SITE DEVELOPMENT PLAN

for

ASHLAND WETLAND MITIGATION BANK
SAUNDERS COUNTY, NEBRASKA

Prepared for
Nebraska Department of Transportation

Benesch Project No. 00120472.00
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TABLE OF CONTENTS

Page

LIST OF APPENDICES

I. PROJECT INFORMATION

A. Project Overview and Objectives

This document provides a Site Development Plan for a proposed wetland mitigation bank site located in Saunders County, Nebraska according to NDOT's Final Statewide Umbrella Mitigation Banking Instrument dated February 2017. NDOT is developing this site for future mitigation needs related to roadway projects within the service area.

The Site Development Plan will provide the wetland restoration objectives, site selection information, background of the site, proposed restoration strategies, anticipated credit production, a construction work plan, monitoring plan, management plan, and site protection and financial assurance.

1. Project Location

The proposed mitigation bank site is located approximately 2 miles west of Ashland, NE along the floodplain of an unnamed tributary of Salt Creek. This site is located within Hydrologic Unit Code (HUC) 10200203 and Nebraska/Kansas Loess Hill (47h) EcoRegion IV. The site latitude and longitude are 41.04870° North, -96.408307° West. The Public Land Survey System (PLSS) description for the west mitigation area is as follows: a portion of Section 3 and 4, Township 12 North, Range 9 East, Saunders County, Nebraska. See Figure 1 in Appendix A for a Site Location Map.

2. Project Summary

The proposed 105.3-acre wetland mitigation bank site is located within the floodplain of an Unnamed Tributary of Salt Creek. The site and surrounding area have been used primarily for agricultural row crops. Historical aerial photographs of the site and surrounding area indicated the entire floodplain was a wetland. A recent wetland delineation completed by NDOT found 46.87 acres (47 acres) of wetlands. The proposed project would rehabilitate the 47 acres of existing wetlands and reestablish 30.83 (31) acres of wetland by plugging drainage ditches, eliminating road ditches, complete limited grading, and raising the elevation of the channelized unnamed tributary of Salt Creek at the property's downgradient end. All these activities attempt to undo what has been done to drain the historic wetlands for agriculture purposes.

3. Factors for Site Selection

NDOT chose this site location for the following reasons:

- The potential to restore a significant amount (78 acre) of wetlands along the ecologically important Salt Creek tributary system. Wetlands lost to agriculture in Nebraska are estimated to be 35%, however, impacts in certain regions of Nebraska, like Eastern Nebraska, are much higher. For example, 90% of the Rainwater Basin wetlands and 90% of the Eastern Saline wetlands have been highly altered (Dahl, 1990). Iowa and Illinois, which are both similar to Eastern Nebraska in crop production, have lost 85-90% of their wetlands (Crumpton, et

al. 2012). Wetland functions typically lost by agriculture conversion are wildlife habitat, flood storage, nutrient removal, and recreation (Crumpton, et al. 2012, & LaGrange, 2015).

- Restoration of these lost and degraded wetlands are of high priority for local, state and federal agencies. For example, the Nebraska Game & Parks Commission WILD Nebraska Program for private lands has wetland restoration as its top priority.

- The proposed Mitigation Bank Site is in the Salt Creek drainage, one of Nebraska's Biologically Unique Landscapes (Schneider et.al. 2011). One of the goals of the Natural Legacy Project is to identify a set of priority landscapes that, if properly managed, would conserve the majority of Nebraska's biological diversity. These landscapes, which are called Biologically Unique Landscapes, were selected based on known occurrences of at-risk species and ecological communities. In addition to at-risk species, these landscapes support a broad array of common species.

4. Goals and Objectives

The following goals were developed for the mitigation project:

- Develop a wetland mitigation bank in this part of Nebraska
- Restore (Rehabilitate and Reestablish) a large area (78 acres) of historic floodplain wetlands.
- The proposed wetland mitigation bank site is anticipated to provide the following wetland functions: Water storage, water filtration, open space and aesthetics, water quality improvement and wildlife habitat.

5. Establishment and Operation

Wetlands will establish once farming activities cease and site restoration activities are implemented. NDOT expects the following types of wetlands to be restored at the site: PEMA, PEMC and PEMF. NDOT will operate the site under the current Umbrella Bank Instrument. NDOT proposes to utilize this bank for roadway improvement projects within the service area that have wetland mitigation requirements. In addition, due to the proximity of the site to Lincoln, NDOT may also selectively request IRT permission to use this bank for impacts that occur within both the eight-digit and six-digit HUC, but outside the bank ecoregion.

