundaries and permit requirements rests with the government agencies which have jurisdiction over this project. Findings of this wetland delineation are subject to revision based upon natural or induced changes in weather, vegetation management, land use, topography, surface water flow, subsurface drainage, stormwater management, within or near the project site which may affect the soils, hydrology, or vegetative community on the project site.

This report provides a description of existing wetland conditions within the Project area and does not include quantification of any temporary or permanent impacts to wetlands or waterbodies. Such impacts would require review and approval from a variety of agencies. Activities which impact or potentially impact jurisdictional wetlands, are currently regulated at several levels of government. Federal (USACE), State (WDNR) and local government agencies may all be involved in reviewing a single project. To avoid potential penalties and project delays it is necessary to acquire necessary permits and approvals from all jurisdictional agencies before initiating activities in wetlands. It is important to obtain USACE concurrence on the wetland boundaries prior to proceeding with activities at the site.

References

Chadde, S.W., 1998. A Great Lakes Wetland Flora. Pocket Flora Press, Calumet, Michigan.

Courtenay and Zimmerman, 1972. Wildflowers and Weeds. Toppan Printing Co., Ltd., Tokyo, Japan.

Eggers and Reed, 2014. Wetland Plants and Plant Communities of Minnesota & Wisconsin. U.S. Army Corp of Engineers, St. Paul District.

Environmental Laboratory, 1987. U.S. Army Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Fassett, N.C., 1950. Grasses of Wisconsin. University of Wisconsin Press, Madison.

Little, E.L., 1980. The Audubon Society Field Guide to North American Tress. Chanticleer Press, Inc., New York.

Mickelson, et. al., 1984. Pleistocene Stratigraphic Units of Wisconsin. Geological and Natural History Survey, University of Wisconsin-Extension, Madison, Wisconsin.

Palmer Drought Index – Long Term Conditions. http://www.ncdc.noaa.gov/temp-and-precip/drought/weekly-palmers.php (June 2018).

University of Wisconsin. *Wisconsin State Herbarium.* http://wiscinfo.doit.wisc.edu/moved/herbarium.htm (June 2018).

USACOE Engineering Research and Development Center, October 2009. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral/Northeast Region.

US Army Corps of Engineers, National Wetland Plant List 2016. *National Wetland Plant List.*

USDA Natural Resource Conservation Service, 2017. *Field Indicators of Hydric Soils in the United States.*

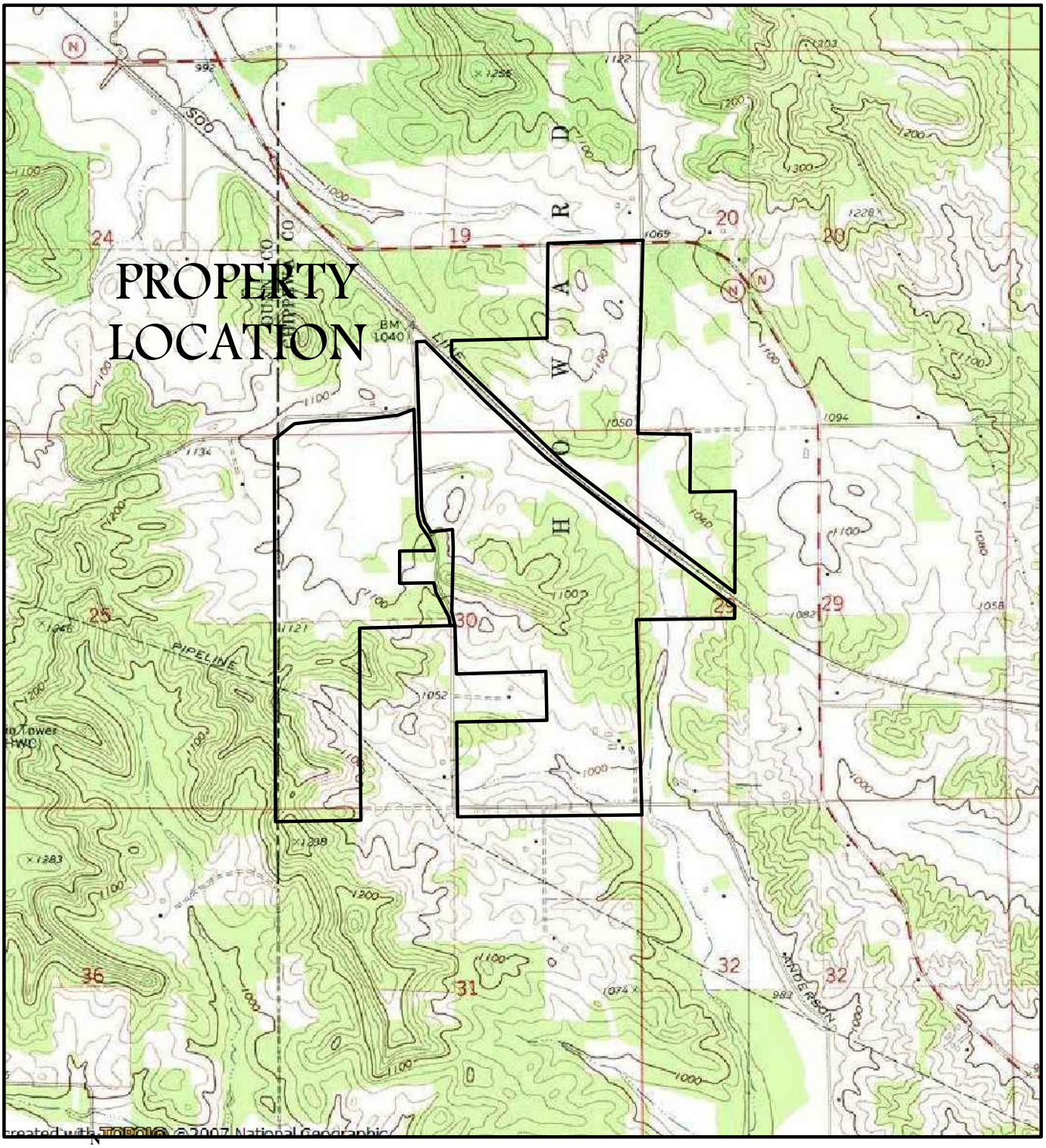
USDA Natural Resource Conservation Service, Eau Claire Regional AP WETS Station. http://www.wcc.nrcs.usda.gov/cgibin/getwetco.pl?state=wi (March through May, 2018).

USDA Natural Resource Conservation Service. *Official Soil Series Descriptions.* http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi (June 2018).

USDA Natural Resources Conservation Service. NCSS Web Soil Survey, Chippewa County, Wisconsin. http://websoilsurvey.nrcs.usda.gov/app/ (June 2018).

U.S. Fish and Wildlife Service, Cowarden et al, *Classification of Wetlands and Deepwater Habitats of the United States,*1979.

Wisconsin Department of Natural Resources, 1992. Wisconsin Wetland Inventory Classification Guide. PUBL-WZ-WZ0223.



SCALE IN FEET

1" = 2000'

0 1000 2000 3000 4000 5000 6000 7000 8000

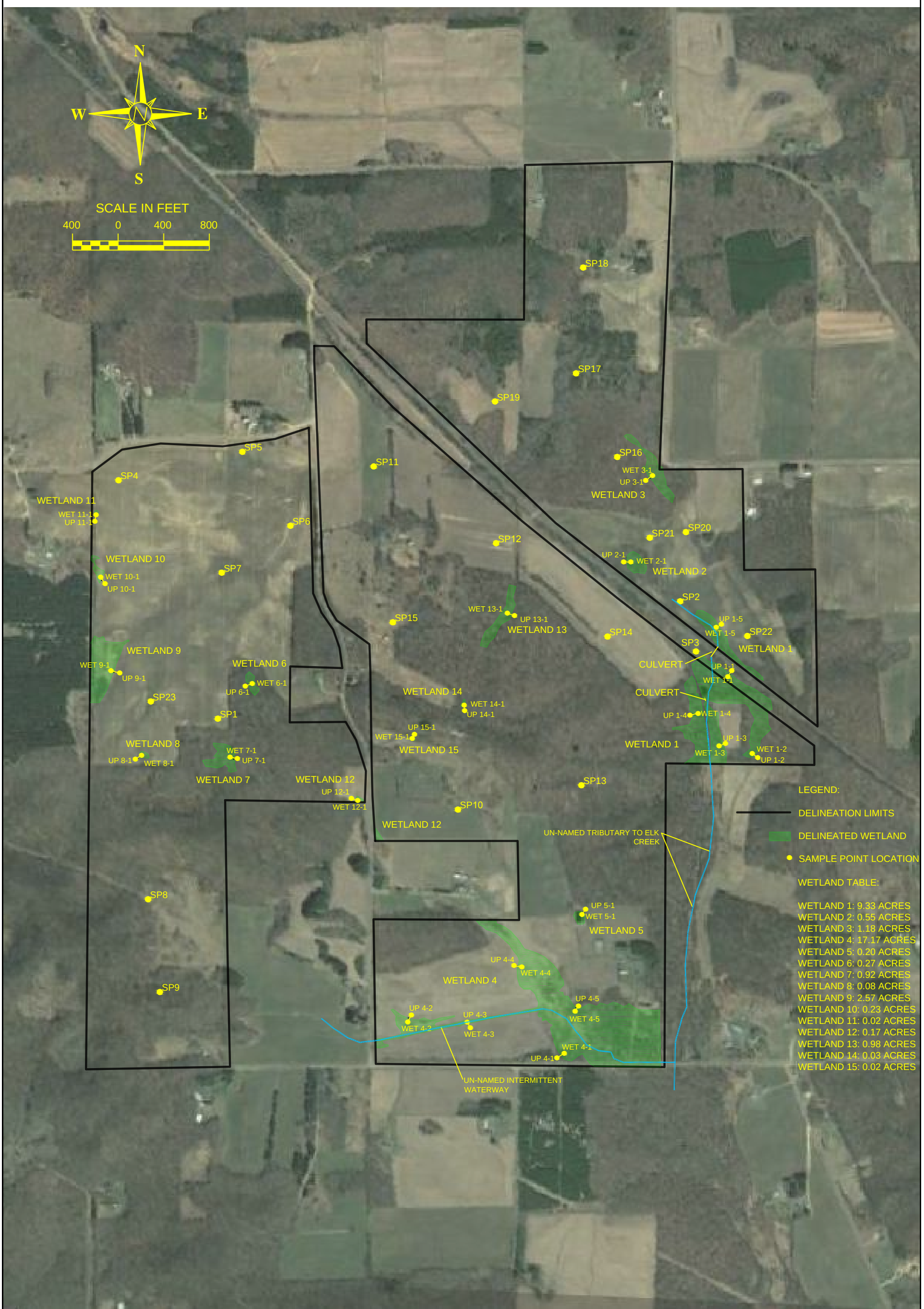
CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

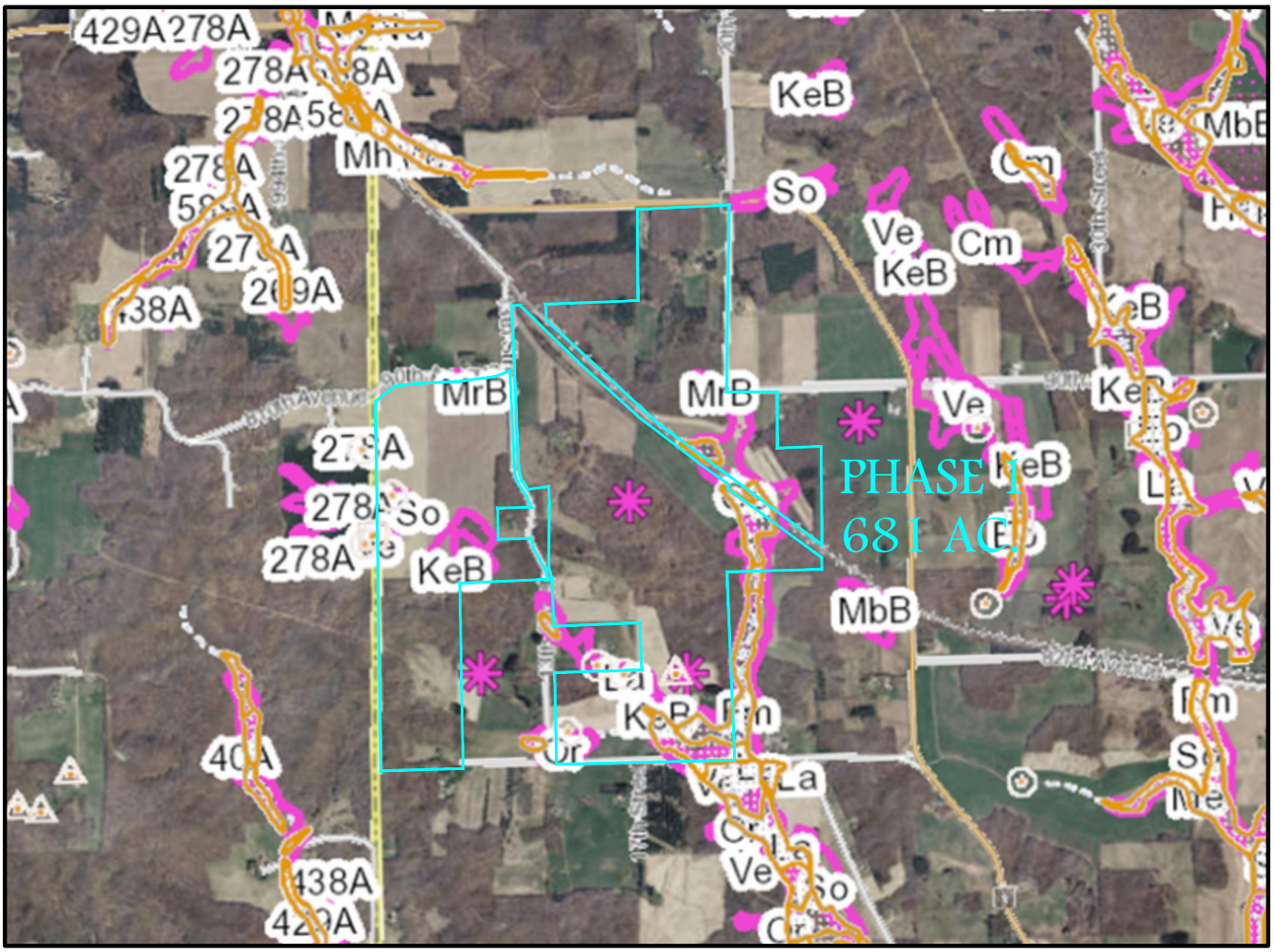
QUADRANGLE LOCATION

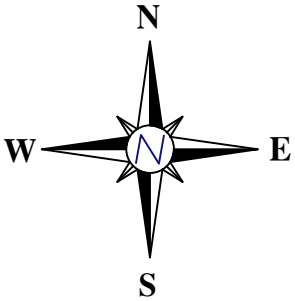
BASE MAP SOURCE: USGS 7.5 MINUTE QUADRANGLE, COLFAX SOUTH, WISCONSIN, 1980 (NATIONAL GEOGRAPHIC HOLDINGS, INC.)

SITE LOCATION & LOCAL TOPOGRAPHY	APPROVED BY: AMK	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF WETLANDS & WATERWAYS LLC, AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS FURNISHED.	Wetlands & Waterways LLC	PROJECT NUMBER: 378
	DRAWN BY: NLB			FIGURE NO.
NORTHERN SANDS WISCONSIN, LLC TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN	DATE: 6-17-18			1
	SCALE: 1"=2000'			



WETLAND LOCATION MAP	APPROVED BY: AMK	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF WETLANDS & WATERWAYS LLC, AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS FURNISHED.	Wetlands & Waterways LLC	PROJECT NUMBER: 378
	DRAWN BY: NLB			FIGURE NO.
NORTHERN SANDS WISCONSIN, LLC PHASE I MINE CHIPPEWA COUNTY, TOWN OF HOWARD, WISCONSIN	DATE: 7-2-18			2
	SCALE: 1"=800'			

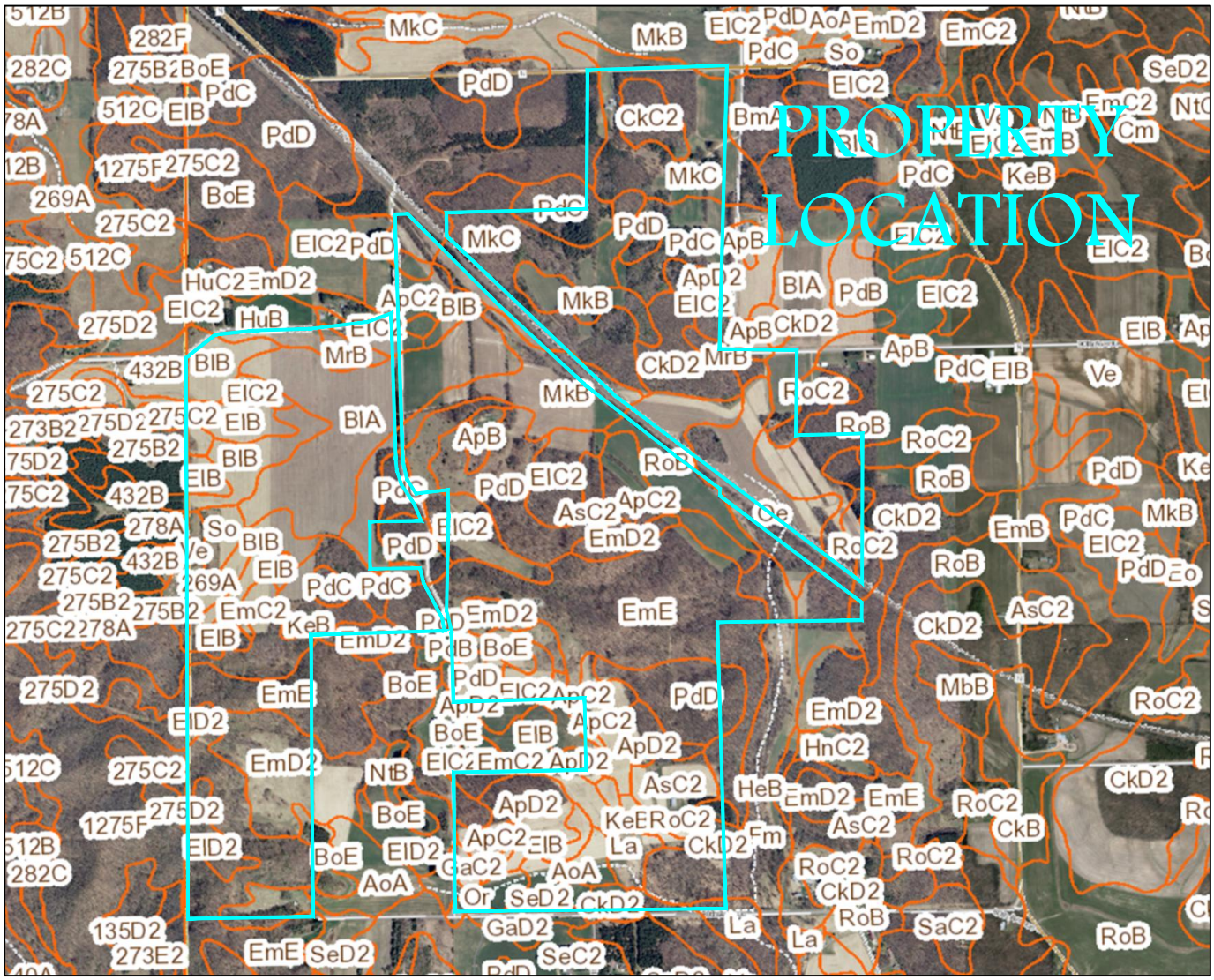


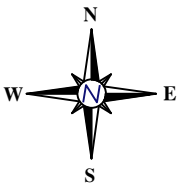


QUADRANGLE LOCATION

BASE MAP SOURCE: USGS 7.5 MINUTE QUADRANGLE, WHITING, WISCONSIN, 1976 (NATIONAL GEOGRAPHIC HOLDINGS, INC.)

WISCONSIN WETLAND INVENTORY MAP	APPROVED BY: AMM	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF WETLANDS & WATERWAYS LLC, AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS FURNISHED.	Wetlands & Waterways LLC	PROJECT NUMBER: 378
	DRAWN BY: NLB			FIGURE NO.
NORTHERN SANDS WISCONSIN, LLC TOWN OF HOWARD, CHIPPEWA COUNTY WISCONSIN	DATE: 8-30-16			3
	SCALE: NONE			





QUADRANGLE LOCATION

BASE MAP SOURCE: CHIPPEWA VALLEY SOIL SURVEY MAP

CHIPPEWA COUNTY SOIL SURVEY MAP	APPROVED BY: AMK	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF WETLANDS & WATERWAYS LLC, AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS FURNISHED.	Wetlands & Waterways LLC	PROJECT NUMBER: 378
	DRAWN BY: NLB			FIGURE NO.
NORTHERN SANDS WISCONSIN, LLC TOWN OF HOWARD, CHIPPEWA COUNTY WISCONSIN	DATE: 6-17-18			**4A**
	SCALE: NONE			

AoA
Arenzville silt loam, 0 to 3 percent slopes, occasionally flooded

ApB
Arland sandy loam, 2 to 6 percent slopes

ApC2
Arland sandy loam, 6 to 12 percent slopes, eroded

ApD2
Arland sandy loam, 12 to 20 percent slopes, eroded

AsC2
Arland loam, 6 to 12 percent slopes, eroded

BlA
Billett sandy loam, 0 to 2 percent slopes

BlB
Billett sandy loam, 2 to 6 percent slopes

BmA
Billett sandy loam, moderately well drained, 0 to 3 percent slopes

BoE
Boone fine sand, 20 to 45 percent slopes

CkC2
Chetek sandy loam, 6 to 12 percent slopes, eroded

CkD2
Chetek-Mahtomedi complex, 12 to 25 percent slopes, eroded

ElB
Eleva sandy loam, 2 to 6 percent slopes

ElC2
Eleva sandy loam, 6 to 12 percent slopes, eroded

ElD2
Eleva sandy loam, 12 to 20 percent slopes, eroded

EmC2
Elkmound loam, 6 to 12 percent slopes, moderately eroded

EmD2
Elkmound loam, 12 to 20 percent slopes, moderately eroded

EmE
Elkmound loam, 20 to 45 percent slopes

Fm
Fordum loam, 0 to 2 percent slopes

GaC2
Gale silt loam, 6 to 12 percent slopes, eroded

HeB
Hiles silt loam, 2 to 6 percent slopes

HnB
Hixton loam, 2 to 6 percent slopes

HnC2
Hixton loam, 6 to 12 percent slopes, eroded

HuB
Humbird sandy loam, 2 to 6 percent slopes

KeB
Kert silt loam, 1 to 6 percent slopes

La
Lows loam, 0 to 2 percent slopes

MbB
Magnor silt loam, 0 to 4 percent slopes

MkB
Menahga loamy sand, 0 to 6 percent slopes

MkC
Menahga loamy sand, 6 to 12 percent slopes

MrB
Merrillan sandy loam, 1 to 6 percent slopes

NtB
Northfield silt loam, 2 to 6 percent slopes

Oe
Oesterle sandy loam, 0 to 3 percent slopes

Or
Orion silt loam, 0 to 3 percent slopes, occasionally flooded

PdB
Plainbo loamy sand, 2 to 6 percent slopes

PdC
Plainbo loamy sand, 6 to 12 percent slopes

PdD
Plainbo loamy sand, 12 to 20 percent slopes

RoB
Rosholt sandy loam, 2 to 6 percent slopes

RoC2
Rosholt sandy loam, 6 to 15 percent slopes

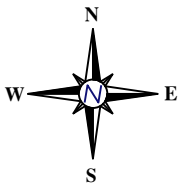
SaC2
Santiago silt loam, 6 to 12 percent slopes, eroded

SeC2
Seaton silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded

SeD2
Seaton silt loam, driftless valley, 12 to 20 percent slopes, moderately eroded

So
Shiffer loam, 0 to 2 percent slopes

Ve
Vesper silt loam, 0 to 2 percent slopes



QUADRANGLE LOCATION

BASE MAP SOURCE: CHIPPEWA VALLEY SOIL SURVEY MAP

CHIPPEWA COUNTY SOIL SURVEY MAP	APPROVED BY: AMK	THIS DRAWING AND ALL INFORMATION CONTAINED THEREON IS THE PROPERTY OF WETLANDS & WATERWAYS LLC, AND SHALL NOT BE COPIED OR USED EXCEPT FOR THE PURPOSE FOR WHICH IT IS FURNISHED.	Wetlands & Waterways LLC	PROJECT NUMBER: 378
	DRAWN BY: NLB			FIGURE NO.
NORTHERN SANDS WISCONSIN, LLC TOWN OF HOWARD, CHIPPEWA COUNTY WISCONSIN	DATE: 6-17-18			4B
	SCALE: NONE			

APPENDIX A – FIELD DATA SHEETS

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 1-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96689 **Long.:** -91.62940 **Datum:** WGS84

Soil Map Unit Name: Oesterle Sandy Loam, 0 to 3% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-8
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 1-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	40	☑	FAC
2. *Ulmus americana*	25	☑	FACW
3. *Populus tremula*	20	☑	FAC
4. *Quercus bicolor*	10	☐	FACW
5.	0	☐	
6.	0	☐	
7.	0	☐	
	95	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Populus tremula*	30	☑	FAC
2. *Ilex verticillata*	15	☑	FACW
3. *Acer rubrum*	5	☐	FAC
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	50	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	85	☑	FACW
2. *Carex intumescens*	15	☐	FACW
3. *Juncus effusus*	10	☐	OBL
4. *Solidago gigantea*	5	☐	FACW
5. *Galium asprellum*	5	☐	OBL
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	120	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	6	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	15	x 1 =	15	
FACW species	155	x 2 =	310	
FAC species	95	x 3 =	285	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	265	(A)	610	(B)

Prevalence Index = B/A = 2.302

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 1-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	2/1	90	7.5YR	3/4	10	C	M	Silt Loam	
6-14	10YR	2/1	85	7.5YR	4/4	15	C	M	Silt Loam	
14-20	10YR	5/2	80	7.5YR	4/4	20	C	M	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☑ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 1-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 40.0 % / 21.8 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96717 **Long.:** -91.62910 **Datum:** WGS84

Soil Map Unit Name: Oesterle Loam, 0 to 2% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Although this area is located along the railroad grade and consists of fill material, the railroad was constructed nearly 100 years ago. No recent disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 1-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	70	☑	FAC
2. *Quercus ellipsoidalis*	35	☑	UPL
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	105	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	15	☑	FAC
2. *Lonicera tatarica*	15	☑	FACU
3. *Corylus cornuta*	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	35	= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Rubus allegheniensis*	30	☑	FACU
2. *Carex pensylvanica*	15	☑	UPL
3. *Impatiens capensis*	15	☑	FACW
4. *Corylus cornuta*	10	☐	FACU
5. *Geranium maculatum*	10	☐	FACU
6. *Prunus serotina*	5	☐	FACU
7. *Carex intumescens*	5	☐	FACW
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	90	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	42.9%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	20	x 2 =	40	
FAC species	85	x 3 =	255	
FACU species	75	x 4 =	300	
UPL species	50	x 5 =	250	
Column Totals:	230 (A)		845	(B)

Prevalence Index = B/A = 3.674

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 1-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100	-	-	-	-	-	Loamy Sand	
5-20	10YR	5/4	100	-	-	-	-	-	Gravelly Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 1-2**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96542 **Long.:** -91.62833 **Datum:** WGS84

Soil Map Unit Name: Rosholt Sandy Loam, 2 to 6% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	-18
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	-12

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 1-2

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	80	☑	FAC
2. *Populus tremula*	20	☐	FAC
3. *Quercus bicolor*	15	☐	FACW
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	115	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Ilex verticillata*	25	☑	FACW
2. *Lonicera tatarica*	25	☑	FACU
3. *Viburnum acerifolium*	5	☐	UPL
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	55	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	60	☑	FACW
2. *Anemone canadensis*	20	☐	FACW
3. *Geranium maculatum*	10	☐	FACU
4. *Rubus allegheniensis*	10	☐	FACU
5. *Circaea canadensis*	10	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	110	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	75.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	120	x 2 =	240
FAC species	100	x 3 =	300
FACU species	55	x 4 =	220
UPL species	5	x 5 =	25
Column Totals:	280 (A)		785 (B)

Prevalence Index = B/A = 2.804

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 1-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	3/2	80	10YR	5/2	20	D	M	Fine Sandy Loam	
10-20	10YR	4/3	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☑ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 1-2**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 4.0 % / 2.3 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96499 **Long.:** -91.62818 **Datum:** WGS84

Soil Map Unit Name: Rosholt Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 1-2

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Prunus serotina*	40	☑	FACU
2. *Acer rubrum*	30	☑	FAC
3. *Quercus rubra*	30	☑	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Cornus racemosa*	20	☑	FAC
2. *Sambucus racemosa*	15	☑	FACU
3. *Amelanchier interior*	5	☐	UPL
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	40	= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Geranium maculatum*	50	☑	FACU
2. *Carex pensylvanica*	15	☑	UPL
3. *Rubus allegheniensis*	15	☑	FACU
4. *Impatiens capensis*	10	☐	FACW
5. *Pteridium aquilinum*	10	☐	FACU
6. *Parthenocissus quinquefolia*	10	☐	FACU
7. *Desmodium glutinosum*	10	☐	UPL
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	120	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	25.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	50	x 3 =	150	
FACU species	170	x 4 =	680	
UPL species	30	x 5 =	150	
Column Totals:	260	(A)	1000	(B)

Prevalence Index = B/A = 3.846

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 1-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	100	-	-	-	-	-	Fine Sandy Loam	
5-20	10YR	4/3	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 1-3**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96535 **Long.:** -91.62968 **Datum:** WGS84

Soil Map Unit Name: Fordum Loam, 0 to 2% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-7
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 1-3

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremula*	60	☑	FAC
2. *Fraxinus pennsylvanica*	10	☐	FACW
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Lonicera tatarica*	30	☑	FACU
2. *Alnus incana ssp. rugosa*	15	☑	FACW
3. *Frangula alnus*	15	☑	FAC
4. *Sambucus racemosa*	10	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
	70	= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Impatiens capensis*	75	☑	FACW
2. *Rubus idaeus (NGL)*	20	☑	FAC
3. *Carex scoparia*	15	☐	FACW
4. *Onoclea sensibilis*	10	☐	FACW
5. *Geum aleppicum*	10	☐	FAC
6. *Carex gracillima*	10	☐	FACU
7. *Carex stipata*	10	☐	OBL
8. *Geum canadense*	5	☐	FAC
9. *Thalictrum dioicum*	5	☐	FACU
10.	0	☐	
11.	0	☐	
12.	0	☐	
	160	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	83.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	10	x 1 =	10	
FACW species	125	x 2 =	250	
FAC species	110	x 3 =	330	
FACU species	55	x 4 =	220	
UPL species	0	x 5 =	0	
Column Totals:	300	(A)	810	(B)

Prevalence Index = B/A = 2.700

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 1-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR	2/2	80	10YR	5/2	20	D	M	Silt Loam	
12-20	10YR	3/2	100	-	-	-	-	-	Gravelly Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☑ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 1-3**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96541 **Long.:** -91.62917 **Datum:** WGS84

Soil Map Unit Name: Rosholt Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 1-3

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremula*	70	☑	FAC
2. *Acer rubrum*	15	☐	FAC
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	85	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera tatarica*	25	☑	FACU
2. *Cornus racemosa*	15	☑	FAC
3. *Quercus rubra*	10	☑	FACU
4. *Prunus serotina*	10	☑	FACU
5. *Corylus cornuta*	10	☑	FACU
6. *Ilex verticillata*	10	☑	FACW
7.	0	☐	
	80	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Carex pensylvanica*	60	☑	UPL
2. *Rubus allegheniensis*	30	☑	FACU
3. *Solidago canadensis*	15	☐	FACU
4. *Asclepias syriaca*	10	☐	UPL
5. *Fragaria virginiana*	10	☐	FACU
6. *Rosa blanda*	10	☐	FACU
7. *Corylus cornuta*	10	☐	FACU
8. *Impatiens capensis*	10	☐	FACW
9. *Geranium maculatum*	10	☐	FACU
10. *Euphorbia corollata*	5	☐	UPL
11.	0	☐	
12.	0	☐	
	170	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	9	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	20	x 2 =	40	
FAC species	100	x 3 =	300	
FACU species	140	x 4 =	560	
UPL species	75	x 5 =	375	
Column Totals:	335	(A)	1275	(B)

Prevalence Index = B/A = 3.806

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 1-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	2/2	100	-	-	-	-	-	Fine Sandy Loam	
6-20	10YR	4/4	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 1-4**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96606 **Long.:** -91.63019 **Datum:** WGS84

Soil Map Unit Name: Fordum Loam, 0 to 2% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-1
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 1-4

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	85	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	85	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Ilex verticillata*	5	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	5	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	90	☑	FACW
2. *Glyceria striata*	15	☐	OBL
3. *Geum aleppicum*	10	☐	FAC
4. *Dryopteris intermedia*	10	☐	FAC
5. *Juncus effusus*	10	☐	OBL
6. *Onoclea sensibilis*	5	☐	FACW
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	140	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	25	x 1 =	25	
FACW species	100	x 2 =	200	
FAC species	105	x 3 =	315	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	230	(A)	540	(B)

Prevalence Index = B/A = 2.348

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 1-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-11	10YR	2/1	100	-	-	-	-	-	Mucky Silt Loam	
11-20	10YR	5/2	90	10YR	4/4	10	C	M	Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☑ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 1-4**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96614 **Long.:** -91.63086 **Datum:** WGS84

Soil Map Unit Name: Elkmound Loam, 6 to 12% slopes, Moderately Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):		
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?**	Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 1-4

Tree Stratum (Plot size: 30' radius)	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. *Quercus ellipsoidalis*	75	☑	UPL
2. *Acer rubrum*	50	☑	FAC
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	125	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer rubrum*	10	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	10	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Rubus idaeus (NGL)*	15	☑	FAC
2. *Uvularia sessilifolia*	15	☑	FACU
3. *Rubus allegheniensis*	15	☑	FACU
4. *Coptis trifolia*	5	☐	FACW
5. *Maianthemum canadense*	5	☐	FACU
6. *Dryopteris intermedia*	5	☐	FAC
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	60	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	80	x 3 =	240	
FACU species	35	x 4 =	140	
UPL species	75	x 5 =	375	
Column Totals:	195	(A)	765	(B)

Prevalence Index = B/A = 3.923

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 1-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	3/2	100	-	-	-	-	-	Fine Sandy Loam	
3-12	10YR	3/3	100	-	-	-	-	-	Fine Sandy Loam	
12-20	10YR	4/4	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 1-5**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96813 **Long.:** -91.62974 **Datum:** WGS84

Soil Map Unit Name: Oesterle Loam, 0 to 2% slopes **NWI classification:** PEM1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?**	Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○		
Wetland Hydrology Present?	Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

This area has been cleared and cropped in some years but not in recent years allowing natural vegetation to reestablish. No recent disturbances were observed and this area was considered to have normal circumstances. A crop slide review was done for this area but in most years the area was forested so the crop slide review was not very useful. Best professional judgment was used based on observations made during the site visit.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-10
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 1-5

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Carex scoparia*	60	☑	FACW
2. *Persicaria sagittata*	30	☑	OBL
3. *Erigeron philadelphicus*	30	☑	FAC
4. *Eutrochium maculatum*	20	☐	OBL
5. *Potentilla simplex*	15	☐	FACU
6. *Rumex crispus*	10	☐	FAC
7. *Carex stricta*	10	☐	OBL
8. *Barbarea vulgaris*	5	☐	FAC
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	180	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	60	x 1 =	60	
FACW species	60	x 2 =	120	
FAC species	45	x 3 =	135	
FACU species	15	x 4 =	60	
UPL species	0	x 5 =	0	
Column Totals:	180	(A)	375	(B)

Prevalence Index = B/A = 2.083

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 1-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-14	10YR	2/1	85	10YR	3/4	15	C	M	Silt Loam	
14-20	10YR	6/1	90	10YR	3/4	10	C	M	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☑ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 18-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 1-5**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96832 **Long.:** -91.62935 **Datum:** WGS84

Soil Map Unit Name: Oesterle Loam, 0 to 2% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 1-5

Tree Stratum (Plot size: 30' radius)	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	50	☑	UPL
2. *Cerastium fontanum*	15	☑	FACU
3. *Barbarea vulgaris*	3	☐	FAC
4. *Hieracium canadense*	3	☐	UPL
5. *Parthenocissus quinquefolia*	1	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	72	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	3	x 3 =	9	
FACU species	16	x 4 =	64	
UPL species	53	x 5 =	265	
Column Totals:	72	(A)	338	(B)

Prevalence Index = B/A = 4.694

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 1-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	4/3	100	-	-	-	-	-	Sandy Loam	
10-20	10YR	5/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 2-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96973 **Long.:** -91.63249 **Datum:** WGS84

Soil Map Unit Name: Oesterle Loam, 0 to 2% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-12
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 2-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	95	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	95	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Cornus racemosa*	20	☑	FAC
2. *Ilex verticillata*	5	☐	FACW
3. *Lonicera tatarica*	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	30	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	80	☑	FACW
2. *Dryopteris intermedia*	15	☐	FAC
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	95	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	85	x 2 =	170	
FAC species	130	x 3 =	390	
FACU species	5	x 4 =	20	
UPL species	0	x 5 =	0	
Column Totals:	220	(A)	580	(B)

Prevalence Index = B/A = 2.636

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR	2/1	100	-	-	-	-	-	Silt	
12-20	10YR	5/2	90	10YR	5/4	10	C	M	Silt	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☑ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 2-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96981 **Long.:** -91.63306 **Datum:** WGS84

Soil Map Unit Name: Rosholt Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 2-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus macrocarpa*	60	☑	FACU
2. *Quercus rubra*	40	☑	FACU
3. *Acer rubrum*	40	☑	FAC
4. *Prunus serotina*	10	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
	150	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Corylus cornuta*	15	☑	FACU
2. *Lonicera tatarica*	15	☑	FACU
3. *Cornus racemosa*	15	☑	FAC
4. *Sambucus racemosa*	10	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
	55	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	60	☑	FACW
2. *Geranium maculatum*	30	☑	FACU
3. *Circaea canadensis*	10	☐	FACU
4. *Desmodium glutinosum*	10	☐	UPL
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	110	= Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	37.5%	(A/B)

Prevalence Index worksheet:

	Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0	
FACW species	60	x 2 =	120	
FAC species	55	x 3 =	165	
FACU species	190	x 4 =	760	
UPL species	10	x 5 =	50	
Column Totals:	315	(A)	1095	(B)

Prevalence Index = B/A = 3.476

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed. A dense herbaceous cover of Impatiens capensis was observed in this area as well as several other areas on this property that were ultimately determined to be upland. The other vegetation observed is indicative of uplands, soils did not show any indications of hydric conditions and no hydrology indicators were observed despite wetter than normal conditions. Best professional judgment was used to identify this area and others as upland despite a thick herbaceous layer of Impatiens.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	2/2	100	-	-	-	-	-	Fine Sandy Loam	
6-14	10YR	4/4	100	-	-	-	-	-	Fine Sandy Loam	
14-20	10YR	4/6	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 3-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope/swale **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97178 **Long.:** -91.63166 **Datum:** WGS84

Soil Map Unit Name: Merrillan Sandy Loam, 1 to 6% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-10
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 3-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	90	☑	FAC
2. *Quercus ellipsoidalis*	20	☐	UPL
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	110	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer rubrum*	15	☑	FAC
2. *Prunus serotina*	5	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	20	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	80	☑	FACW
2. *Osmunda claytoniana*	30	☑	FAC
3. *Dryopteris intermedia*	10	☐	FAC
4. *Parthenocissus quinquefolia*	10	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	130	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	80.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	80	x 2 =	160	
FAC species	145	x 3 =	435	
FACU species	15	x 4 =	60	
UPL species	20	x 5 =	100	
Column Totals:	260	(A)	755	(B)

Prevalence Index = B/A = 2.904

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 3-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	2/2	100	-	-	-	-	-	Silt	
7-14	10YR	6/2	80	10YR	5/6	20	C	M	Silt Loam	
14-20	10YR	6/1	50	10YR	5/8	50	C	M	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 3-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97175 **Long.:** -91.63234 **Datum:** WGS84

Soil Map Unit Name: Chetek-Mahtomedi Complex, 12 to 25% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 3-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	60	☑	FAC
2. *Quercus ellipsoidalis*	40	☑	UPL
3. *Quercus macrocarpa*	30	☑	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	130	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Frangula alnus*	10	☑	FAC
2. *Acer rubrum*	5	☑	FAC
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	15	= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Geranium maculatum*	40	☑	FACU
2. *Impatiens capensis*	30	☑	FACW
3. *Parthenocissus quinquefolia*	25	☑	FACU
4. *Rubus idaeus (NGL)*	20	☐	FAC
5. *Desmodium glutinosum*	15	☐	UPL
6. *Pteridium aquilinum*	15	☐	FACU
7. *Ribes cynosbati*	10	☐	FACU
8. *Carex intumescens*	5	☐	FACW
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	160	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	8	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	35	x 2 =	70	
FAC species	95	x 3 =	285	
FACU species	120	x 4 =	480	
UPL species	55	x 5 =	275	
Column Totals:	305	(A)	1110	(B)

Prevalence Index = B/A = 3.639

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed. Palustrine, Forested, Broad-Leaved Deciduous (PFO1) wetland community

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 3-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100	-	-	-	-	-	Fine Sandy Loam	
6-14	10YR	4/3	100	-	-	-	-	-	Fine Sandy Loam	
14-20	10YR	4/4	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 4-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95805 **Long.:** -91.63461 **Datum:** WGS84

Soil Map Unit Name: Vesper Silt Loam, 0 to 2% slopes **NWI classification:** PEM1/PSS1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-6
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 4-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Cornus racemosa*	20	☑	FAC
2. *Alnus incana ssp. rugosa*	15	☑	FACW
3. *Acer rubrum*	5	☐	FAC
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	40	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	85	☑	FACW
2. *Phalaris arundinacea*	30	☑	FACW
3. *Carex stricta*	25	☐	OBL
4. *Carex projecta*	10	☐	FACW
5. *Solidago gigantea*	10	☐	FACW
6. *Thalictrum dioicum*	5	☐	FACU
7. *Sium suave*	5	☐	OBL
8. *Rumex britannica*	5	☐	OBL
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	175	= Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	150	x 2 =	300
FAC species	25	x 3 =	75
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	215 (A)		430 (B)

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree or vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 4-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-20	10YR	2/1	100	-	-	-	-	-	Muck	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Sandy Muck Mineral (S1)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR R, MLRA 149B)
- [ ] Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- [ ] Thin Dark Surface (S9) (LRR R, MLRA 149B)
- [ ] Loamy Mucky Mineral (F1) LRR K, L)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- [x] 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- [ ] Coast Prairie Redox (A16) (LRR K, L, R)
- [ ] 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- [ ] Dark Surface (S7) (LRR K, L, M)
- [ ] Polyvalue Below Surface (S8) (LRR K, L)
- [ ] Thin Dark Surface (S9) (LRR K, L)
- [ ] Iron-Manganese Masses (F12) (LRR K, L, R)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149B)
- [ ] Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- [ ] Red Parent Material (F21)
- [ ] Very Shallow Dark Surface (TF12)
- [ ] Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 4-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** convex **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96775 **Long.:** -91.63508 **Datum:** WGS84

Soil Map Unit Name: Chetek-Mahtomedi Complex, 12 to 25% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 4-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	50	☑	FACW
2. *Quercus ellipsoidalis*	40	☑	UPL
3. *Acer negundo*	20	☐	FAC
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	110	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Frangula alnus*	10	☑	FAC
2. *Acer negundo*	10	☑	FAC
3. *Ulmus americana*	5	☐	FACW
4. *Prunus serotina*	5	☐	FACU
5. *Sambucus racemosa*	5	☐	FACU
6.	0	☐	
7.	0	☐	
	35	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Prunus serotina*	15	☑	FACU
2. *Circaea canadensis*	10	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	25	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	55	x 2 =	110
FAC species	40	x 3 =	120
FACU species	35	x 4 =	140
UPL species	40	x 5 =	200
Column Totals:	170 (A)		570 (B)

Prevalence Index = B/A = 3.353

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 4-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-14	10YR	3/2	100	-	-	-	-	-	Sandy Loam	
14-20	10YR	4/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 4-2**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope/Farm swale **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95861 **Long.:** -91.64010 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 2 to 6% slopes **NWI classification:** PEM1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Although areas surrounding this wetland are currently cropped and farmed, no recent disturbances were observed in the sample plot area and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 4-2