6. Site Protection Arrangements

The wetland mitigation area will be protected by a deed restriction that will be filed with the Register of Deeds in Saunders County. NDOT will provide a certified copy of the deed restriction within 60 days after construction is completed. A USACE template of deed and use restrictions is provided in Appendix E. If the property is sold or

transferred, the deed restriction will be transferred from NDOT to the appropriate party.

7. Schedule and Milestones

The site was purchased in the Fall of 2016 which will end the row crop farming practice. The Site Development Plan was submitted to the IRT June 15, 2018. Comments were received on September 28, 2018 with a response issued on November 30, 2018. Two comments required further discussion which were worked out by NDOT and the USACE between November 30, 2018 to March 14, 2019. Site Improvements are proposed to commence in 2020 and end in 2021. Seeding will be completed after the growing season (dormant season) or the following spring depending on when grading is completed. Seed oats will be incorporated into the seed mixture to allow a temporary cover crop. Monitoring at the site will start in 2022 and continue until it is determined that restored wetlands are successful. Appendix D provides a tentative schedule and timeline to complete tasks necessary to develop the mitigation bank site.

8. Financial Assurances

NDOT will be responsible for assuring the mitigation wetland is constructed according to this Site Development Plan and that it meets success criteria during the monitoring period. NDOT is and will continue to be financially responsible for the site in perpetuity. See NDOT Financial Assurance letter in Appendix F.

9. Real Estate Provisions

The wetland mitigation bank site will be protected by a deed restriction that will be filed with the Register of Deeds in Saunders County. NDOT will provide the USACE with a certified copy of the deed restriction within 60 days after construction is completed. A USACE template of deed and use restrictions is provided in Appendix E. If the property is sold or transferred, the deed restriction will be transferred from NDOT to the appropriate party.

B. AUTHORITIES

Permittee: Nebraska Department of Transportation
Contact: Mr. Dillon Dittmer
Highway Environmental Program Manager
1500 Nebraska Highway 2, PO Box 94759
Lincoln, NE 68509
Phone: (402) 479-4411

C. BASELINE DESCRIPTION OF MITIGATION BANK SITE

1. Summary of Proposed Site and Purpose

The mitigation bank lies in the rolling hills topographic region of Nebraska, generally described as hilly land with moderate to steep slopes and rounded ridge crests. The rolling hills of eastern Nebraska are mostly glacial till that has been eroded and mantled

by loess. The site area is in the topographic floodplain of Salt Creek, and drains to Salt Creek, which in turn flows into the nearby Platte River. The site itself consists of approximately 105.3 acres of farmed agricultural fields, portions of which were historically wetland areas, wetlands, and riparian habitat along an unnamed tributary to Salt Creek and a drainage ditch. The site is in the Salt Creek Watershed.

The purpose of the site restoration is to develop wetland credits for NDOT to bank and use in in the future as needed for highway construction projects within the banks service area.

2. Project Description

a. Location

The proposed mitigation area is located approximately two miles west of Ashland, NE along the floodplain of Salt Creek. The site exists north of Cooper Road and is divided by County Road 6. See the Site Location Map presented in Figure 1. The site latitude and longitude are 41.04870° North, -96.408307° West. The Public Land Survey System (PLSS) description for the mitigation bank site is as follows: the northeast quarter of Section 4, Township 12 North, Range 9 East and the northwest quarter of Section 3, Township 12 North, Range 9 East, Saunders County, Nebraska.

The surrounding land use consists of farmed agricultural fields and small acreages. The site is near Salt Creek which is located 1 mile to the south, an oxbow of Salt Creek (0.4 mile), a large wetland complex which includes saline mapped wetlands, is located 0.6 mile to the southwest. See NWI/NHD maps provided as Figure 6 of Appendix A. USGS Topographic maps are provided as Figures 1 and 4, Appendix A.

b. Impacted Wetlands and/or Stream Channel

Wetland and stream impacts will result from the restoration project. Ditch plugs proposed for the ditch and unnamed tributary of Salt Creek will fill 0.403 acres of wetland/channel. A weir structure proposed to be placed within the Unnamed Tributary of Salt Creek will have impacts to 0.004 acre of channel. Finally, the filling of road ditches on County Road 6 and Cooper Road will impact 0.63 acres of wetlands. A total of 1.037 acres of PEMA/C wetlands will be impacted.

c. Delineation Report

The site was delineated by TranSystems personnel on October 22, 2015 with a report issued December 2015. TranSystems conducted additional field work and revised the delineation report in 2016. NDOT revisited the site in October of 2017 and modified the east side delineation boundary. A total of 46.87 acres of existing wetlands, including farmed wetlands, were identified during the delineation effort. See Appendix H for wetland delineation information.

d. Section 106, Endangered Species Act, or Other Documentation

The mitigation bank site was evaluated for impacts to Section 106 and the Endangered Species Act at the mitigation bank site and no concerns were identified. See Appendix I for agency coordination. It should be noted that a portion of this site was proposed to mitigate impacts for the Agnew North and South project which is no longer the case. Agency approvals for this site reference that project but the area reviewed is relevant to this project.