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5' radius)			
1. *Phalaris arundinacea*	90	☑	FACW
2. *Eleocharis obtusa*	15	☐	OBL
3. *Equisetum arvense*	10	☐	FAC
4. *Juncus effusus*	5	☐	OBL
5. *Thlaspi arvense*	5	☐	UPL
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	125	**= Total Cover**	
Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	20	x 1 =	20	
FACW species	90	x 2 =	180	
FAC species	10	x 3 =	30	
FACU species	0	x 4 =	0	
UPL species	5	x 5 =	25	
Column Totals:	125	(A)	255	(B)

Prevalence Index = B/A = 2.040

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 4-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	4/1	85	7.5YR	3/4	15	C	M	Silt	
10-14	10YR	6/2	85	10YR	5/6	15	C	M	Silt	
14-20	10YR	6/1	60	7.5YR	4/6	40	C	M	Silt	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 4-2**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 6.0 % / 3.4 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95901 **Long.:** -91.63988 **Datum:** WGS84

Soil Map Unit Name: Arland Sandy Loam, 6 to 12% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of corn crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 4-2

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Zea mays*	25	☑	UPL
2. *Taraxacum officinale*	10	☑	FACU
3. *Parthenocissus quinquefolia*	3	☐	FACU
4. *Cerastium fontanum*	3	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	41	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	16	x 4 =	64
UPL species	25	x 5 =	125
Column Totals:	41 (A)		189 (B)

Prevalence Index = B/A = 4.610

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 4-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	4/3	100	-	-	-	-	-	Sandy Loam	
7-20	10YR	4/6	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 4-3**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope/Farm ditch **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95868 **Long.:** -91.63801 **Datum:** WGS84

Soil Map Unit Name: Arenzville Silt Loam, 0 to 3% slopes **NWI classification:** PEM1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Although this area is a man-made farm ditch and areas surrounding this wetland are currently cropped and farmed, the ditch was excavated many years ago based on crop slide review and no recent disturbances were observed in the sample plot area and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 1	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 4-3

Tree Stratum (Plot size: 35' x 80')	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	60	☑	FACW
2. *Carex conoidea*	40	☑	FACW
3. *Phalaris arundinacea*	30	☐	FACW
4. *Cornus racemosa*	10	☐	FAC
5. *Eupatorium perfoliatum*	10	☐	FACW
6. *Juncus effusus*	10	☐	OBL
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	160	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	10	x 1 =	10	
FACW species	140	x 2 =	280	
FAC species	10	x 3 =	30	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	160	(A)	320	(B)

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. The sample plot size for the tree layer was adjusted due to the narrow wetland area being evaluated.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 4-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	90	10YR	4/4	10	C	M	Silt	
4-8	10YR	6/2	60	7.5YR	4/6	40	C	M	Silt	
8-20	10YR	7/2	50	7.5YR	4/6	50	C	M	Silt	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 4-3**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 6.0 % / 3.4 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95839 **Long.:** -91.63793 **Datum:** WGS84

Soil Map Unit Name: Arland Sandy Loam, 6 to 12% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of corn crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 4-3

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Zea mays*	25	☑	UPL
2. *Taraxacum officinale*	5	☐	FACU
3. *Cerastium fontanum*	3	☐	FACU
4. *Cirsium arvense*	1	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	34	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	9	x 4 =	36	
UPL species	25	x 5 =	125	
Column Totals:	34	(A)	161	(B)

Prevalence Index = B/A = 4.735

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 4-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-14	7.5YR	3/2	100	-	-	-	-	-	Sandy Loam	
14-20	7.5YR	5/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 4-4**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope/Farm ditch **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95999 **Long.:** -91.63600 **Datum:** WGS84

Soil Map Unit Name: Lows Loam, 0 to 2% slopes **NWI classification:** PEM1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?**	Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○		
Wetland Hydrology Present?	Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Although areas surrounding this wetland are currently cropped and farmed no recent disturbances were observed in the sample plot area and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-10
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	-6

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 4-4

Tree Stratum (Plot size: 30' radius)	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Carex stipata*	70	☑	OBL
2. *Typha angustifolia*	20	☑	OBL
3. *Carex scoparia*	20	☑	FACW
4. *Scirpus cyperinus*	15	☐	OBL
5. *Solidago gigantea*	10	☐	FACW
6. *Impatiens capensis*	10	☐	FACW
7. *Phalaris arundinacea*	5	☐	FACW
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	150	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	105	x 1 =	105	
FACW species	45	x 2 =	90	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	150	(A)	195	(B)

Prevalence Index = B/A = 1.300

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 4-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	90	7.5YR	3/4	10	C	M	Silt	
8-20	10YR	5/2	75	7.5YR	5/6	25	C	M	Silt	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 4-4**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 7.0 % / 4.0 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96001 **Long.:** -91.63676 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of corn crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 4-4

Tree Stratum (Plot size: 30' radius)	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Zea mays*	30	☑	UPL
2. *Taraxacum officinale*	10	☑	FACU
3. *Cerastium fontanum*	5	☐	FACU
4. *Parthenocissus quinquefolia*	5	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	50	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	20	x 4 =	80	
UPL species	30	x 5 =	150	
Column Totals:	50	(A)	230	(B)

Prevalence Index = B/A = 4.600

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 4-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-13	10YR	4/3	100	-	-	-	-	-	Loamy Sand	
13-20	10YR	5/4	100	-	-	-	-	-	Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 4-5**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95889 **Long.:** -91.63450 **Datum:** WGS84

Soil Map Unit Name: Fordum Loam, 0 to 2% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No recent disturbances were observed in the sample plot area and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-5
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 4-5

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	25	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	25	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix discolor*	10	☑	FACW
2. *Ulmus americana*	5	☑	FACW
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	15	= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Impatiens capensis*	50	☑	FACW
2. *Carex scoparia*	50	☑	FACW
3. *Solidago gigantea*	30	☐	FACW
4. *Onoclea sensibilis*	20	☐	FACW
5. *Carex stipata*	15	☐	OBL
6. *Glyceria grandis*	10	☐	OBL
7. *Carex intumescens*	10	☐	FACW
8. *Iris versicolor*	5	☐	OBL
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	190	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	200	x 2 =	400
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	230 (A)		430 (B)

Prevalence Index = B/A = 1.870

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 4-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-11	10YR	2/2	90	7.5YR	3/4	10	C	M	Mucky Silt Loam	
11-20	10YR	5/1	95	7.5YR	4/4	5	C	M	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☑ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 4-5**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 4.0 % / 2.3 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95929 **Long.:** -91.63419 **Datum:** WGS84

Soil Map Unit Name: Kert Silt Loam, 1 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 4-5

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	15	☑	FACU
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	15	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Potentilla simplex*	80	☑	FACU
2. *Solidago canadensis*	75	☑	FACU
3. *Asclepias syriaca*	20	☐	UPL
4. *Impatiens capensis*	15	☐	FACW
5. *Rubus allegheniensis*	15	☐	FACU
6. *Sambucus racemosa*	10	☐	FACU
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	215	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	15	x 2 =	30	
FAC species	0	x 3 =	0	
FACU species	195	x 4 =	780	
UPL species	20	x 5 =	100	
Column Totals:	230	(A)	910	(B)

Prevalence Index = B/A = 3.957

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No shrub or vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 4-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	3/2	100	-	-	-	-	-	Silt Loam	
10-20	10YR	5/4	85	10YR	5/6	15	C	M	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Although redoximorphic features were observed, matrix chroma colors are too bright and soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 5-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95889 **Long.:** -91.63450 **Datum:** WGS84

Soil Map Unit Name: Arland Loam, 6 to 12% slopes, Eroded **NWI classification:** PEM1x

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Although this pond was excavated, which resulted in disturbances at the time, it was excavated many years ago based on review of crop slides. No recent disturbances were observed in the sample plot area and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☑ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉ No ○	Depth (inches): 12	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 5-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	5	☑	FACW
2. *Salix discolor*	5	☑	FACW
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	10	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Salix petiolaris*	5	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	5	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Lemna minor*	20	☑	OBL
2. *Typha angustifolia*	30	☑	OBL
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	50	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	65 (A)		80 (B)

Prevalence Index = B/A = 1.231

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 5-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	4/2	85	7.5YR	4/4	15	C	M	Loamy Sand	
10+	-	-	-	-	-	-	-	-	Rock	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☑ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 10

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators. Although a full soil profile could not be viewed due to shallow rock, soils still met hydric soil indicators and were assumed as well based on surface hydrology.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 5-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96143 **Long.:** -91.63389 **Datum:** WGS84

Soil Map Unit Name: Arland Loam, 6 to 12% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

Although a small path was cleared through this area many years ago, no significant disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ○	No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 5-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Malus pumila*	20	☑	UPL
2. *Quercus ellipsoidalis*	20	☑	UPL
3. *Ulmus americana*	5	☐	FACW
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	45	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera tatarica*	25	☑	FACU
2. *Sambucus racemosa*	15	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	40	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Bromus inermis*	50	☑	UPL
2. *Rubus allegheniensis*	40	☑	FACU
3. *Phleum pratense*	30	☑	FACU
4. *Solidago canadensis*	30	☑	FACU
5. *Danthonia spicata*	20	☐	UPL
6. *Asclepias syriaca*	10	☐	UPL
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	180	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	140	x 4 =	560
UPL species	120	x 5 =	600
Column Totals:	265 (A)		1170 (B)

Prevalence Index = B/A = 4.415

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 5-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-16	10YR	3/2	100	-	-	-	-	-	Silt Loam	
16-20	10YR	5/4	100	-	-	-	-	-	Gravelly Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed and soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 6-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96680 **Long.:** -91.64538 **Datum:** WGS84

Soil Map Unit Name: Kert Silt Loam, 1 to 6% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed in the sample plot area and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): -10	**Wetland Hydrology Present?** Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 6-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	90	☑	FAC
2. *Ulmus americana*	10	☐	FACW
3. *Populus tremula*	10	☐	FAC
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	110	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Lonicera tatarica*	15	☑	FACU
2. *Frangula alnus*	5	☑	FAC
3. *Ulmus americana*	5	☑	FACW
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	25	= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Carex intumescens*	10	☑	FACW
2. *Coptis trifolia*	5	☑	FACW
3. *Parthenocissus quinquefolia*	5	☑	FACU
4. *Dryopteris intermedia*	5	☑	FAC
5. *Rubus idaeus (NGL)*	5	☑	FAC
6. *Circaea canadensis*	5	☑	FACU
7. *Ulmus americana*	3	☐	FACW
8. *Solidago gigantea*	3	☐	FACW
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	41	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	7	(A)
Total Number of Dominant Species Across All Strata:	10	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	70.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	36	x 2 =	72
FAC species	115	x 3 =	345
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	176 (A)		517 (B)

Prevalence Index = B/A = 2.938

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 6-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	2/2	100	-	-	-	-	-	Silt Loam	
5-12	10YR	5/2	75	10YR	5/6	25	C	M	Silt Loam	
12-20	10YR	6/2	70	10YR	5/6	30	C	M	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 6-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 4.0 % / 2.3 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96673 **Long.:** -91.64569 **Datum:** WGS84

Soil Map Unit Name: Kert Silt Loam, 1 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 6-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	90	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	90	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Frangula alnus*	15	☑	FAC
2. *Lonicera tatarica*	10	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	25	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Carex pensylvanica*	30	☑	UPL
2. *Rubus allegheniensis*	15	☑	FACU
3. *Parthenocissus quinquefolia*	15	☑	FACU
4. *Circaea canadensis*	15	☑	FACU
5. *Maianthemum canadense*	10	☐	FACU
6. *Lonicera tatarica*	10	☐	FACU
7. *Geranium maculatum*	5	☐	FACU
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	100	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 28.6% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	105	x 3 =	315	
FACU species	80	x 4 =	320	
UPL species	30	x 5 =	150	
Column Totals:	215 (A)		785	(B)

Prevalence Index = B/A = 3.651

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 6-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100	-	-	-	-	-	Silt Loam	
4-14	10YR	4/4	100	-	-	-	-	-	Silt Loam	
14-20	10YR	5/4	100	-	-	-	-	-	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed and soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 7-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96499 **Long.:** -91.64617 **Datum:** WGS84

Soil Map Unit Name: Plainbo Loamy Sand, 6 to 12% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Some historic activities including excavation and berming occurred in this area but evidently many years ago. No recent disturbances were observed in the sample plot area and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-6
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 7-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	95	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	95	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer rubrum*	30	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	30	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	70	☑	FACW
2. *Dryopteris intermedia*	10	☐	FAC
3. *Osmunda claytoniana*	10	☐	FAC
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	90	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	70	x 2 =	140	
FAC species	145	x 3 =	435	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	215	(A)	575	(B)

Prevalence Index = B/A = 2.674

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 7-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/1	85	10YR	3/4	15	C	M	Silt Loam	
8-20	10YR	6/2	60	7.5YR	5/6	40	C	M	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 7-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96496 **Long.:** -91.64581 **Datum:** WGS84

Soil Map Unit Name: Kert Silt Loam, 1 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 7-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	90	☑	FAC
2. *Quercus alba*	40	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	130	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer rubrum*	15	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	15	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Carex pensylvanica*	30	☑	UPL
2. *Quercus alba*	15	☑	FACU
3. *Gaylussacia baccata*	15	☑	FACU
4. *Gaultheria procumbens*	10	☐	FACU
5. *Prunus serotina*	5	☐	FACU
6. *Corylus cornuta*	5	☐	FACU
7. *Prunus serotina*	5	☐	FACU
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	85	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	105	x 3 =	315
FACU species	95	x 4 =	380
UPL species	30	x 5 =	150
Column Totals:	230 (A)		845 (B)

Prevalence Index = B/A = 3.674

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 7-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-2	10YR	2/1	100	-	-	-	-	-	Silt Loam	
2-10	10YR	4/4	100	-	-	-	-	-	Silt Loam	
10-20	10YR	5/4	100	-	-	-	-	-	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed and soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 8-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** concave **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96506 **Long.:** -91.64903 **Datum:** WGS84

Soil Map Unit Name: Billett Sandy Loam, 2 to 6% slopes **NWI classification:** PEM1F

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?**	Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○		
Wetland Hydrology Present?	Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Although the soybean crop did not take well in this area and volunteer species were observed. Soils had recently been tilled but did meet hydric soil indicators. The crop slide review indicated wetness or crop stress signatures in this area in 60% of normal precipitation years.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☑ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-10
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 8-1

Tree Stratum (Plot size: 48' x 20')	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Cyperus esculentus*	60	☑	FACW
2. *Potentilla simplex*	20	☐	FACU
3. *Glycine max*	15	☐	UPL
4. *Carex scoparia*	10	☐	FACW
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	105	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	70	x 2 =	140	
FAC species	0	x 3 =	0	
FACU species	20	x 4 =	80	
UPL species	15	x 5 =	75	
Column Totals:	105	(A)	295	(B)

Prevalence Index = B/A = 2.810

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was present. The sample plot size for the tree layer were adjusted due to narrow area being evaluated.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 8-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	85	10YR	3/6	15	C	M	Silt Loam	
8-20	10YR	5/2	70	7.5YR	5/6	30	C	M	Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 8-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** convex **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96493 **Long.:** -91.64940 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 8-1

Tree Stratum (Plot size: 30' radius)	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	60	☑	UPL
2. *Ambrosia artemisiifolia*	10	☐	FACU
3. *Cerastium fontanum*	5	☐	FACU
4. *Potentilla simplex*	5	☐	FACU
5. *Erigeron strigosus*	3	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	83	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	23	x 4 =	92	
UPL species	60	x 5 =	300	
Column Totals:	83	(A)	392	(B)

Prevalence Index = B/A = 4.723

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 8-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	4/3	100	-	-	-	-	-	Sandy Loam	
10-20	10YR	4/6	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 9-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96713 **Long.:** -91.65024 **Datum:** WGS84

Soil Map Unit Name: Vesper Silt Loam, 0 to 2% slopes **NWI classification:** PEM1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Areas surrounding this wetland are currently cropped and farmed, the sample plot area was not cropped and no recent disturbances were observed iand this area was considered to have normal circumstances. A crop slide review indicated wetness or crop stress signatures in this area in 60% of normal precipitation years.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-8
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 9-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Phalaris arundinacea*	50	☑	FACW
2. *Scirpus cyperinus*	40	☑	OBL
3. *Juncus effusus*	30	☑	OBL
4. *Solidago gigantea*	25	☐	FACW
5. *Carex scoparia*	20	☐	FACW
6. *Onoclea sensibilis*	20	☐	FACW
7. *Eupatorium perfoliatum*	5	☐	FACW
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	190	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	70	x 1 =	70	
FACW species	120	x 2 =	240	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	190	(A)	310	(B)

Prevalence Index = B/A = 1.632

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 9-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	95	10YR	5/4	5	C	M	Silt Loam	
7-20	10YR	5/3	85	7.5YR	5/6	15	C	M	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 9-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** convex **Slope:** 4.0 % / 2.3 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96696 **Long.:** -91.64994 **Datum:** WGS84

Soil Map Unit Name: Shiffer Loam, 0 to 2% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 9-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	60	☑	UPL
2. *Stellaria graminea*	20	☐	UPL
3. *Ambrosia artemisiifolia*	15	☐	FACU
4. *Chenopodium album*	5	☐	FACU
5. *Taraxacum officinale*	5	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	105	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	25	x 4 =	100	
UPL species	80	x 5 =	400	
Column Totals:	105 (A)		500	(B)

Prevalence Index = B/A = 4.762

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 9-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100	-	-	-	-	-	VF Sandy Loam	
6-20	10YR	5/4	100	-	-	-	-	-	VF Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 10-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** concave **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96943 **Long.:** -91.65058 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 2 to 6% slopes **NWI classification:** PEM1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

Areas surrounding this wetland are currently cropped and farmed, the sample plot area was not cropped and no recent disturbances were observed iand this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-2
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 10-1

Tree Stratum (Plot size: 30' radius)	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Phalaris arundinacea*	80	☑	FACW
2. *Juncus effusus*	40	☑	OBL
3. *Scirpus cyperinus*	15	☐	OBL
4. *Carex scoparia*	15	☐	FACW
5. *Euthamia graminifolia*	10	☐	FAC
6. *Carex stipata*	5	☐	OBL
7. *Eupatorium perfoliatum*	5	☐	FACW
8. *Persicaria sagittata*	5	☐	OBL
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	175	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	65	x 1 =	65	
FACW species	100	x 2 =	200	
FAC species	10	x 3 =	30	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	175	(A)	295	(B)

Prevalence Index = B/A = 1.686

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 10-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/1	95	10YR	3/4	5	C	M	Silt Loam	
4-20	10YR	7/2	80	7.5YR	5/6	20	C	M	Coarse Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☑ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 10-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Shoulder slope **Local relief (concave, convex, none):** convex **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96912 **Long.:** -91.65041 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 10-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	70	☑	UPL
2. *Ambrosia artemisiifolia*	20	☐	FACU
3. *Taraxacum officinale*	10	☐	FACU
4. *Persicaria pensylvanica*	5	☐	FACW
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	105	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	0	x 3 =	0	
FACU species	30	x 4 =	120	
UPL species	70	x 5 =	350	
Column Totals:	105	(A)	480	(B)

Prevalence Index = B/A = 4.571

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 10-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100	-	-	-	-	-	Fine Sandy Loam	
8-20	10YR	5/4	90	10YR	5/6	10	C	M	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. Although redoximorphic features were observed, matrix chroma colors were too bright and soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 11-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope/Terrace **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97090 **Long.:** -91.65068 **Datum:** WGS84

Soil Map Unit Name: Billett Sandy Loam, 2 to 6% slopes **NWI classification:** PEM1F

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?**	Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○		
Wetland Hydrology Present?	Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Although the soybean crop did not take well in this area and volunteer species were observed. Soils had recently been tilled but did meet hydric soil indicators. A crop slide review was not conducted on this area since it is so small to evaluate.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☑ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-6
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that on this date conditions were wetter than normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 11-1

Tree Stratum (Plot size: 31' x 34')	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Cyperus esculentus*	60	☑	FACW
2. *Barbarea vulgaris*	5	☐	FAC
3. *Potentilla simplex*	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	70	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	60	x 2 =	120	
FAC species	5	x 3 =	15	
FACU species	5	x 4 =	20	
UPL species	0	x 5 =	0	
Column Totals:	70	(A)	155	(B)

Prevalence Index = B/A = 2.214

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was present. The sample plot size for the tree layer was adjusted due to the narrow wetland area being evaluated.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 11-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	85	10YR	3/6	15	C	M	Loam	
6-20	10YR	5/4	85	10YR	5/8	15	C	M	Coarse Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 11-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97077 **Long.:** -91.65071 **Datum:** WGS84

Soil Map Unit Name: Billett Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 11-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	
Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	70	☑	UPL
2. *Cerastium fontanum*	25	☑	FACU
3. *Ambrosia artemisiifolia*	20	☐	FACU
4. *Conyza canadensis*	5	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	120	**= Total Cover**	
Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	50	x 4 =	200
UPL species	70	x 5 =	350
Column Totals:	120 (A)		550 (B)

Prevalence Index = B/A = 4.583

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 11-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100	-	-	-	-	-	Sandy Loam	
8-20	10YR	6/6	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil I

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 12-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Toeslope **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96395 **Long.:** -91.64170 **Datum:** WGS84

Soil Map Unit Name: Plainbo Loamy Sand, 2 to 6% slopes **NWI classification:** PEM1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ◉ No ○		
Hydric Soil Present? Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○	
Wetland Hydrology Present? Yes ◉ No ○		

Remarks: (Explain alternative procedures here or in a separate report.)

Although areas surrounding this wetland were recently hayed, no significant disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ◉	No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 12-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Scirpus cyperinus*	40	☑	OBL
2. *Carex scoparia*	35	☑	FACW
3. *Typha angustifolia*	25	☑	OBL
4. *Juncus effusus*	20	☐	OBL
5. *Rumex crispus*	15	☐	FAC
6. *Onoclea sensibilis*	10	☐	FACW
7. *Persicaria pensylvanica*	10	☐	FACW
8. *Eupatorium perfoliatum*	5	☐	FACW
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	160	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	85	x 1 =	85	
FACW species	60	x 2 =	120	
FAC species	15	x 3 =	45	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column Totals:	160	(A)	250	(B)

Prevalence Index = B/A = 1.563

Hydrophytic Vegetation Indicators:

- ☑ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 12-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/1	85	10YR	3/4	15	C	M	Silt Loam	
7-20	10YR	5/1	80	10YR	5/8	15	C	M	Silt Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 12-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** linear **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96416 **Long.:** -91.64222 **Datum:** WGS84

Soil Map Unit Name: Plainbo Loamy Sand, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

Although this area was recently hayed, no significant disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 12-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Bromus inermis*	80	☑	UPL
2. *Trifolium repens*	25	☑	FACU
3. *Plantago major*	10	☐	FACU
4. *Taraxacum officinale*	5	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	120	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	40	x 4 =	160	
UPL species	80	x 5 =	400	
Column Totals:	120	(A)	560	(B)

Prevalence Index = B/A = 4.667

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 12-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-9	10YR	3/2	100	-	-	-	-	-	Sandy Loam	
9-20	10YR	5/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed and soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 13-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope/swale **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96847 **Long.:** -91.63681 **Datum:** WGS84

Soil Map Unit Name: Plainbo Loamy Sand, 12 to 20% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No significant disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-6
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 13-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	☑	FAC
2. *Quercus bicolor*	30	☑	FACW
3. *Ulmus americana*	10	☐	FACW
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ilex verticillata*	15	☑	FACW
2. *Frangula alnus*	10	☑	FAC
3. *Prunus serotina*	10	☑	FACU
4. *Corylus cornuta*	5	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
	40	= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Impatiens capensis*	90	☑	FACW
2. *Rubus idaeus (NGL)*	15	☐	FAC
3. *Dryopteris intermedia*	10	☐	FAC
4. *Geum aleppicum*	5	☐	FAC
5. *Solidago gigantea*	5	☐	FACW
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	125	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	83.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	150	x 2 =	300
FAC species	70	x 3 =	210
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	235 (A)		570 (B)

Prevalence Index = B/A = 2.426

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 13-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	2/2	100	-	-	-	-	-	Silt	
3-10	10YR	4/2	85	10YR	3/6	15	C	M	Silt	
10-20	10YR	5/4	70	10YR	5/8	30	C	M	Silt	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 13-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope/swale **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96847 **Long.:** -91.63681 **Datum:** WGS84

Soil Map Unit Name: Plainbo Loamy Sand, 12 to 20% slopes **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No significant disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches):	-6
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 13-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	☑	FAC
2. *Quercus bicolor*	30	☑	FACW
3. *Ulmus americana*	10	☐	FACW
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ilex verticillata*	15	☑	FACW
2. *Frangula alnus*	10	☑	FAC
3. *Prunus serotina*	10	☑	FACU
4. *Corylus cornuta*	5	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
	40	= Total Cover	

Herb Stratum (Plot size: 5' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Impatiens capensis*	90	☑	FACW
2. *Rubus idaeus (NGL)*	15	☐	FAC
3. *Dryopteris intermedia*	10	☐	FAC
4. *Geum aleppicum*	5	☐	FAC
5. *Solidago gigantea*	5	☐	FACW
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	125	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	83.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	150	x 2 =	300
FAC species	70	x 3 =	210
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	235 (A)		570 (B)

Prevalence Index = B/A = 2.426

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 13-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-3	10YR	2/2	100	-	-	-	-	-	Silt	
3-10	10YR	4/2	85	10YR	3/6	15	C	M	Silt	
10-20	10YR	5/4	70	10YR	5/8	30	C	M	Silt	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 14-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope/seep **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96636 **Long.:** -91.63821 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 6 to 12% slopes, Eroded **NWI classification:** PFO1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No significant disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 14-1

Tree Stratum (Plot size: 54' x 24')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	60	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	60	= Total Cover	

Sapling/Shrub Stratum (Plot size: 24' x 29')			
1. *Ilex verticillata*	10	☑	FACW
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	10	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	10	☑	FACW
2. *Dryopteris intermedia*	15	☑	FAC
3. *Geum aleppicum*	2	☐	FAC
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	27	= Total Cover	

Woody Vine Stratum (Plot size: 24' x 29')			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	77	x 3 =	231
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	97 (A)		271 (B)

Prevalence Index = B/A = 2.794

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was present. Sample plot sizes for the tree, shrub and vine layers were adjusted due to the small wetland area being evaluated.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 14-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox %	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/2	90	10YR	5/2	10	D	M	Mucky Loamy Sand	
5-20	10YR	4/1	80	10YR	6/1	20	D	M	Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☑ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☑ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 14-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 20.0 % / 11.3 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96632 **Long.:** -91.63798 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 6 to 12% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 14-1

Tree Stratum (Plot size: 30' radius)	**Absolute % Cover**	**Dominant Species?**	**Indicator Status**
1. *Acer rubrum*	95	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	95	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Zanthoxylum americanum*	35	☑	FACU
2. *Sambucus racemosa*	25	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	60	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Rubus allegheniensis*	50	☑	FACU
2. *Circaea canadensis*	20	☑	FACU
3. *Eurybia macrophylla*	15	☐	UPL
4. *Dryopteris intermedia*	15	☐	FAC
5. *Osmunda claytoniana*	10	☐	FAC
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	110	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	120	x 3 =	360	
FACU species	130	x 4 =	520	
UPL species	15	x 5 =	75	
Column Totals:	265 (A)		955	(B)

Prevalence Index = B/A = 3.604

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 14-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-4	10YR	3/2	100	-	-	-	-	-	Sandy Loam	
4-20	10YR	5/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed and soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Wet 15-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope/seep **Local relief (concave, convex, none):** concave **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96547 **Long.:** -91.63995 **Datum:** WGS84

Soil Map Unit Name: Elkmound Loam, 12 to 20% slopes, Moderately Eroded **NWI classification:** PEM1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks: (Explain alternative procedures here or in a separate report.)

No significant disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☑ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ◉ No ○	Depth (inches): 0	**Wetland Hydrology Present?** Yes ◉ No ○
Saturation Present? (includes capillary fringe)	Yes ◉ No ○	Depth (inches): 0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal.

VEGETATION - Use scientific names of plants.

Sampling Point: Wet 15-1

Tree Stratum (Plot size: 54' x 25')	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 25' x 27')			
1. *Cornus racemosa*	10	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	10	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Glyceria striata*	25	☑	OBL
2. *Geum aleppicum*	20	☑	FAC
3. *Onoclea sensibilis*	15	☑	FACW
4. *Carex scoparia*	15	☑	FACW
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	75	= Total Cover	
Woody Vine Stratum (Plot size: 25' x 27')			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	30	x 2 =	60
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	85 (A)		175 (B)

Prevalence Index = B/A = 2.059

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☑ **Dominance Test is > 50%**
- ☑ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

No tree or vine layer was present. Sample plot sizes for the tree, shrub and vine layers were adjusted due to the small wetland area being evaluated.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Wet 15-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-5	10YR	3/1	90	10YR	5/2	10	D	M	Mucky Loamy Sand	
5-20	10YR	5/1	80	10YR	5/6	20	D	M	Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☑ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☑ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☑ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soils meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **Up 15-1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 45.0 % / 24.2 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96552 **Long.:** -91.63969 **Datum:** WGS84

Soil Map Unit Name: Elkmound Loam, 12 to 20% slopes, Moderately Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: Up 15-1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremula*	90	☑	FAC
2. *Betula papyrifera*	25	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	115	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Zanthoxylum americanum*	15	☑	FACU
2. *Sambucus racemosa*	10	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	25	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Rubus allegheniensis*	80	☑	FACU
2. *Lonicera tatarica*	15	☐	FACU
3. *Carex pensylvanica*	15	☐	UPL
4. *Potentilla simplex*	10	☐	FACU
5. *Prunus serotina*	5	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	125	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	20.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	90	x 3 =	270	
FACU species	160	x 4 =	640	
UPL species	15	x 5 =	75	
Column Totals:	265	(A)	985	(B)

Prevalence Index = B/A = 3.717

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: Up 15-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-9	10YR	3/2	100	-	-	-	-	-	Loam	
9-20	10YR	5/4	90	7.5YR	4/4	10	C	M	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Although redoximorphic features were observed, matrix chroma colors are too bright and soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP1**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96591 **Long.:** -91.64653 **Datum:** WGS84

Soil Map Unit Name: Plainbo Loamy Sand, 6 to 12% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions in area mapped as having wetland indicator soils. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	50	☑	UPL
2. *Cerastium fontanum*	10	☐	FACU
3. *Ambrosia artemisiifolia*	5	☐	FACU
4. *Chenopodium album*	5	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	70	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	20	x 4 =	80	
UPL species	50	x 5 =	250	
Column Totals:	70	(A)	330	(B)

Prevalence Index = B/A = 4.714

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-13	10YR	3/3	100	-	-	-	-	-	Sandy Loam	
13-20	10YR	4/6	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP2**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96878 **Long.:** -91.63086 **Datum:** WGS84

Soil Map Unit Name: Kert Silt Loam, 1 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions in area mapped as having wetland indicator soils. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP2

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	40	☑	UPL
2. *Cerastium fontanum*	10	☐	FACU
3. *Taraxacum officinale*	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	55	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	15	x 4 =	60	
UPL species	40	x 5 =	200	
Column Totals:	55	(A)	260	(B)

Prevalence Index = B/A = 4.727

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100	-	-	-	-	-	Sandy Loam	
8-20	10YR	5/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 19-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP3**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96761 **Long.:** -91.63033 **Datum:** WGS84

Soil Map Unit Name: Oesterle Loam, 0 to 2% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions in area mapped as having wetland indicator soils. No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP3

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremula*	70	☑	FAC
2. *Populus grandidentata*	30	☑	FACU
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera tatarica*	70	☑	FACU
2. *Rhus typhina*	15	☐	UPL
3. *Cornus racemosa*	15	☐	FAC
4. *Quercus macrocarpa*	10	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
	110	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Lonicera tatarica*	20	☑	FACU
2. *Rubus allegheniensis*	20	☑	FACU
3. *Desmodium glutinosum*	15	☑	UPL
4. *Geum aleppicum*	10	☐	FAC
5. *Taraxacum officinale*	5	☐	FACU
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	70	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 16.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	95	x 3 =	285
FACU species	155	x 4 =	620
UPL species	30	x 5 =	150
Column Totals:	280 (A)		1055 (B)

Prevalence Index = B/A = 3.768

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/2	100	-	-	-	-	-	Fine Sandy Loam	
8-11	10YR	4/3	100	-	-	-	-	-	Sandy Loam	
11-20	10YR	4/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed and soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP4**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Farm Swale/Footslope **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97167 **Long.:** -91.64994 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☑ **, or Hydrology** ☑ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ○ No ◉		
Hydric Soil Present? Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉	
Wetland Hydrology Present? Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions a farm swale that has potential to be wetland due to topographic position and showed some wetness signatures on a few crop slides that were reviewed, although no wetlands or wetland indicator soils were mapped in this area. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. However, the soybean crop was minimal here and other volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP4

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Erucastrum gallicum*	25	☑	UPL
2. *Glycine max*	20	☑	UPL
3. *Ambrosia artemisiifolia*	15	☑	FACU
4. *Hieracium canadense*	10	☐	UPL
5. *Silene pratensis*	10	☐	UPL
6. *Rumex crispus*	10	☐	FAC
7. *Arctium minus*	5	☐	FACU
8. *Chenopodium album*	5	☐	FACU
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	100	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	10	x 3 =	30	
FACU species	25	x 4 =	100	
UPL species	65	x 5 =	325	
Column Totals:	100	(A)	455	(B)

Prevalence Index = B/A = 4.550

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/3	100	-	-	-	-	-	Sandy Loam	
6-20	10YR	5/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP5**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97236 **Long.:** -91.64575 **Datum:** WGS84

Soil Map Unit Name: Merrillan Sandy Loam, 1 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions in area mapped as having wetland indicator soils. Crop slide review wetness indicators in only 10% of normal precipitation years in this area. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):		
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?**	Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP5

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	70	☑	UPL
2. *Poa pratensis*	15	☐	FACU
3. *Ambrosia artemisiifolia*	10	☐	FACU
4. *Hieracium aurantiacum*	5	☐	UPL
5. *Barbarea vulgaris*	3	☐	FAC
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	103	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	3	x 3 =	9	
FACU species	25	x 4 =	100	
UPL species	75	x 5 =	375	
Column Totals:	103	(A)	484	(B)

Prevalence Index = B/A = 4.699

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR	4/3	100	-	-	-	-	-	Fine Sandy Loam	
12-20	10YR	5/4	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP6**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Farm Swale/Footslope **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97061 **Long.:** -91.64404 **Datum:** WGS84

Soil Map Unit Name: Billett Sandy Loam, 0 to 2% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☑ **, or Hydrology** ☑ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions a farm swale that has potential to be wetland due to topographic position and showed some wetness signatures on a few crop slides that were reviewed, although no wetlands or wetland indicator soils were mapped in this area. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. However, the soybean crop was not planted in this vegetated swale and other volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP6

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Hieracium canadense*	50	☑	UPL
2. *Ambrosia artemisiifolia*	25	☑	FACU
3. *Silene pratensis*	15	☐	UPL
4. *Taraxacum officinale*	15	☐	FACU
5. *Chenopodium album*	10	☐	FACU
6. *Leucanthemum vulgare*	5	☐	UPL
7. *Arctium minus*	5	☐	FACU
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	125	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	55	x 4 =	220	
UPL species	70	x 5 =	350	
Column Totals:	125	(A)	570	(B)

Prevalence Index = B/A = 4.560

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR	4/3	100	-	-	-	-	-	Fine Sandy Loam	
12-20	10YR	5/4	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 25-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP7**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Farm Swale/Footslope **Local relief (concave, convex, none):** concave **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96933 **Long.:** -91.64636 **Datum:** WGS84

Soil Map Unit Name: Billett Sandy Loam, 0 to 2% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☑ **, or Hydrology** ☑ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions a farm swale that has potential to be wetland due to topographic position and showed some wetness signatures on a few crop slides that were reviewed, although no wetlands or wetland indicator soils were mapped in this area. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. However, the soybean crop was not planted in this vegetated swale and other volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):		
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?**	Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP7

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Hieracium canadense*	30	☑	UPL
2. *Ambrosia artemisiifolia*	30	☑	FACU
3. *Taraxacum officinale*	20	☑	FACU
4. *Silene pratensis*	15	☐	UPL
5. *Chenopodium album*	10	☐	FACU
6. *Potentilla simplex*	10	☐	FACU
7. *Leucanthemum vulgare*	5	☐	UPL
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	120	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	70	x 4 =	280
UPL species	50	x 5 =	250
Column Totals:	120 (A)		530 (B)

Prevalence Index = B/A = 4.417

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-10	10YR	4/3	100	-	-	-	-	-	Fine Sandy Loam	
10-20	10YR	5/4	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 26-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP8**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** convex **Slope:** 25.0 % / 14.0 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96166 **Long.:** -91.64895 **Datum:** WGS84

Soil Map Unit Name: Elkmound Loam, 12 to 20% slopes, Moderately Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to simply document typical upland conditions in this portion of the study area. No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP8

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Prunus serotina*	25	☑	FACU
2. *Quercus ellipsoidalis*	20	☑	UPL
3. *Acer rubrum*	5	☐	FAC
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	50	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Cornus racemosa*	10	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	10	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Leucanthemum vulgare*	50	☑	UPL
2. *Bromus inermis*	50	☑	UPL
3. *Rubus allegheniensis*	50	☑	FACU
4. *Lotus corniculatus*	15	☐	FACU
5. *Erigeron strigosus*	15	☐	FACU
6. *Asclepias syriaca*	10	☐	UPL
7. *Achillea millefolium*	5	☐	FACU
8. *Potentilla simplex*	5	☐	FACU
9. *Cirsium arvense*	5	☐	FACU
10.	0	☐	
11.	0	☐	
12.	0	☐	
	205	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	16.7%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	15	x 3 =	45	
FACU species	120	x 4 =	480	
UPL species	130	x 5 =	650	
Column Totals:	265	(A)	1175	(B)

Prevalence Index = B/A = 4.434

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-11	10YR	3/2	100	-	-	-	-	-	Loam	
11-20	10YR	5/4	100	-	-	-	-	-	Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 26-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP9**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 45.0 % / 24.2 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.95933 **Long.:** -91.64847 **Datum:** WGS84

Soil Map Unit Name: Elkmound Loam, 20 to 45% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to simply document typical upland conditions in this portion of the study area. No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):		
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?**	Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP9

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	70	☑	FAC
2. *Quercus ellipsoidalis*	50	☑	UPL
3. *Quercus alba*	40	☑	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	160	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Prunus serotina*	10	☑	FACU
2. *Acer rubrum*	10	☑	FAC
3. *Corylus cornuta*	5	☑	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	25	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Rubus allegheniensis*	25	☑	FACU
2. *Dryopteris intermedia*	20	☑	FAC
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	45	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 37.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	80	x 4 =	320
UPL species	50	x 5 =	250
Column Totals:	230 (A)		870 (B)

Prevalence Index = B/A = 3.783

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-1	10YR	4/3	100	-	-	-	-	-	Sandy Loam	
1-20	10YR	4/6	100	-	-	-	-	-	VF Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 26-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP10**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96374 **Long.:** -91.63838 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 6 to 12% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to simply document typical upland conditions in this portion of the study area. No disturbances were observed and this area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ◉	Depth (inches):	
Water Table Present?	Yes ○	No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP10

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Bromus inermis*	70	☑	UPL
2. *Ambrosia artemisiifolia*	60	☑	FACU
3. *Medicago sativa*	30	☐	UPL
4. *Taraxacum officinale*	20	☐	FACU
5. *Silene pratensis*	15	☐	UPL
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	195	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	80	x 4 =	320
UPL species	115	x 5 =	575
Column Totals:	195 (A)		895 (B)

Prevalence Index = B/A = 4.590

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-12	10YR	4/3	100	-	-	-	-	-	Loamy Sand	
12-20	10YR	4/4	100	-	-	-	-	-	Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 27-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP11**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 3.0 % / 1.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97205 **Long.:** -91.64123 **Datum:** WGS84

Soil Map Unit Name: Billett Sandy Loam, 0 to 2% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document typical upland conditions in this portion of the study area, although no wetlands or wetland indicator soils are mapped in this area. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP11

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Trifolium repens*	75	☑	FACU
2. *Medicago sativa*	60	☑	UPL
3. *Phalaris arundinacea*	50	☑	FACW
4. *Glycine max*	30	☐	UPL
5. *Phleum pratense*	25	☐	FACU
6. *Festuca pratensis*	25	☐	FACU
7. *Taraxacum officinale*	20	☐	FACU
8. *Elymus repens*	10	☐	FACU
9. *Bromus inermis*	10	☐	UPL
10.	0	☐	
11.	0	☐	
12.	0	☐	
	305	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	155	x 4 =	620
UPL species	100	x 5 =	500
Column Totals:	305 (A)		1220 (B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-14	10YR	3/3	100	-	-	-	-	-	Sandy Loam	
14-20	10YR	4/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 27-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP12**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** convex **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97022 **Long.:** -91.63720 **Datum:** WGS84

Soil Map Unit Name: Merrillan Sandy Loam, 1 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document typical upland conditions in this portion of the study area, although no wetlands or wetland indicator soils are mapped in this area. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP12

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	60	☑	UPL
2. *Chenopodium album*	25	☑	FACU
3. *Bromus inermis*	25	☑	UPL
4. *Taraxacum officinale*	15	☐	FACU
5. *Viola tricolor*	15	☐	UPL
6. *Erucastrum gallicum*	15	☐	UPL
7. *Silene pratensis*	5	☐	UPL
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	160	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	40	x 4 =	160	
UPL species	120	x 5 =	600	
Column Totals:	160	(A)	760	(B)

Prevalence Index = B/A = 4.750

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-8	10YR	3/3	100	-	-	-	-	-	Sandy Loam	
8-20	10YR	4/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 27-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP13**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Swale **Local relief (concave, convex, none):** linear **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96431 **Long.:** -91.63429 **Datum:** WGS84

Soil Map Unit Name: Arland Sandy Loam, 6 to 12% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document typical upland conditions in this portion of the study area. No disturbances were observed and the area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP13

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	70	☑	FAC
2. *Pinus resinosa*	30	☑	FACU
3. *Quercus rubra*	30	☑	FACU
4. *Quercus alba*	20	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
	150	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer rubrum*	10	☑	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	10	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Maianthemum canadense*	20	☑	FACU
2. *Viburnum acerifolium*	15	☑	UPL
3. *Rubus allegheniensis*	15	☑	FACU
4. *Quercus alba*	10	☐	FACU
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	60	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 28.6% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	125	x 4 =	500
UPL species	15	x 5 =	75
Column Totals:	220 (A)		815 (B)

Prevalence Index = B/A = 3.705

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-2	10YR	2/2	100	-	-	-	-	-	Fine Sandy Loam	
2-18	10YR	4/3	100	-	-	-	-	-	Fine Sandy Loam	
18-20	10YR	4/4	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 27-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP14**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** linear **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96804 **Long.:** -91.63300 **Datum:** WGS84

Soil Map Unit Name: Elkmound Loam, 20 to 45% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document typical upland conditions in this portion of the study area, although no wetlands or wetland indicator soils are mapped in this area. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP14

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	60	☑	UPL
2. *Oxalis stricta*	50	☑	FACU
3. *Taraxacum officinale*	20	☐	FACU
4. *Silene vulgaris*	15	☐	UPL
5. *Erigeron strigosus*	10	☐	FACU
6. *Chenopodium album var. album*	10	☐	FACU
7. *Barbarea vulgaris*	5	☐	FAC
8. *Capsella bursa-pastoris*	5	☐	FACU
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	175	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	5	x 3 =	15	
FACU species	95	x 4 =	380	
UPL species	75	x 5 =	375	
Column Totals:	175	(A)	770	(B)

Prevalence Index = B/A = 4.400

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	3/2	100	-	-	-	-	-	Silt Loam	
6-20	10YR	4/4	100	-	-	-	-	-	Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 27-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP15**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** linear **Slope:** 1.0 % / 0.6 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96813 **Long.:** -91.64091 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 6 to 12% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document typical upland conditions in this portion of the study area. No disturbances were observed and the area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP15

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Cornus racemosa*	3	☐	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	3	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Solidago canadensis*	80	☑	FACU
2. *Rubus allegheniensis*	20	☐	FACU
3. *Bromus inermis*	20	☐	UPL
4. *Cornus racemosa*	5	☐	FAC
5. *Achillea millefolium*	5	☐	FACU
6. *Eurybia macrophylla*	5	☐	UPL
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	135	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	8	x 3 =	24	
FACU species	105	x 4 =	420	
UPL species	25	x 5 =	125	
Column Totals:	138	(A)	569	(B)

Prevalence Index = B/A = 4.123

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree or vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	100	-	-	-	-	-	Fine Sandy Loam	
7-9	10YR	3/3	100	-	-	-	-	-	Fine Sandy Loam	
9-20	10YR	4/4	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 29-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP16**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** convex **Slope:** 10.0 % / 5.7 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97240 **Long.:** -91.63309 **Datum:** WGS84