3. Mitigation Bank Site Information

a. Delineation Methods

The wetland delineation used hydrology tools for the Wetland Delineation, USDA NRCS, 1997, used in conjunction with supporting remote sensing data. The aerials from normal precipitation years were then reviewed for wetness signatures under normal conditions. All wetness signatures present in normal year imagery was initially outlined. All identified wetness signatures were then reviewed to determine if they were present in at least 50 percent of normal year aerials. If a wetness signature was present in at least 50 percent of the normal year aerials, the average size of the boundary was outlined and considered for field review. The average wetness sized boundary from normal years is illustrated in the delineation report provided in Appendix H. On October 22nd, 2015, TranSystems personnel performed a field investigation of waters of the U.S. within the NDOT specified potential mitigation bank site area. Field verification of potential farmed wetlands on site was carried out utilizing typical delineation procedures in conjunction with those set forth by the NRCS for farmed wetlands. The methods utilized included those in accordance with guidance provided by the U.S. Army Corps of Engineers Wetlands Delineation Manual (1987) and Midwest Regional Supplement, with the method for identifying wetlands in an agricultural setting from the NRCS's Hydrology Tools for Wetland Determination (1997).

While on site, soil samples were examined for the farmed wetland areas outlined during the desktop examination of the site aerials. Soils were excavated to either a depth of 40 inches, or to a shallower depth if hydric soil indicators were present. Due to the problematic nature of the soil conditions created by agricultural activity, soils were hydric regardless of depth requirements if hydric features were present (e.g. redoximorphic features, depleted matrices, etc.). If hydric soils were present, the location was a wetland. Colonizing weedy vegetation and hydrology patterns were also noted for each location. Geospatial information was collected in the field using sub-meter accuracy Global Positioning Systems (GPS) equipment, and then digitized onto aerial photographs for assessment of wetland areas. Site conditions were also photographed in the field.

Color Infrared (CIR) imagery was reviewed as a supplemental tool to determine potential wetlands inside the potential mitigation bank site area. CIR Is based on the premise that different materials, including land cover types, absorb a portion of the electromagnetic spectrum, transmit other portions, and reflect the remaining portion, which can be recorded (Paine and Kiser, 2003 and Aronoff, 2005). CIR was used to confirm wetness signatures previously identified on aerial imagery using the NRCS methods and to identify other potential wet areas to be investigated in the field.

CIR imagery was obtained from the NRCS Geospatial Data Gateway for the year 2009. Dark locations, which often indicate wet conditions within fields, were outlined. These outlines were then compared to the wet indicator outline results from the NRCS procedures.

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) was referenced to determine if there were wetlands in the potential mitigation area. NWI mapping indicated two wetlands to be present. Based on aerial imagery, one wetland area appears to have formerly been a farm pond, now filled. The other NWI wetland present is a freshwater emergent wetland centered over an area of creek channel.

The U.S. Geological Survey (USGS) 7.5-minute quadrangle topographic map for Ashland West, and the USGS National Hydrography Dataset (NHD) were reviewed for the presence of known water resources in the area. Both resources showed one intermittent Unnamed Tributary to Salt Creek traversing from the northwest corner of the study area to the southeast. Salt Creek, in turn, flows into the Platte River. A review of aerial information indicated an additional water resource likely to be present in the form of a drainage ditch. NWI and NHD information is located on Figure 6 in Appendix A.

b. Wetland Classification

Wetlands were classified according to the Cowardin Classification System (1979) and the HGM Nebraska Subclass (Jasmer, et al. 1997).

c. Wetland Functional (Condition) Assessment

The condition of the existing farmed wetlands was evaluated using the Draft Nebraska Wetland Rapid Assessment Method (NeWRAM v1.0). This method was approved by the USACE project manager as a way to prove existing wetlands could be rehabilitated if the estimated post rehabilitation condition score was higher than the baseline condition score. The NeWRAM condition score for this wetland was 0.62 on a scale of 0 to 5 with 0 being a non-wetland site and 5 being a perfect wetland. Additional information about the wetland condition score can be found in Appendix H.