Soil Map Unit Name: Chetek-Mahtomedi Complex, 12 to 25% slopes, Eroded **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document typical upland conditions in this portion of the study area. No disturbances were observed and the area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP16

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	90	☑	FAC
2. *Quercus alba*	30	☑	FACU
3. *Quercus ellipsoidalis*	20	☐	UPL
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	140	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Acer rubrum*	2	☐	FAC
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	2	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Impatiens capensis*	60	☑	FACW
2. *Geranium maculatum*	20	☑	FACU
3. *Circaea canadensis*	15	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	95	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	60	x 2 =	120	
FAC species	92	x 3 =	276	
FACU species	65	x 4 =	260	
UPL species	20	x 5 =	100	
Column Totals:	237	(A)	756	(B)

Prevalence Index = B/A = 3.190

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed. A dense herbaceous cover of Impatiens capensis was observed in this area as well as several other areas on this property that were ultimately determined to be upland. The other vegetation observed is indicative of uplands, soils did not show any indications of hydric conditions and no hydrology indicators were observed despite wetter than normal conditions. Best professional judgment was used to identify this area and others as upland despite a thick herbaceous layer of Impatiens.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-6	10YR	2/2	100	-	-	-	-	-	Fine Sandy Loam	
6-20	10YR	4/6	100	-	-	-	-	-	Fine Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 29-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP17**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 19 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Terrace **Local relief (concave, convex, none):** linear **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97037 **Long.:** -91.63096 **Datum:** WGS84

Soil Map Unit Name: Plainbo Loamy Sand, 6 to 12% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document typical upland conditions in this portion of the study area. No disturbances were observed and the area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):		
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?**	Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP17

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	60	☑	FAC
2. *Pinus banksiana*	60	☑	FACU
3. *Quercus rubra*	20	☐	FACU
4. *Ulmus americana*	10	☐	FACW
5.	0	☐	
6.	0	☐	
7.	0	☐	
	150	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera tatarica*	10	☑	FACU
2. *Ilex verticillata*	10	☑	FACW
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	20	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Carex pensylvanica*	60	☑	UPL
2. *Circaea canadensis*	20	☑	FACU
3. *Rubus allegheniensis*	10	☐	FACU
4. *Lonicera tatarica*	10	☐	FACU
5. *Parthenocissus quinquefolia*	10	☐	FACU
6. *Quercus rubra*	5	☐	FACU
7. *Viburnum acerifolium*	5	☐	UPL
8. *Ilex verticillata*	5	☐	FACW
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	125	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	25	x 2 =	50	
FAC species	60	x 3 =	180	
FACU species	145	x 4 =	580	
UPL species	65	x 5 =	325	
Column Totals:	295	(A)	1135	(B)

Prevalence Index = B/A = 3.847

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	100	-	-	-	-	-	Sandy Loam	
7-11	10YR	4/4	100	-	-	-	-	-	Sandy Loam	
11-20	10YR	5/6	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 29-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP18**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 19 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Swale **Local relief (concave, convex, none):** concave **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97052 **Long.:** -91.63221 **Datum:** WGS84

Soil Map Unit Name: Menhaga Loamy Sand, 6 to 12% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document typical upland conditions in this portion of the study area. No disturbances were observed and the area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP18

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus americana*	30	☑	FACU
2. *Prunus serotina*	20	☑	FACU
3. *Pinus strobus*	20	☑	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Fraxinus americana*	15	☑	FACU
2. *Quercus rubra*	10	☑	FACU
3. *Corylus cornuta*	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	30	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Parthenocissus quinquefolia*	50	☑	FACU
2. *Carex pensylvanica*	30	☑	UPL
3. *Potentilla simplex*	20	☐	FACU
4. *Leucanthemum vulgare*	5	☐	UPL
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	105	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	170	x 4 =	680
UPL species	35	x 5 =	175
Column Totals:	205 (A)		855 (B)

Prevalence Index = B/A = 4.171

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		Matrix %	Redox Features Color (moist)		Redox Features %	Type [1]	Loc[2]	Texture	Remarks
0-16	10YR	4/3	100	-	-	-	-	-	Sandy Loam	
16-20	10YR	4/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 29-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP19**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 19 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Swale **Local relief (concave, convex, none):** concave **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96782 **Long.:** -91.62853 **Datum:** WGS84

Soil Map Unit Name: Menhaga Loamy Sand, 0 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ◉ No ○

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document typical upland conditions in this portion of the study area. No disturbances were observed and the area was considered to have normal circumstances.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP19

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Bromus inermis*	60	☑	UPL
2. *Danthonia spicata*	50	☑	UPL
3. *Solidago missouriensis*	20	☐	UPL
4. *Populus tremula*	15	☐	FAC
5. *Plantago major*	10	☐	FACU
6. *Ambrosia artemisiifolia*	10	☐	FACU
7. *Rudbeckia hirta*	5	☐	FACU
8. *Dichanthelium depauperatum*	5	☐	UPL
9. *Oxalis stricta*	5	☐	FACU
10. *Tragopogon dubius*	5	☐	UPL
11. *Phleum pratense*	5	☐	FACU
12. *Euphorbia corollata*	5	☐	UPL
	195	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	15	x 3 =	45	
FACU species	35	x 4 =	140	
UPL species	145	x 5 =	725	
Column Totals:	195	(A)	910	(B)

Prevalence Index = B/A = 4.667

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	4/3	100	-	-	-	-	-	Sandy Loam	
7-20	10YR	5/4	100	-	-	-	-	-	Loamy Sand	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 27-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP20**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** linear **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97052 **Long.:** -91.63066 **Datum:** WGS84

Soil Map Unit Name: Oesterle Loam, 0 to 2% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions in an area mapped as having wetland indicator soils. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP20

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	60	☑	UPL
2. *Capsella bursa-pastoris*	10	☐	FACU
3. *Cerastium fontanum*	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	75	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	15	x 4 =	60	
UPL species	60	x 5 =	300	
Column Totals:	75	(A)	360	(B)

Prevalence Index = B/A = 4.800

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/3	100	-	-	-	-	-	Silt Loam	
7-10	10YR	3/4	100	-	-	-	-	-	Loam	
10-20	10YR	4/4	100	-	-	-	-	-	Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 27-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP21**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** linear **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.97011 **Long.:** -91.63162 **Datum:** WGS84

Soil Map Unit Name: Rosholt Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions in an area mapped as having wetland indicator soils. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP21

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	**= Total Cover**	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	60	☑	UPL
2. *Taraxacum officinale*	5	☐	FACU
3. *Cerastium fontanum*	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	70	**= Total Cover**	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	**= Total Cover**	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	10	x 4 =	40	
UPL species	60	x 5 =	300	
Column Totals:	70	(A)	340	(B)

Prevalence Index = B/A = 4.857

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-14	10YR	3/2	100	-	-	-	-	-	Sandy Loam	
14-20	10YR	3/3	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 27-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP22**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 29 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Footslope **Local relief (concave, convex, none):** linear **Slope:** 2.0 % / 1.1 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96766 **Long.:** -91.62845 **Datum:** WGS84

Soil Map Unit Name: Oesterle Loam, 0 to 2% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ **(If no, explain in Remarks.)**

Are Vegetation ☑ **, Soil** ☑ **, or Hydrology** ☐ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?**	Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉		
Wetland Hydrology Present?	Yes ○ No ◉		

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions in an area mapped as having wetland indicator soils. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were within normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP22

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	60	☑	UPL
2. *Taraxacum officinale*	5	☐	FACU
3. *Cerastium fontanum*	5	☐	FACU
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	70	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	0.0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	10	x 4 =	40	
UPL species	60	x 5 =	300	
Column Totals:	70	(A)	340	(B)

Prevalence Index = B/A = 4.857

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-7	10YR	3/2	100	-	-	-	-	-	Sandy Loam	
7-20	10YR	4/4	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Northern Sands Wisconsin - Phase I Mine **City/County:** Town of Howard, Chippewa Co. **Sampling Date:** 20-Jun-18

Applicant/Owner: Northern Sands Wisconsin, LLC **State:** WI **Sampling Point:** **SP23**

Investigator(s): Ann Key, WDNR Prof. Assured Delin. **Section, Township, Range: S.** 30 **T.** 29N **R.** 10W

Landform (hillslope, terrace, etc.): Sideslope **Local relief (concave, convex, none):** linear **Slope:** 5.0 % / 2.9 °

Subregion (LRR or MLRA): LRR K **Lat.:** 44.96628 **Long.:** -91.64911 **Datum:** WGS84

Soil Map Unit Name: Eleva Sandy Loam, 2 to 6% slopes **NWI classification:** Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ○ No ◉ **(If no, explain in Remarks.)**

Are Vegetation ☐ **, Soil** ☑ **, or Hydrology** ☑ **significantly disturbed?** **Are "Normal Circumstances" present?** Yes ○ No ◉

Are Vegetation ☐ **, Soil** ☐ **, or Hydrology** ☐ **naturally problematic?** **(If needed, explain any answers in Remarks.)**

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks: (Explain alternative procedures here or in a separate report.)

This sample plot was taken to document upland conditions in area that had wetness signatures on some crop slides reviewed. Wetness indicators were only observed in 20% of normal precipitation years, no wetland mapping or wetland indicator soils were identified. This area is considered to have significantly disturbed vegetation and soils due to planting of soybean crops and recent tilling of soils. Volunteer vegetation was observed and was comprised primarily of non-hydrophytic species, soils were not hydric and no hydrology indicators were observed.

Hydrology

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of 2 required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○ No ◉	Depth (inches):	
Water Table Present?	Yes ○ No ◉	Depth (inches):	**Wetland Hydrology Present?** Yes ○ No ◉
Saturation Present? (includes capillary fringe)	Yes ○ No ◉	Depth (inches):	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches but then no significant rain events to follow. Based on this information and site observations, best professional judgment was applied to determine that on this date hydrologic conditions were wetter than normal. No hydrology indicators were observed in this area.

VEGETATION - Use scientific names of plants.

Sampling Point: SP23

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
5.	0	☐	
6.	0	☐	
7.	0	☐	
	0	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. *Glycine max*	50	☑	UPL
2. *Cyperus esculentus*	20	☑	FACW
3. *Ambrosia artemisiifolia*	20	☑	FACU
4. *Erigeron strigosus*	10	☐	FACU
5. *Potentilla simplex*	5	☐	FACU
6. *Hieracium canadense*	5	☐	UPL
7.	0	☐	
8.	0	☐	
9.	0	☐	
10.	0	☐	
11.	0	☐	
12.	0	☐	
	110	= Total Cover	

Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐	
2.	0	☐	
3.	0	☐	
4.	0	☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of dominant Species That Are OBL, FACW, or FAC:	33.3%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	20	x 2 =	40	
FAC species	0	x 3 =	0	
FACU species	35	x 4 =	140	
UPL species	55	x 5 =	275	
Column Totals:	110	(A)	455	(B)

Prevalence Index = B/A = 4.136

Hydrophytic Vegetation Indicators:

- ☐ **Rapid Test for Hydrophytic Vegetation**
- ☐ **Dominance Test is > 50%**
- ☐ **Prevalence Index is ≤3.0** [1]
- ☐ **Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Definitions of Vegetation Strata:

Tree - Woody plants, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall..

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

No tree, shrub or vine layer was observed. Vegetation is considered to be significantly disturbed due to planted crops but several volunteer species were observed and consisted primarily of non-hydrophytic species.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: SP23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type [1]	Loc[2]	Texture	Remarks
0-9	10YR	4/3	100	-	-	-	-	-	Sandy Loam	
9-20	10YR	4/6	100	-	-	-	-	-	Sandy Loam	

[1] Type: C=Concentration. D=Depletion. RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining. M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR R, MLRA 149B)
- ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)
- ☐ Loamy Mucky Mineral (F1) LRR K, L)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils : [3]

- ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- ☐ Coast Prairie Redox (A16) (LRR K, L, R)
- ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- ☐ Dark Surface (S7) (LRR K, L, M)
- ☐ Polyvalue Below Surface (S8) (LRR K, L)
- ☐ Thin Dark Surface (S9) (LRR K, L)
- ☐ Iron-Manganese Masses (F12) (LRR K, L, R)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149B)
- ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Soils are considered significantly disturbed due to recent tilling associated with cropping. However, a full soil profile was observed with minimal or no mixing. No redoximorphic features or depleted soils were observed. Soils do not meet hydric soil indicators.

APPENDIX B – ANTECEDENT PRECIPITATION EVALUATION, WETS DATA and PALMER DROUGHT INDEX REPORTS

Antecedent Precipitation Evaluation

Project Name: Northern Sands Wisconsin, LLC – Mine Phase I

Date: 06-19-18 through 06-28-18

Weather Station: Eau Claire Regional AP

Client: Northern Sands Wisconsin, LLC

County: Chippewa State: WI

		Long-term Rainfall Records							
	Month	3 yrs in 10 less than	Average	3 yrs in 10 more than	Rain fall	Conditions, dry, wet, normal	Condition value	Month Weight Value	Produce of previous two columns
1st prior month*	May	2.56	3.69	4.39	3.04	Normal	2	3	6
2nd prior month*	April	1.98	2.91	3.47	1.59	Dry	1	2	2
3rd prior month*	March	1.11	1.86	2.26	0.93	Dry	1	1	1

Note: If sum is

6 – 9	then prior period has been drier than normal
10 – 14	then prior period has been normal
15 – 18	then prior period has been wetter than normal

Condition Value:

Dry	= 1
Normal	= 2
Wet	= 3

Precipitation data from the Eau Claire Regional AP WETS station indicates climatic conditions were drier than normal at the time of the site visit. The Palmer Drought Index was evaluated for the period of the field visits as well and indicated conditions were with normal (Mid-Range -1.99 to +1.99) during all site visits. A significant amount of rainfall was recorded in the 2 days prior to and the first day of the site visits totaling 3.13 inches. Based on this information and observations of very heavy precipitation, best professional judgment was applied to determine that **the first several days of the field evaluation were wetter than normal and the latter evaluation days were within normal.**

WETS Table

WETS Station: EAU CLAIRE REGIONAL AP, WI								
Requested years: 1971 - 2000								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	21.2	2.4	11.8	1.04	0.65	1.25	3	13.8
Feb	28.3	8.7	18.5	0.80	0.44	0.98	3	7.6
Mar	40.4	20.9	30.7	1.86	1.11	2.26	5	9.1
Apr	56.6	33.4	45.0	2.91	1.98	3.47	6	2.3
May	70.2	45.7	57.9	3.69	2.56	4.39	7	0.0
Jun	78.5	55.0	66.8	4.32	3.03	5.12	8	0.0
Jul	82.6	60.2	71.4	3.94	2.73	4.68	7	0.0
Aug	79.9	58.1	69.0	4.68	3.31	5.55	7	0.0
Sep	70.4	48.4	59.4	3.74	1.97	4.57	6	0.0
Oct	57.9	36.6	47.3	2.24	1.39	2.70	5	0.3
Nov	40.0	23.5	31.8	1.93	0.96	2.36	4	6.3
Dec	25.9	9.2	17.6	1.05	0.67	1.27	3	10.8
Annual:					28.67	35.14		
Average	54.3	33.5	43.9	-	-	-	-	-
Total	-	-	-	32.19			65	50.2

GROWING SEASON DATES			
Years with missing data:	24 deg = 0	28 deg = 0	32 deg = 0
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 30	28 deg = 30	32 deg = 30
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	4/14 to 10/22: 191 days	4/26 to 10/6: 163 days	5/7 to 9/29: 145 days
70 percent *	4/10 to 10/26: 199 days	4/23 to 10/10: 170 days	5/3 to 10/3: 153 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1949										4.29	0.62	0.87	5.78
1950	1.75	0.53	2.29	M2.76	2.66	2.40	3.91	2.35	1.68	0.92	0.88	1.39	23.52
1951	0.45	2.16	3.32	3.33	2.69	6.17	4.25	3.11	3.78	2.67	1.85	1.10	34.88
1952	1.62	0.69	1.12	1.19	3.83	4.73	2.30	4.76	0.46	0.05	0.98	0.27	22.00
1953	0.63	1.75	1.80	3.71	2.38	5.01	3.95	3.20	1.08	0.22	2.11	1.84	27.68
1954	0.29	0.46	1.51	7.07	3.23	6.20	4.39	2.60	6.96	2.12	0.64	0.30	35.77
1955	0.37	0.60	1.27	2.84	3.43	2.17	5.80	4.82	0.71	2.85	0.84	0.81	26.51
1956	0.42	0.12	1.75	1.51	3.73	6.33	2.19	5.52	1.16	1.48	1.04	0.22	25.47
1957	0.14	0.37	0.69	0.71	4.08	2.80	2.97	4.54	1.	1.	1.	0.	22.

									72	45	93	72	12
1958	0.11	0.06	0.34	3.53	4.06	2.37	4.55	2.78	3.26	1.69	1.24	0.06	24.05
1959	0.16	0.46	0.61	2.02	4.13	3.68	5.30	5.72	4.30	2.94	0.38	2.22	31.92
1960	0.41	0.29	0.25	1.96	5.28	3.40	1.11	4.78	3.09	2.06	1.79	0.64	25.06
1961	0.10	0.86	1.94	2.21	3.06	4.60	2.70	2.88	3.84	2.49	1.52	0.69	26.89
1962	0.62	1.22	1.16	2.03	5.83	3.32	2.54	8.29	3.83	1.29	0.36	0.50	30.99
1963	0.81	0.57	1.48	2.46	5.15	3.42	2.93	3.98	4.05	1.49	1.18	0.51	28.03
1964	0.23	0.04	1.66	2.66	2.63	1.66	1.16	2.03	6.21	0.53	1.71	0.86	21.38
1965	0.39	1.11	2.18	3.34	4.92	3.88	5.54	3.66	4.37	0.76	1.84	2.59	34.58
1966	1.05	0.69	1.96	1.01	1.65	4.50	4.16	5.12	1.93	3.27	0.37	1.17	26.88
1967	3.47	1.52	1.30	5.20	1.16	7.14	1.68	6.04	3.32	2.02	0.17	0.29	33.31
1968	1.08	0.17	1.34	4.06	5.15	6.08	6.94	1.78	5.44	3.45	1.27	2.60	39.36
1969	3.37	0.04	1.25	1.30	3.85	4.35	4.78	0.81	0.89	3.22	0.76	1.72	26.34
1970	0.62	0.14	1.11	1.55	5.25	3.52	5.93	2.67	5.84	5.64	3.02	0.52	35.81
1971	2.38	1.76	0.53	1.78	4.25	3.80	5.89	2.86	3.80	3.26	1.98	1.63	33.92
1972	1.20	0.58	1.74	2.75	1.50	3.56	5.93	4.48	5.07	3.47	2.13	2.44	34.85
1973	0.62	0.77	3.01	5.41	9.16	3.13	2.54	2.75	4.14	3.25	1.25	0.93	36.96
1974	0.51	0.86	1.76	3.52	4.47	4.48	0.94	2.33	1.03	1.65	0.68	0.58	22.81
1975	1.30	0.59	1.26	6.06	5.28	7.50	1.15	9.61	5.03	1.08	5.40	1.16	45.42
1976	0.96	0.44	3.21	2.87	1.22	3.10	2.69	1.62	0.19	0.29	0.07	0.56	17.22
1977	0.48	0.65	4.22	4.53	4.02	4.07	5.34	5.48	3.84	2.16	1.10	1.51	37.40
1978	0.26	0.13	0.29	4.34	2.83	4.51	5.43	3.93	8.79	0.62	1.39	1.08	33.60
1979	1.03	0.75	2.49	1.81	4.58	5.14	4.42	4.70	0.43	5.23	1.77	0.37	32.72
1980	1.38	0.35	0.68	1.46	2.70	6.60	2.83	11.64	5.53	1.99	0.33	0.30	35.79
1981	0.10	2.36	0.96	3.06	3.88	5.22	3.60	5.53	1.71	2.46	0.45	0.88	30.21
1982	1.74	0.23	2.70	2.89	4.62	2.12	2.97	2.31	5.23	3.39	2.26	1.54	32.00
1983	1.28	0.60	1.39	2.36	4.94	1.00	4.70	5.40	4.24	2.21	3.77	0.98	32.87
1984	0.56	1.99	0.76	3.99	2.58	2.92	5.58	3.73	3.55	5.40	0.84	2.46	34.36
1985	0.48	0.96	2.50	1.74	1.34	1.71	2.75	4.86	5.49	2.90	1.70	0.86	27.29
1986	0.51	0.56	1.91	3.62	2.51	5.85	5.62	3.40	10.85	3.48	0.95	0.34	39.60
1987	0.67	0.09	0.82	0.65	3.79	2.20	8.54	4.30	1.42	2.15	3.20	1.04	28.87
1988	0.85	0.14	1.05	1.67	2.34	1.59	1.08	4.61	4.27	0.80	2.16	1.20	21.76
1989	0.61	0.58	1.88	1.18	4.42	4.38	3.88	5.35	1.25	0.87	1.67	0.32	26.39
1990	0.80	0.96	2.42	3.37	5.11	10.42	4.06	8.49	1.35	2.13	0.41	1.49	41.01
1991	0.56	0.88	2.60	3.77	6.01	2.94	3.67	1.66	3.	1.	7.	1.	36.

									37	80	52	49	27
1992	0.90	0.64	2.09	3.15	0.79	2.47	4.16	2.39	3.90	1.33	2.61	1.39	25.82
1993	0.99	0.29	1.71	3.20	4.59	6.61	2.73	6.66	2.91	1.54	1.66	1.06	33.95
1994	1.50	0.99	0.37	5.18	1.29	3.96	2.74	3.17	5.05	1.26	1.76	0.64	27.91
1995	0.49	0.53	2.54	2.15	3.44	3.57	4.47	9.10	2.05	4.02	1.55	0.91	34.82
1996	2.07	0.49	1.81	1.32	2.66	5.03	3.61	4.24	1.93	3.36	3.54	1.86	31.92
1997	2.00	0.41	1.62	0.88	2.42	3.92	7.62	5.70	3.35	2.07	0.42	0.26	30.67
1998	1.58	2.36	6.03	1.18	4.00	4.16	1.13	4.10	1.59	1.10	1.36	0.49	29.08
1999	1.68	1.03	0.65	5.20	5.96	3.87	4.26	3.59	1.00	0.93	1.05	0.37	29.59
2000	1.58	1.17	0.86	2.17	4.06	9.64	3.76	2.38	9.88	0.85	2.98	1.36	40.69
2001	1.04	1.06	0.93	5.39	5.08	5.26	4.22	5.28	2.73	2.02	2.48	1.53	37.02
2002	0.59	1.49	2.87	4.07	2.84	6.79	2.52	6.60	6.72	4.17	0.07	0.65	39.38
2003	0.32	0.64	2.05	3.42	4.46	2.96	3.58	0.30	2.14	1.26	1.77	1.13	24.03
2004	0.65	2.29	2.73	1.51	6.28	2.74	2.36	2.90	3.36	4.23	1.60	0.91	31.56
2005	1.00	0.88	1.77	2.01	2.42	6.94	2.35	1.54	3.82	1.04	2.01	0.37	26.15
2006	1.10	0.44	2.97	2.03	2.70	1.82	1.83	6.34	3.02	2.21	2.01	2.27	28.74
2007	0.41	1.21	2.99	1.32	2.06	1.97	3.56	5.59	4.72	4.54	0.08	1.83	30.28
2008	0.77	0.94	1.62	4.15	3.74	4.41	4.86	2.53	1.86	1.43	1.24	1.63	29.18
2009	0.42	0.68	0.86	2.30	2.01	3.84	1.10	5.75	0.65	4.91	0.56	1.99	25.07
2010	0.89	0.37	0.48	2.88	1.65	4.81	7.66	5.60	7.35	0.58	2.24	1.83	36.34
2011	0.80	1.06	2.57	2.80	3.28	7.23	7.42	2.30	1.67	1.01	0.55	1.20	31.89
2012	0.54	1.82	1.54	3.27	4.58	3.73	1.60	2.06	1.01	1.53	0.70	1.85	24.23
2013	1.08	1.49	2.82	5.38	9.28	5.86	0.64	1.09	1.77	3.64	1.32	1.53	35.90
2014	1.58	1.62	0.73	6.09	4.08	9.84	2.44	6.29	5.46	2.43	1.74	0.68	42.98
2015	0.37	0.22	0.71	2.76	5.39	4.83	6.09	7.19	5.29	2.93	2.81	3.84	42.43
2016	0.42	0.74	4.66	2.56	3.81	6.29	3.51	4.84	8.20	2.72	1.17	2.10	41.02
2017	2.35	1.73	1.12	4.94	4.36	5.31	4.19	4.12	2.27	3.54	0.49	0.91	35.33
2018	1.26	1.20	0.93	1.59	3.04	4.18	M1.32						13.52

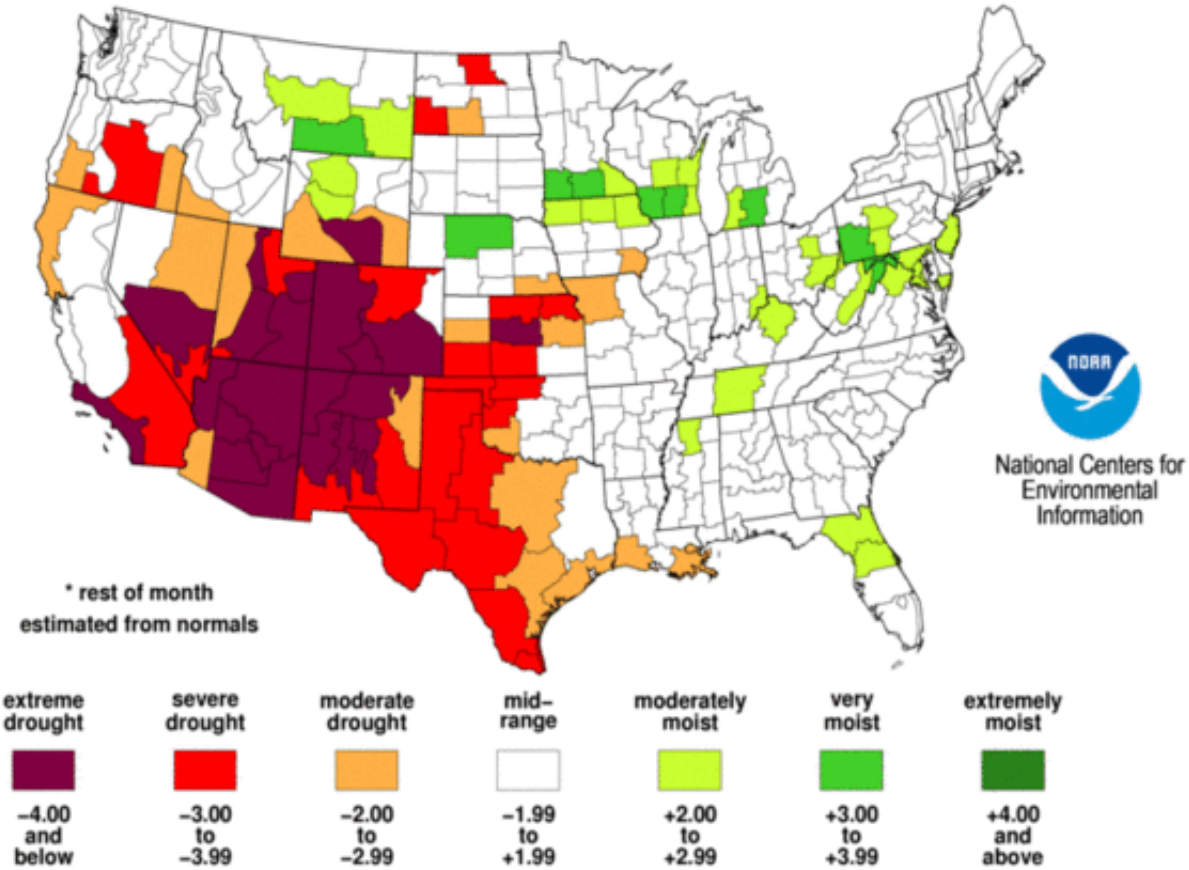
Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2016-07-22

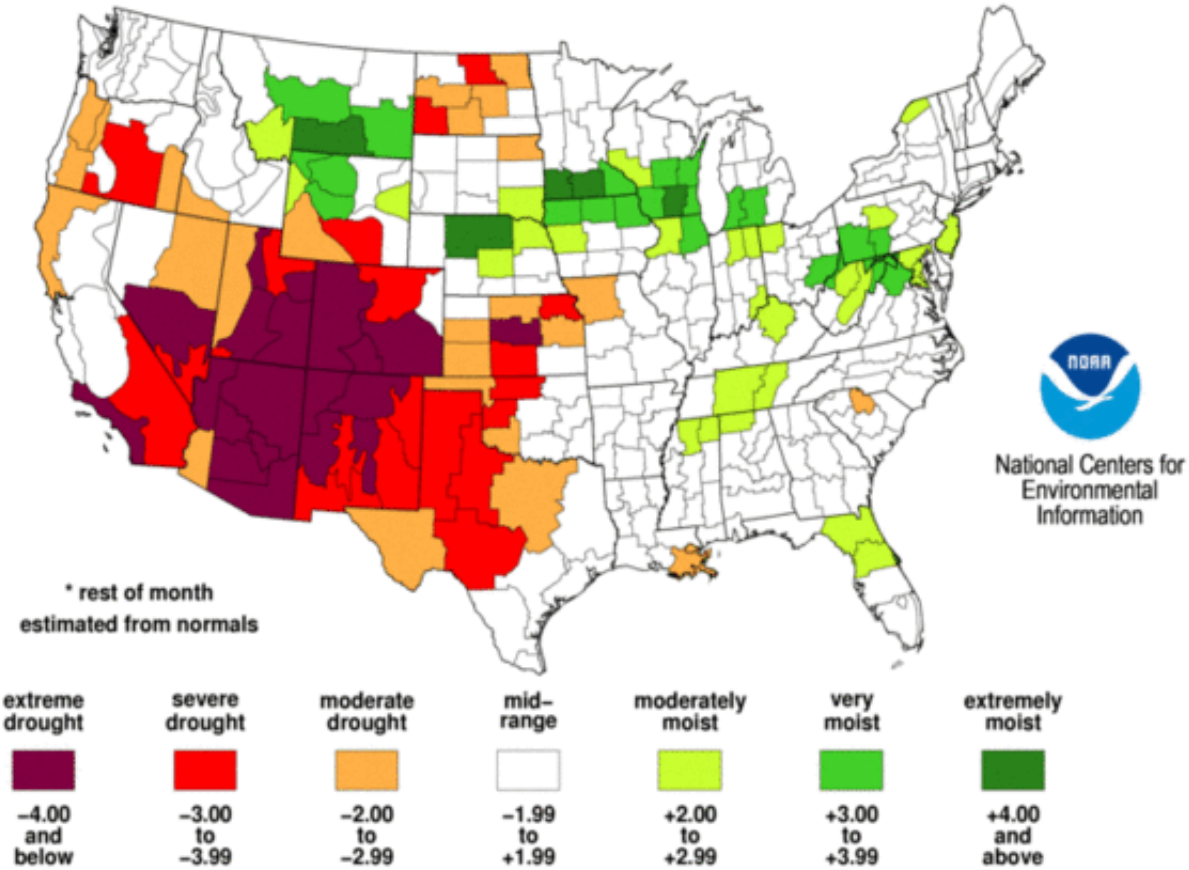
Palmer Drought Index
Long–Term (Meteorological) Conditions

June 2018: through June 16 2018*



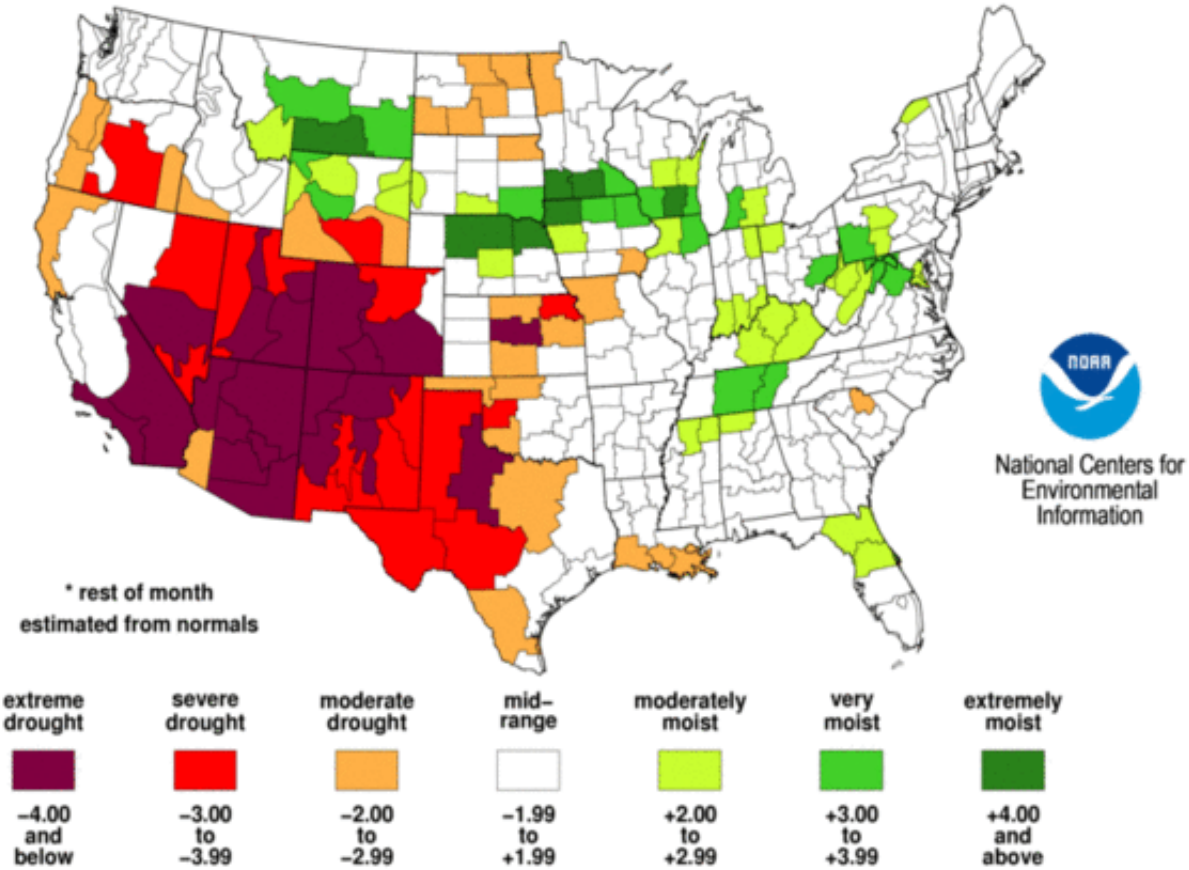
Palmer Drought Index
Long–Term (Meteorological) Conditions

June 2018: through June 23 2018*



Palmer Drought Index
Long–Term (Meteorological) Conditions

June 2018: through June 30 2018*



Climatological Data for EAU CLAIRE REGIONAL AP, WI - June 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-06-01	77	61	69.0	29	19	0.00	0.0	0
2018-06-02	64	52	58.0	18	8	0.36	0.0	0
2018-06-03	65	52	58.5	19	9	T	0.0	0
2018-06-04	82	48	65.0	25	15	0.00	0.0	0
2018-06-05	76	52	64.0	24	14	0.00	0.0	0
2018-06-06	77	56	66.5	27	17	0.34	0.0	0
2018-06-07	79	56	67.5	28	18	0.00	0.0	0
2018-06-08	70	60	65.0	25	15	T	0.0	0
2018-06-09	78	58	68.0	28	18	0.00	0.0	0
2018-06-10	79	60	69.5	30	20	0.00	0.0	0
2018-06-11	80	60	70.0	30	20	T	0.0	0
2018-06-12	78	64	71.0	31	21	0.01	0.0	0
2018-06-13	79	55	67.0	27	17	0.00	0.0	0
2018-06-14	82	55	68.5	29	19	T	0.0	0
2018-06-15	86	67	76.5	37	27	0.14	0.0	0
2018-06-16	85	69	77.0	37	27	T	0.0	0
2018-06-17	92	72	82.0	42	32	2.39	0.0	0
2018-06-18	78	67	72.5	33	23	0.62	0.0	0
2018-06-19	71	58	64.5	25	15	0.12	0.0	0
2018-06-20	80	64	72.0	32	22	0.00	0.0	0
2018-06-21	77	61	69.0	29	19	0.00	0.0	0
2018-06-22	80	57	68.5	29	19	0.00	0.0	0
2018-06-23	83	55	69.0	29	19	0.00	0.0	0
2018-06-24	84	57	70.5	31	21	0.00	0.0	0
2018-06-25	82	63	72.5	33	23	0.00	0.0	0
2018-06-26	74	62	68.0	28	18	0.20	0.0	0
2018-06-27	77	62	69.5	30	20	0.00	0.0	0
2018-06-28	86	60	73.0	33	23	0.00	0.0	0
2018-06-29	97	71	84.0	44	34	0.00	0.0	0
2018-06-30	92	71	81.5	42	32	T	0.0	0
Average|Sum	79.7	60.2	69.9	904	604	4.18	0.0	0.0

APPENDIX C – CROP SLIDE REVIEW AND CROP SLIDES/AERIAL PHOTOS

Wetland Hydrology from Aerial Imagery – Recording Form

Project Name: Northern Sands Wisconsin, LLC – Phase I Mine Date: 06/19/18 thru 06/28/18

Investigator: Ann Key County: Chippewa Legal Description: Sections 19, 20, 29 and 30, T29N, R10W

Summary Table

Date Image Taken (M-D-Y)	Image Source	Climate Condition (wet, dry, normal)[1]										
			A	B	C	D	E	F	G	H	I	J
5-1938	WHAIF	No WETS	WS	WS	WS	WS	WS	WS	NI	WS	---	NI
6-1981	FSA	Normal	WS	WS	NI	NC	WS	WS	WS	NC	NI	WS
7-1983	FSA	Normal	NI	NI	NI	NI	NI	NI	NI	NC	NI	WS
7-1985	FSA	Dry	WS	WS	WS	NI	NI	NI	NI	NC	NC	WS
6-1987	FSA	Normal	NI	NI	NI	NI	NI	NI	NI	NC	NI	NI
7-1989	FSA	Normal	NI	NI	NI	NI	NI	NI	CS	NC	WS	WS
7-1991	FSA	Normal	NI	NI	WS	NI	NI	NI	NI	NC	WS	NI
7-1995	FSA	Normal	NC	WS	NI	NI	NI	NI	NI	NC	NC	NI
7-1998	Google	Normal	WS	WS	NI	NI	NI	NI	WS	WS	WS	WS
6-2005	Google	Dry	NC	WS	WS	WS	WS	WS	NI	NI	WS	NI
6-2006	Google	Normal	WS	WS	NI	NI	NI	NI	NI	NI	NI	NI
6-2008	Google	Normal	WS	WS	WS	NI	NI	NI	WS	NI	WS	NC
5-2010	Google	Dry	NC	WS	NI	WS	NI	NI	WS	NI	WS	WS
6-2010	Google	Normal	NC	CS	NI	NI	NI	NI	NI	NI	NI	NI
10-2011	Google	Dry	NC	WS	WS	NI	NI	NI	NI	NI	NC	NC
4-2014	Google	Wet	WS	NI	WS	NI	NI	NI	WS	WS	WS	WS
5-2017	Google	Wet	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS
Normal Climate Condition			**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Number			10	10	10	10	10	10	10	10	10	10
Number with wet signatures			6	6	2	1	1	1	4	0	4	5
Percent with wet signatures			60%	60%	20%	10%	10%	10%	40%	0%	40%	50%

KEY		
WS - wetland signature	SS - soil wetness signature	CS - crop stress
NC - not cropped	AP - altered pattern	NV - normal vegetative cover
DO - drowned out	SW - standing water	NI – no indicator
Other labels or comments:	Due to limited crop slides and only 4 years of normal precipitation, an equal number of wet (5) and dry (5) years were evaluated.	

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Wetland Hydrology from Aerial Imagery – Recording Form

Project Name: Northern Sands Wisconsin, LLC – Phase I Mine Date: 06/19/18 thru 06/28/18 County: Chippewa

Investigator: Ann Key Legal Description: Sections 19, 20, 29 and 30, T29N, R10W

Use the Decision Matrix below to complete Table 1.

Hydric Soils present[1]	Identified on NWI or other wetland map[2]	Percent with wet signatures from Exhibit 1	Field verification required[3]	Wetland?
Yes	Yes	>50%	No	Yes
Yes	Yes	30-50%	No	Yes
Yes	Yes	<30%	Yes	Yes, if other hydrology indicators present
Yes	No	>50%	No	Yes
Yes	No	30-50%	Yes	Yes, if other hydrology indicators present
Yes	No	<30%	No	No
No	Yes	>50%	No	Yes
No	Yes	30-50%	No	Yes
No	Yes	<30%	No	No
No	No	>50%	Yes	Yes, if other hydrology indicators present
No	No	30-50%	Yes	Yes, if other hydrology indicators present
No	No	<30%	No	No

[1] The presence of hydric soils can be determined from the "Hydric Rating by Map Unit Feature" under "Land Classifications" from the Web Soil Survey. "Not Hydric" is the only category considered to not have hydric soils. Field sampling for the presence/absence of hydric soil indicators can be used in lieu of the hydric rating if appropriately documented by providing completed field datasheets.

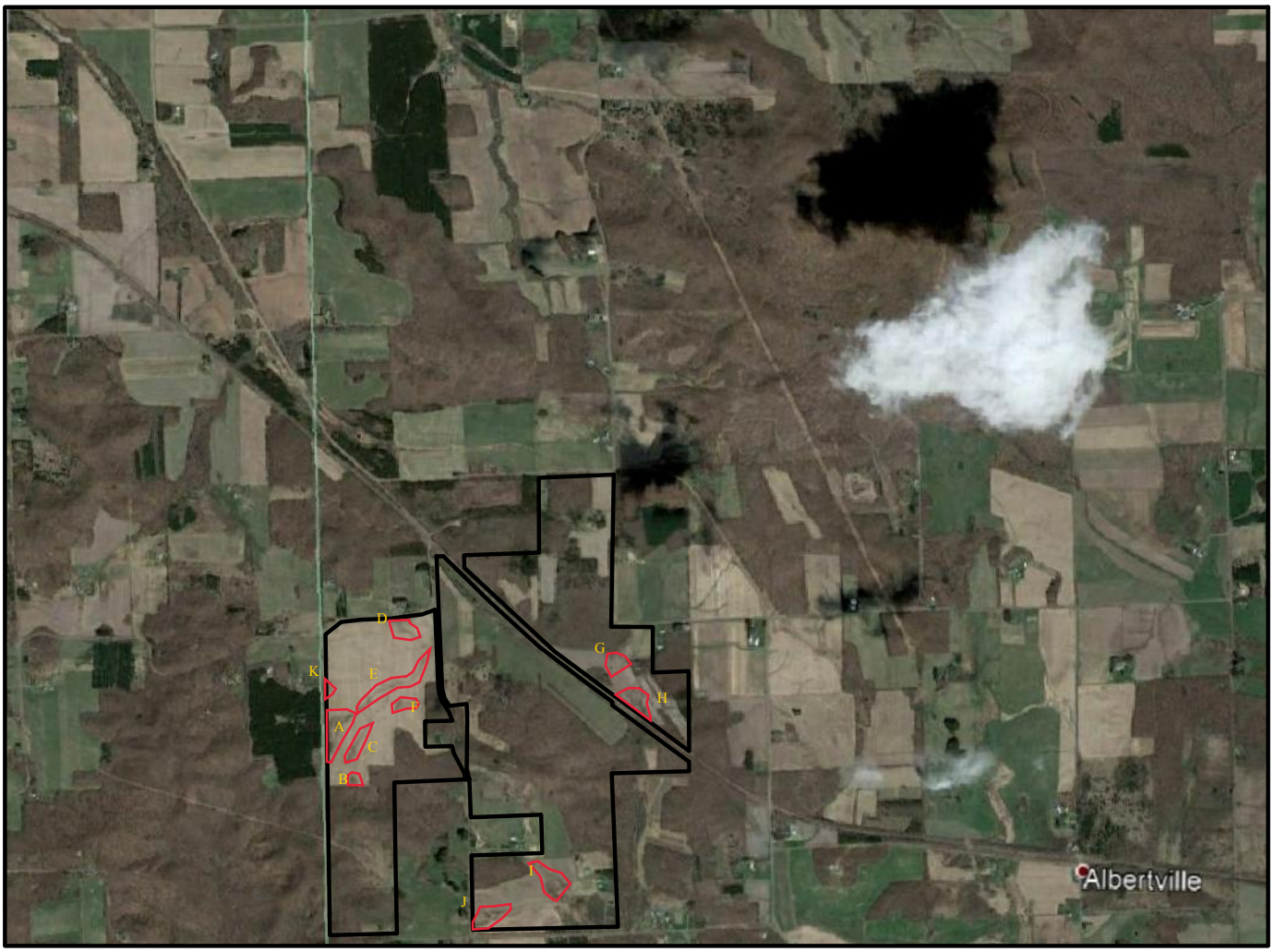
[2] At minimum, the most updated NWI data available for the area must be reviewed for this step. Any and all other local or regional wetland maps that are publically available should be reviewed.

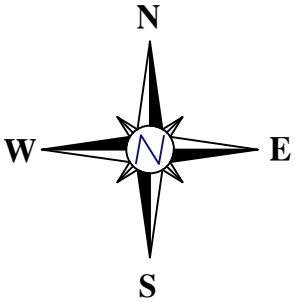
[3] Area should be reviewed in the field for the presence/absence of wetland hydrology indicators per the applicable 87 Manual Regional Supplement, including the D2 indicator (geomorphic position).

Table 1.

Area	Hydric Soils Present	Identified on NWI or other wetland map	Percent with wet signatures from Exhibit 1	Other hydrology indicators present[1]	Wetland?
A	Yes	Yes	60%	Yes	Yes
B	No	No	60%	Yes	Yes
C	No	No	20%	No	No
D	Yes	No	10%	No	No
E	No	No	10%	No	No
F	No	No	10%	No	No
G	Yes	No	40%	No	No
H	Yes	Yes	0%	Yes	Yes
I	Yes	Yes	40%	Yes	Yes
J	Yes	Yes	50%	Yes	Yes

[1] Answer "N/A" if field verification is not required and was not conducted.

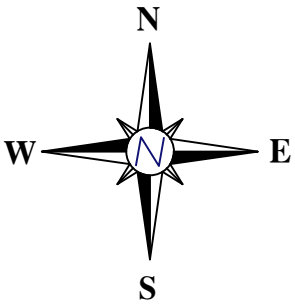




CROP SLIDE REVIEW REFERENCE MAP - 2017 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY,
WISCONSIN

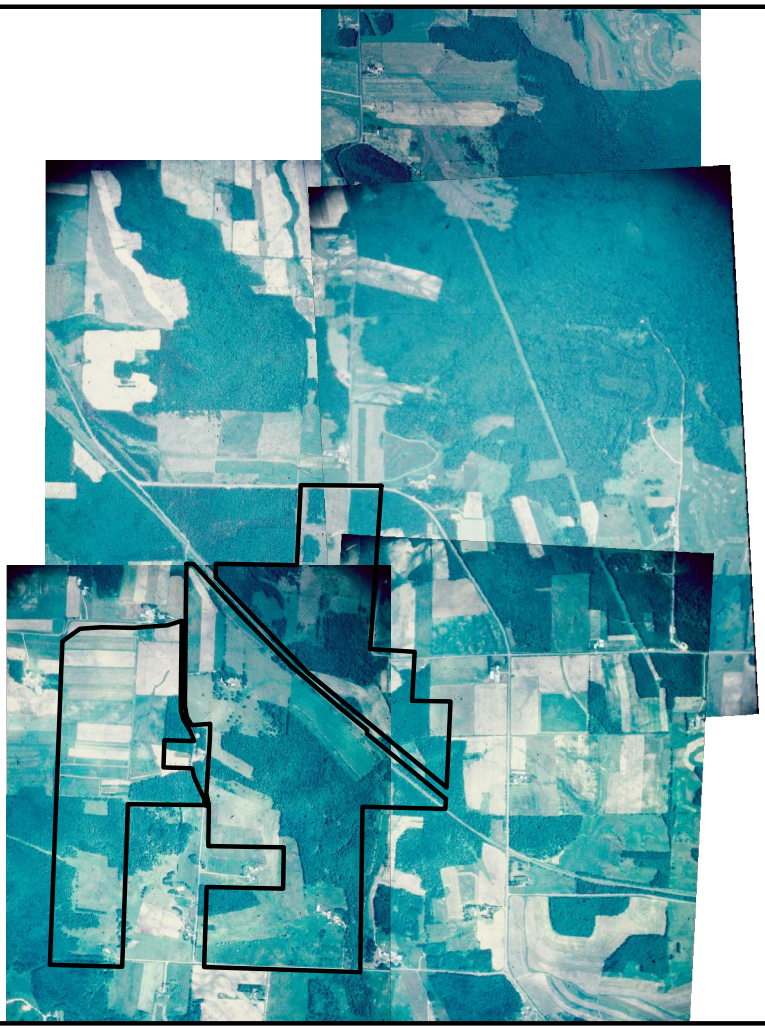
QUADRANGLE LOCATION

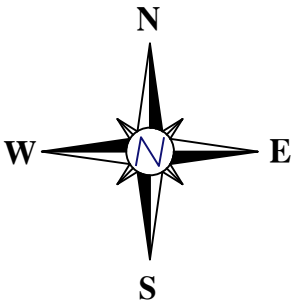


1938 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

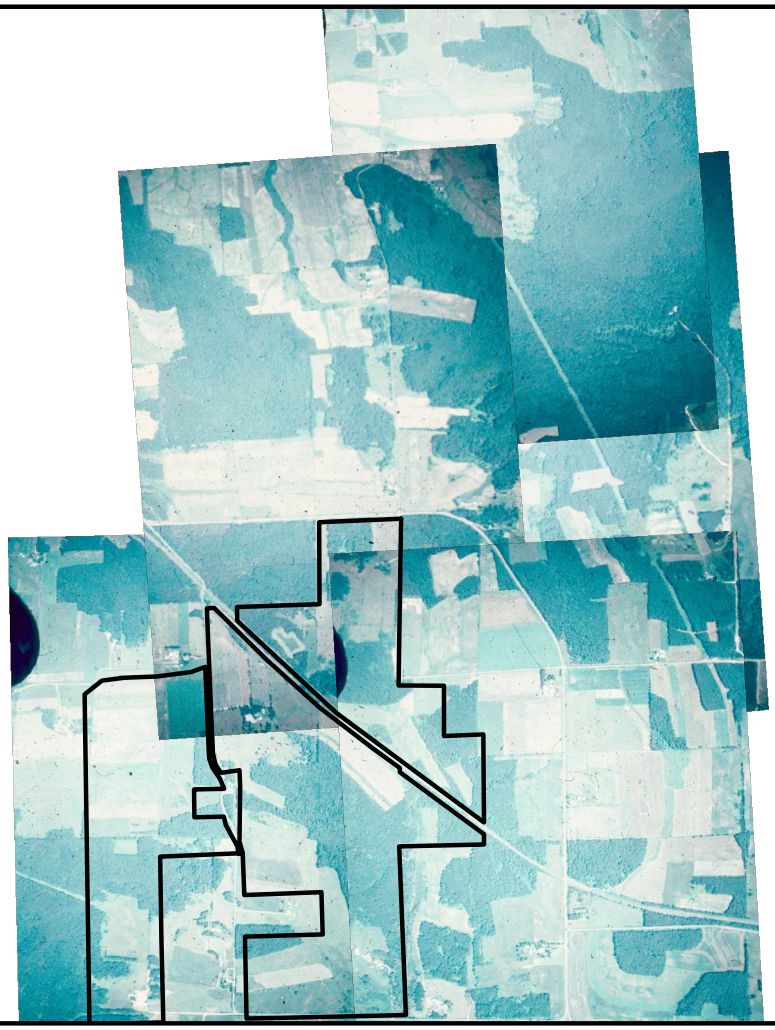


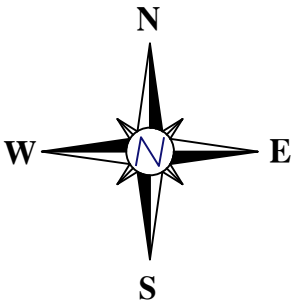


1981 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

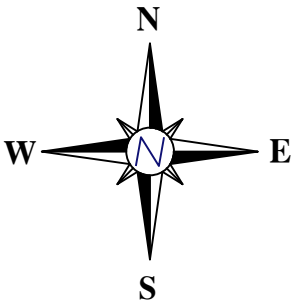




1983 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

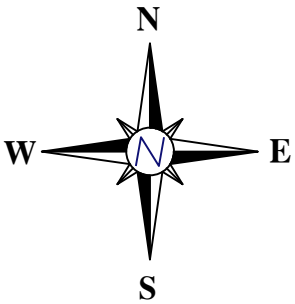
QUADRANGLE LOCATION



1985 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

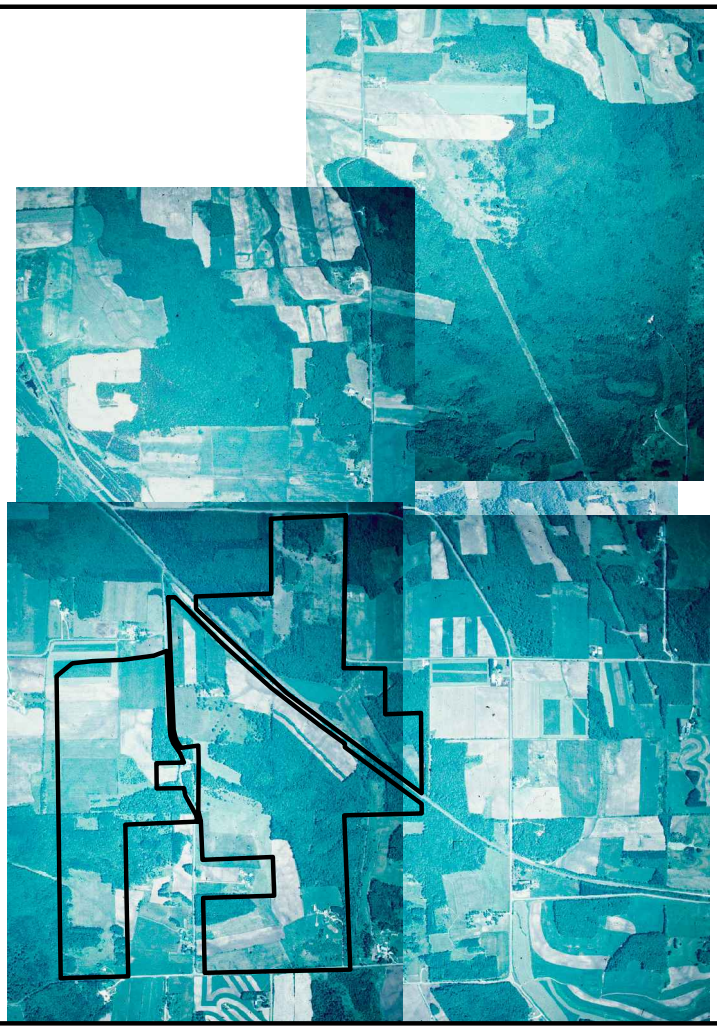
QUADRANGLE LOCATION

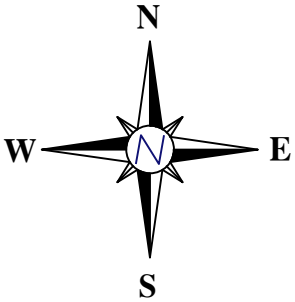


1987 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

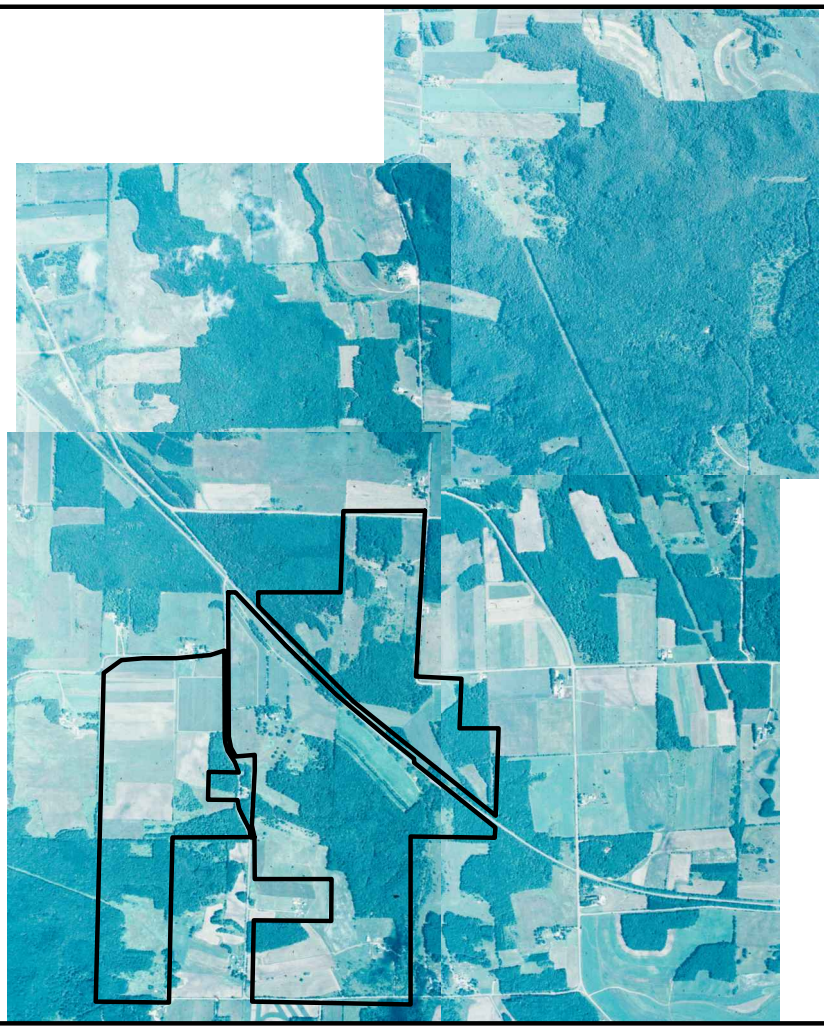


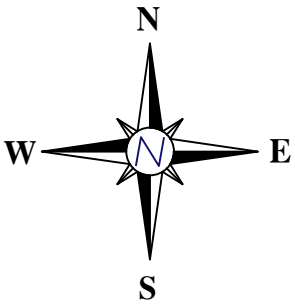


1989 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

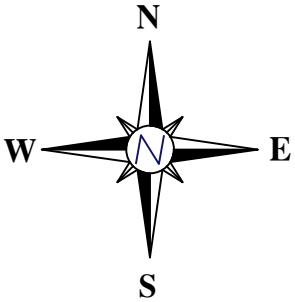




1991 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

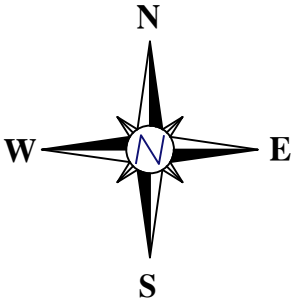
QUADRANGLE LOCATION



1995 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

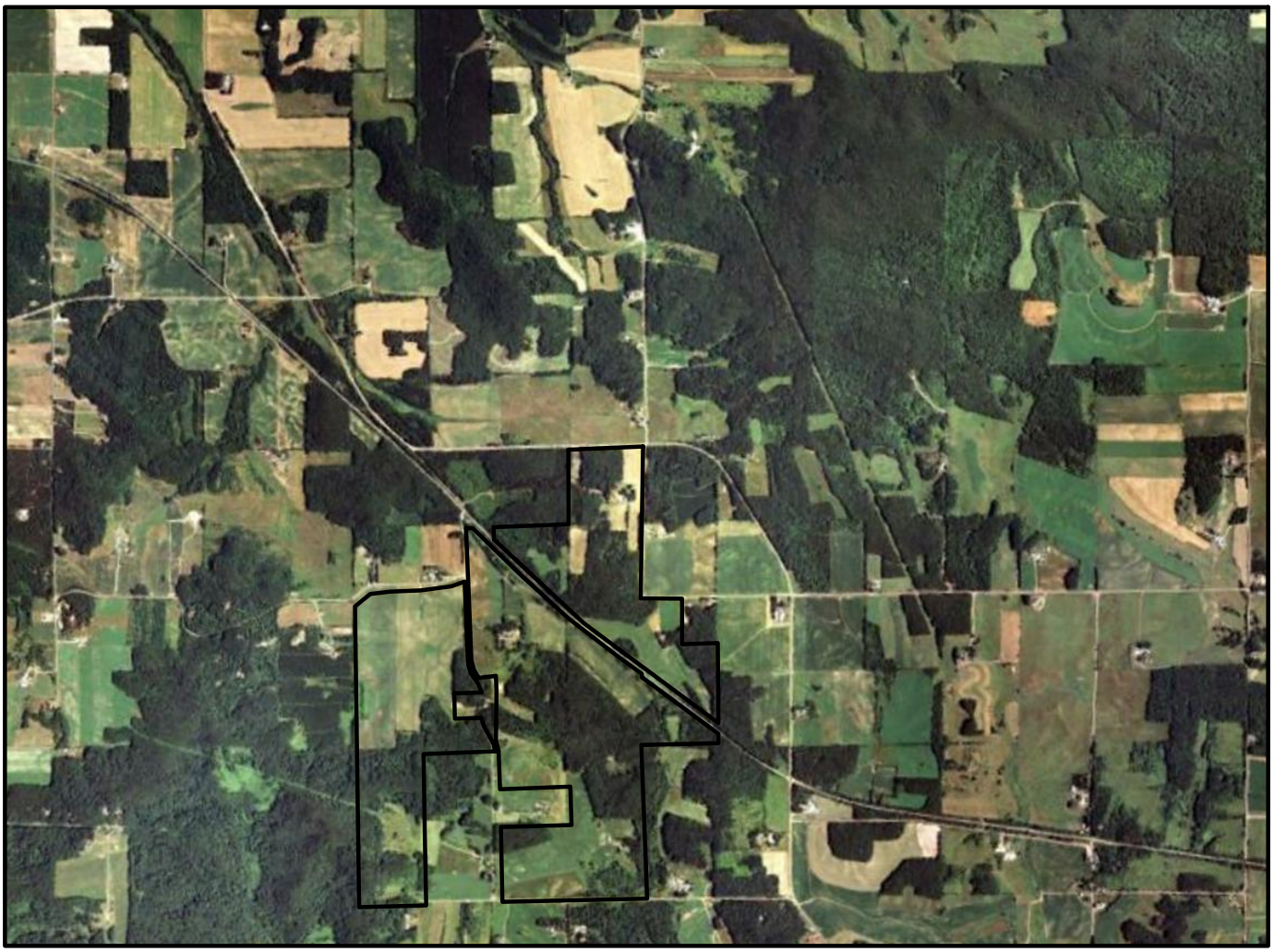
QUADRANGLE LOCATION

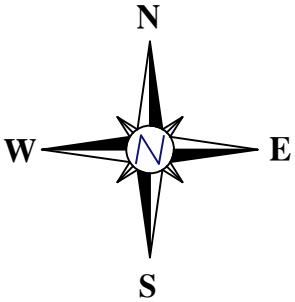


1998 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

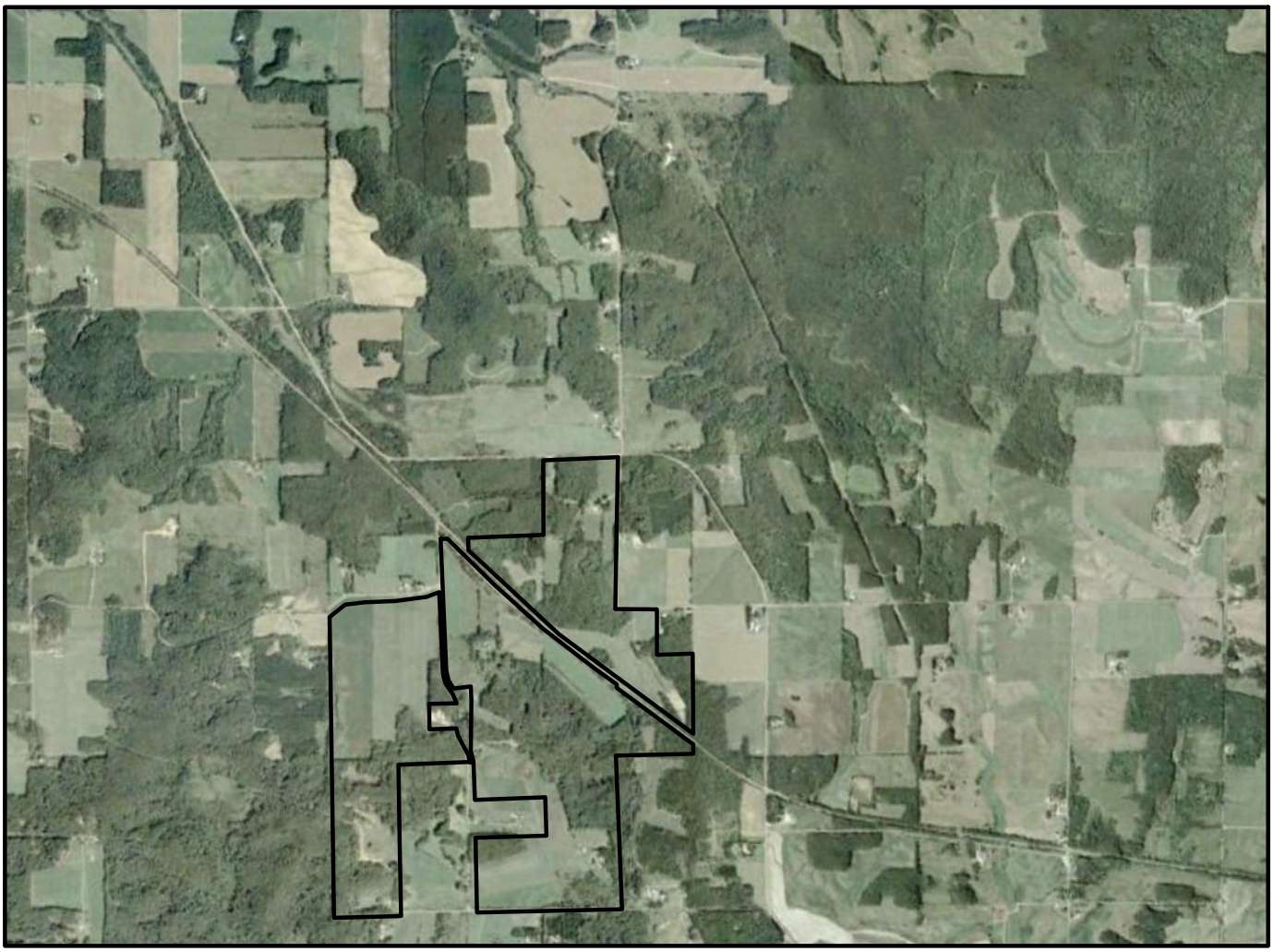


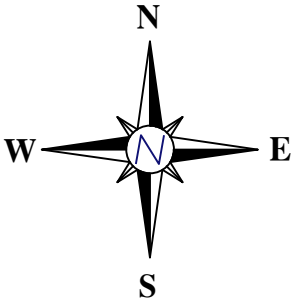


2005 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

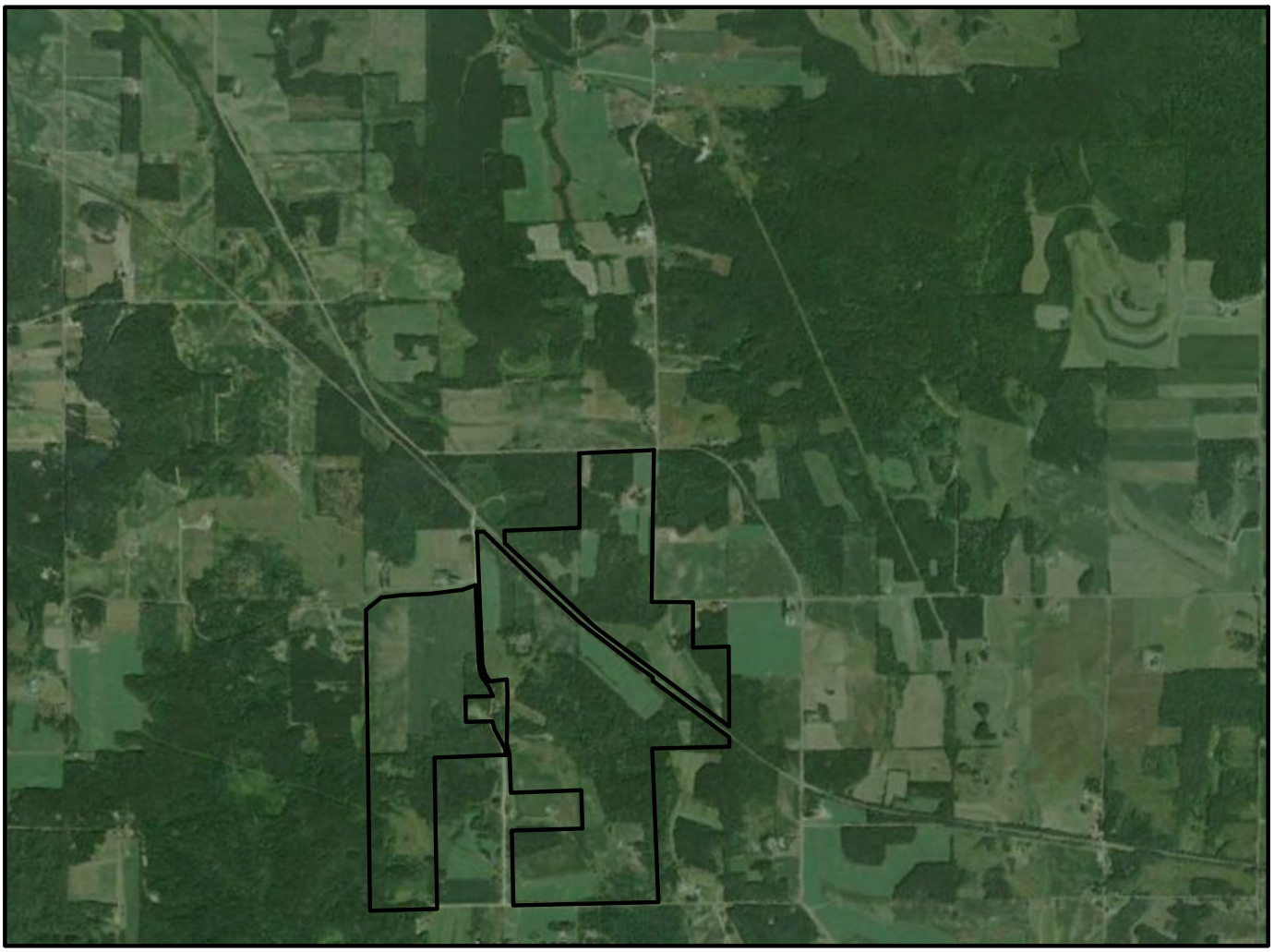


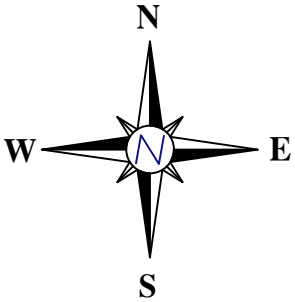


2006 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

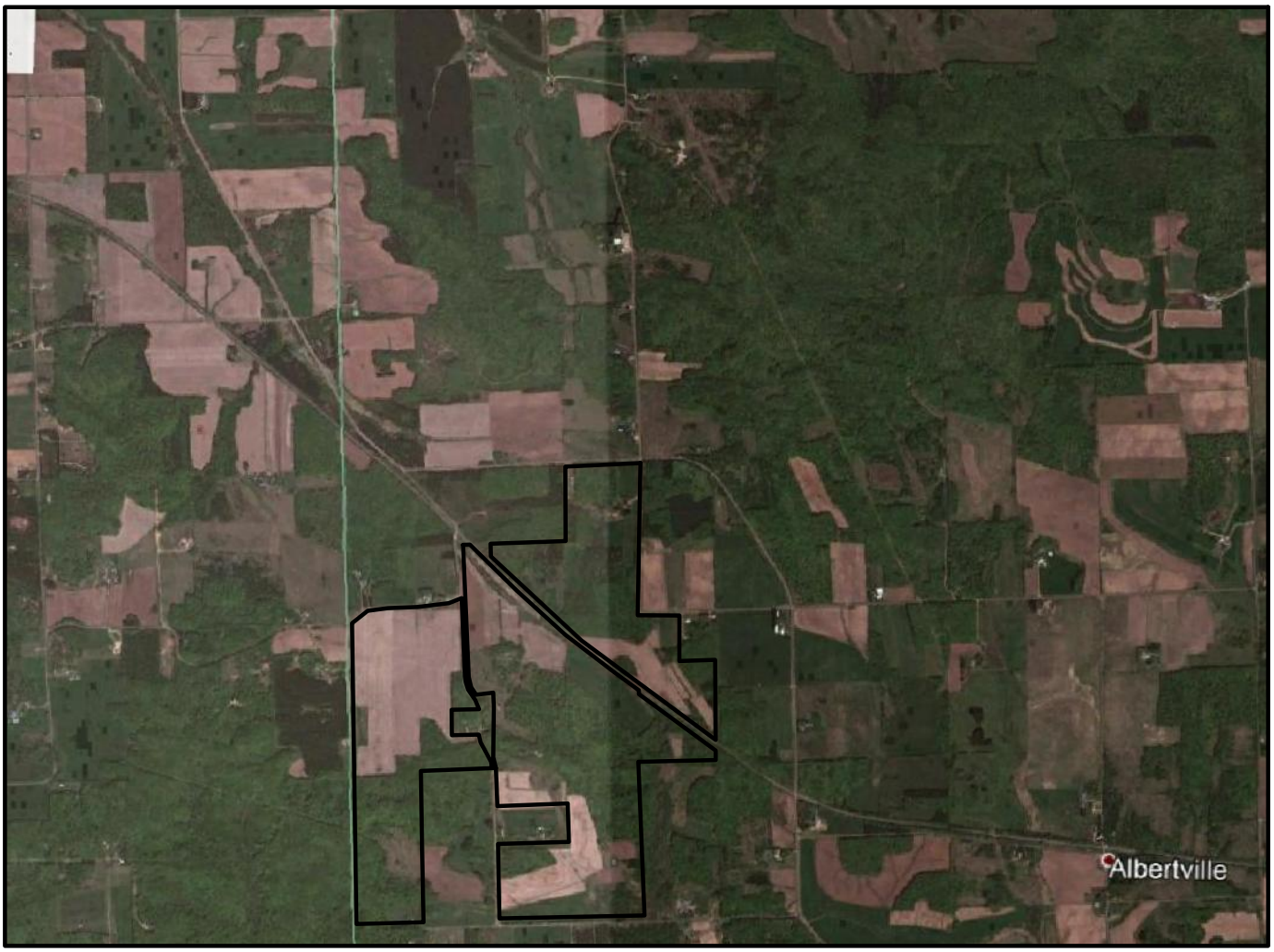


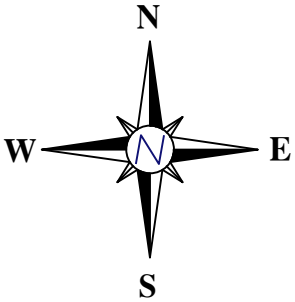


2008 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

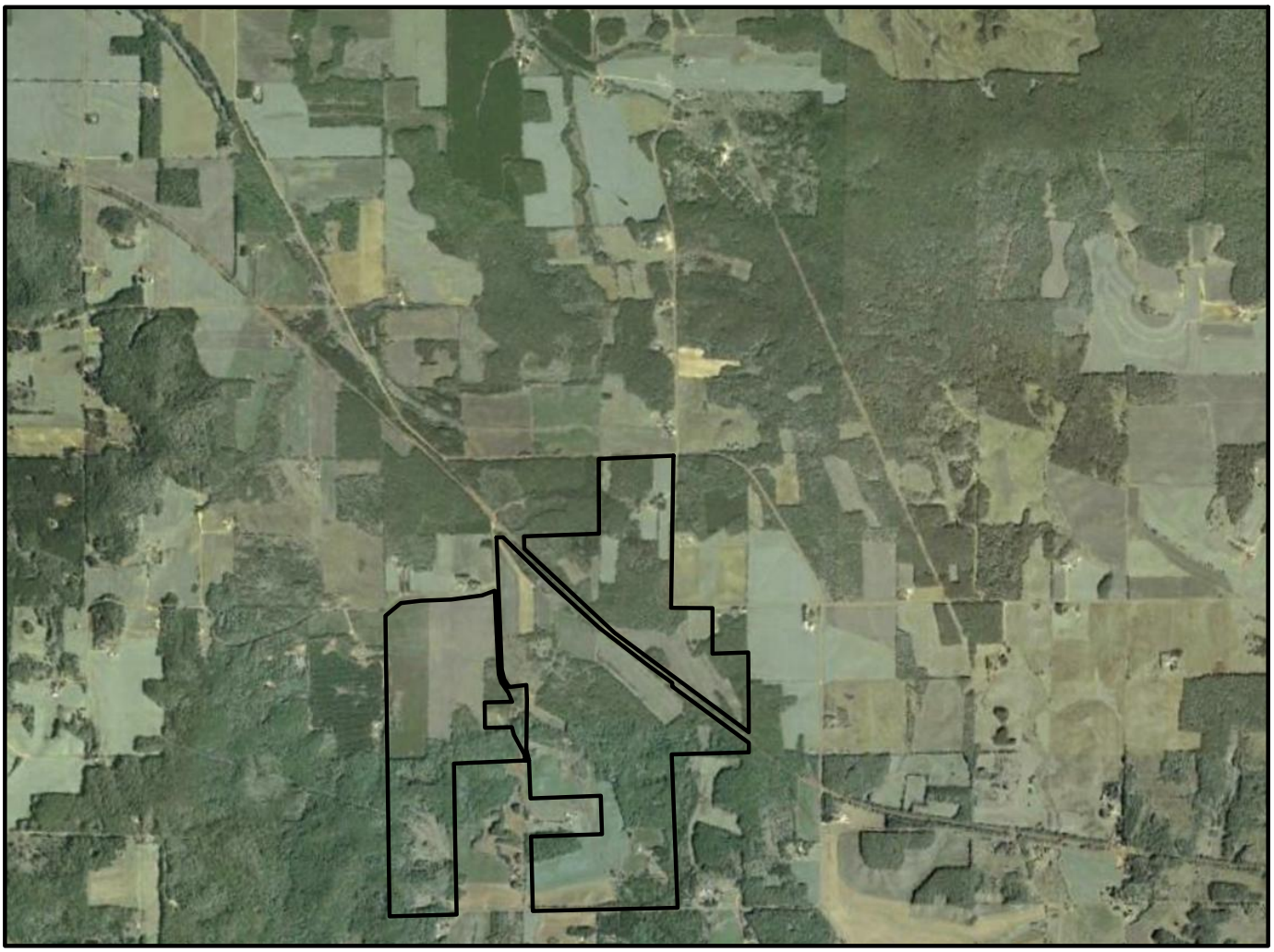


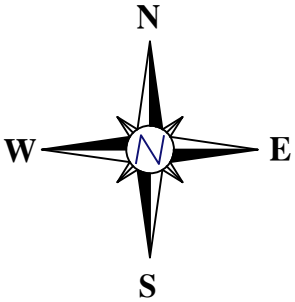


MAY 2010 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

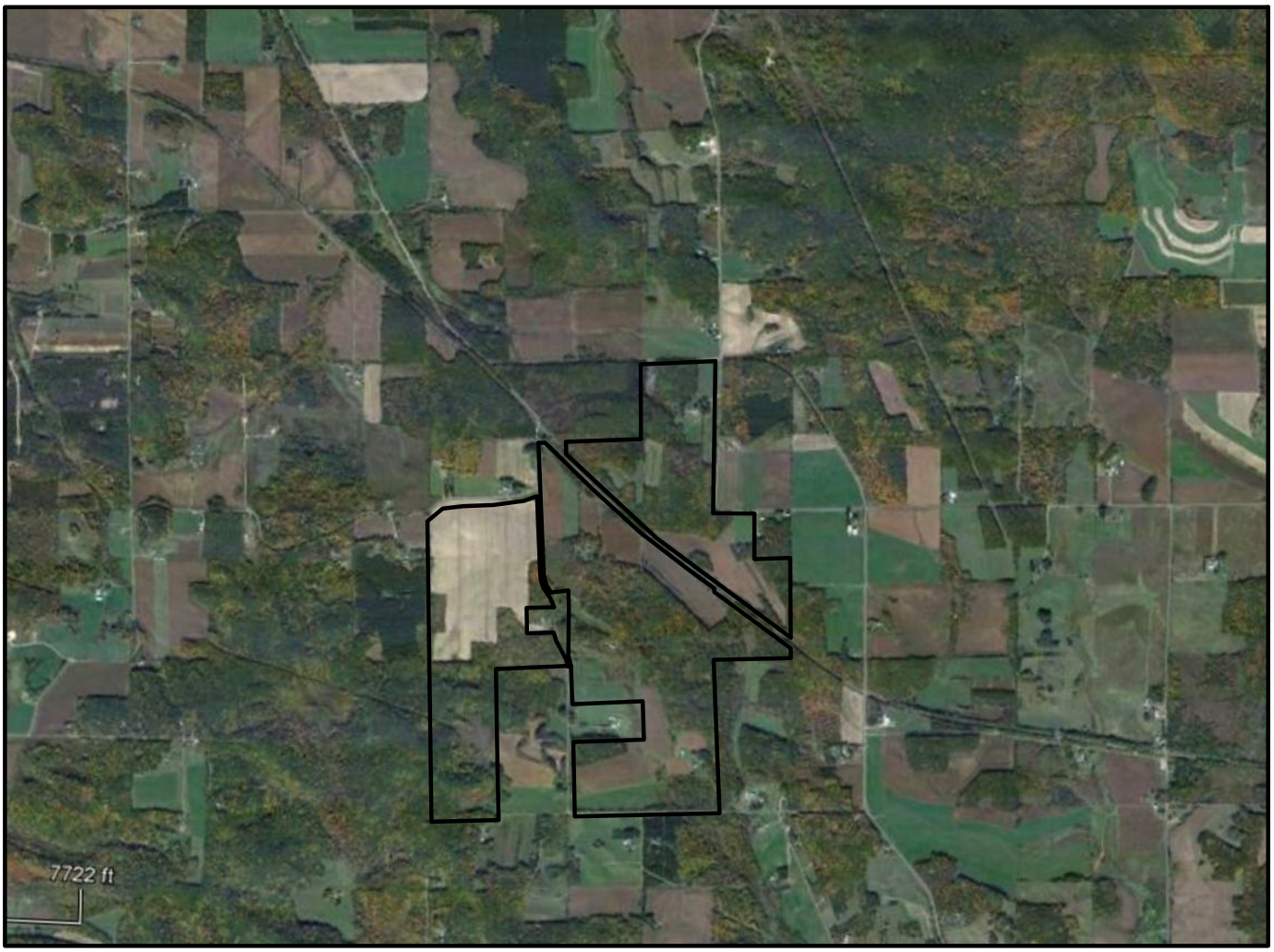


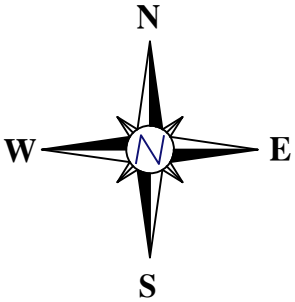


2010 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

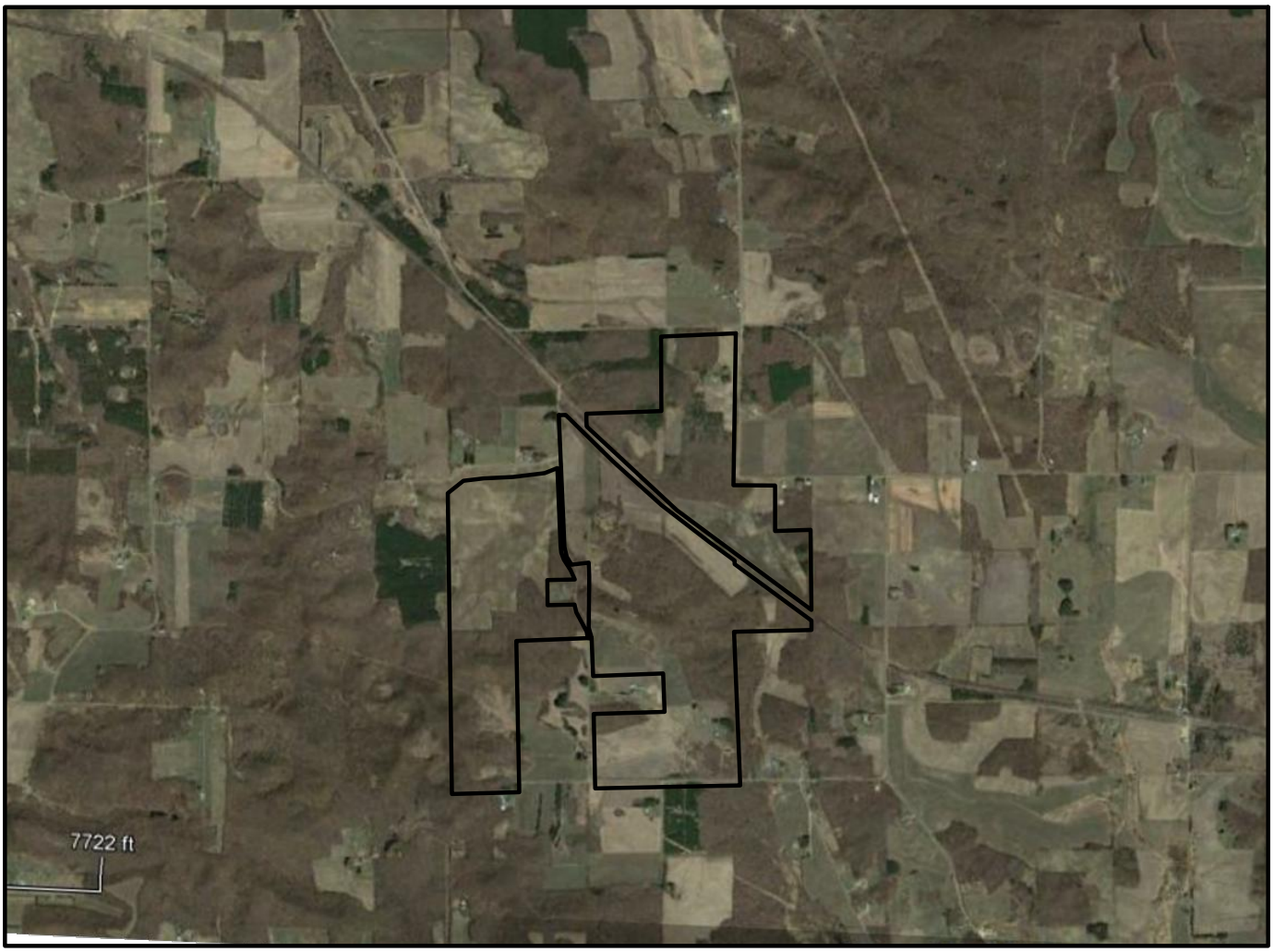


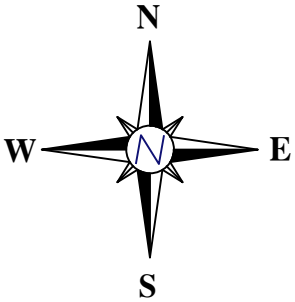


2011 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

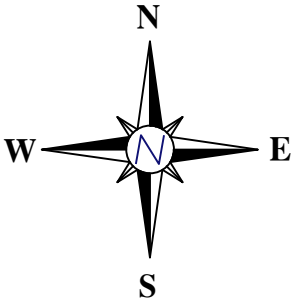




2014 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION



2017 AERIAL

NORTHERN SANDS WISCONSIN - PHASE I MINE
TOWN OF HOWARD, CHIPPEWA COUNTY, WISCONSIN

QUADRANGLE LOCATION

APPENDIX D – SITE PHOTOS

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 1-1

UP 1-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 1-2

UP 1-2

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 1-3

UP 1-3

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 1-4

UP 1-4

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 1-5

UP 1-5

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 2-1

UP 2-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 3-1

UP 3-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 4-1

UP 4-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 4-2

UP 4-2

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 4-3

UP 4-3

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 4-4

UP 4-4

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 4-5

UP 4-5

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 5-1

UP 5-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 6-1

UP 6-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 7-1

UP 7-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 8-1

UP 8-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 9-1

UP 9-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 10-1

UP 10-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 11-1

UP 11-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 12-1

UP 12-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 13-1

UP 13-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 14-1

UP 14-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

WET 15-1

UP 15-1

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

SP1

SP2

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

SP3

SP4

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

SP5

SP6

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

SP7

SP8

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

SP9

SP10

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

SP11

SP12

NORTHERN SANDS WISCONSIN, LLC - MINE PHASE I
WETLAND DELINEATION SITE PHOTOS

SP13

SP14

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WETLAND DELINEATION SITE PHOTOS

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