4. Vegetation and Soil Data

a. Vegetation Data

In 2015 natural, unfarmed, vegetation at the site was limited to a narrow riparian area along the Unnamed Tributary of Salt Creek, and at a wetland area located west of County Road 6 near the south property boundary. See Existing Wetlands Map (Figure 3). Vegetation within the tributary area consists primarily of *Typha* spp., and *Phalaris arundinacea*. Trees were present along the west end of the unnamed tributary and west half of drainage ditch to the south. Trees observed included *Populus deltoides* and *Salix nigra*. Vegetation in the natural wetland area consists primarily of *Typha* spp. Vegetation identified in the farmed wetland areas consisted of *Panicum dichotomiflorum*, *P. arundinacea*, *Salix nigra*, *Persicaria pensylvancia*, and *Amaranthus tuberculatus*.

b. Soils Analysis

The USDA-NRCS Web Soil Survey classifies soils in the mitigation area as Fluvaquents, silty (9906), Obert Silty Clay Loam (6367/6368), Nodaway silt loam (7750), Muscotah Silty Clay Loam (7061), and Yutan Silty Clay Loam (7105). Most of the site has hydric soils. Soils 9906, 6367 and 6368 are mostly hydric. See hydric soils map in Figure 5, Appendix A. Soils across most of the site are classified as poorly drained to very poorly drained, which is due to the presence of silty clay soils that have low permeability.

The 9906-soil unit (Fluvaquents) is unique in Saunders County. Fluvaquents are defined as aquent (wet soil) produced by flooding. These soils are very poorly drained and are commonly situated on the lowest part of the floodplain along streams and rivers. Fluvaquents occupy only 0.10% of the soils in Saunders County. The upper 18" of a Fluvaquent consists of clay while the soils below consist of stratified silts, sands and gravels.

The Fluvaquent at the Ashland mitigation bank site consists of a 20-acre bean-shaped mapped unit located west of County Road 6 as seen in the Nebraska Soil Survey of Saunders County (Figure 5). The west half of the mapped unit is heavily vegetated. The east half is sparsely vegetated and hosts what appears to be an active seep. The mechanics of the assumed seep are not yet known until further investigation and observation, but it is assumed that the groundwater is being released through a more permeable soil within the less permeable clay cap of the Fluvaquent. Additional information about this feature can be found in the Fluvaquent Geotechnical Investigation Memo in Appendix G.

Soil borings were taken at the site June 22nd and 23rd, 2017. Twenty-one (21) borings were advanced to a depth of 2-3.5 feet to characterize soils. Three soil

borings at the site were subsequently developed into groundwater monitoring piezometers. See geotechnical report in Appendix G.

5. Hydrology

a. Source

The USDA Web Soil Survey indicates that groundwater is observed 0-18 inches from the surface in normal conditions. The NRCS estimated groundwater table was confirmed during the wetland delineation conducted in October 2015, and the Geotechnical exploration in 2017, and follow-up groundwater measurements in May 2018 and June 2019. During the wetland delineation, water saturated the soil surface at sample point S-6, which represents the floodplain south of unnamed tributary. North of the tributary (S-7), groundwater below the floodplain was reported to be 30 inches below the ground surface. On the west end of the site, along the Unnamed Tributary, water was 8 inches below the surface with saturation to the surface. Currently, farmed wetlands have a saturated to temporarily flooded water regime in normal to wet years. Groundwater measured at 4 different events from 3 piezometers over 2 years indicated water was just below the surface or at surface across entire site. See Table 1 for groundwater depth over time.

Benesch conducted a proposed conditions hydrology model at the site using HEC-HMS software. Existing conditions model results showed the water surface elevation varied by -0.4’ to +0.1’ on any given day due to the differences in the ground surface topography. The only change between the existing conditions results and proposed conditions results was the grading of -0.5’ (estimated) in the locations shown on the plans and the additions of the wetland depressions. The proposed rehabilitation to the existing wetlands will lower the overall modelled water depth across the existing wetland due to the increased storage created by excavating approximately 0.5’. However even with this change, the wetland function will be similar.

Table 1. Groundwater Data at the Ashland Wetland Bank Site.

Piezometer No.	Date	Ground Elevation	TOC Elevation	Depth from TOC	Elevation of Water (ft.)	Depth Below Existing Grade (ft.)
PZ-4	6/23/2017				1072.6	1.7
	8/4/2017				1071.7	2.6
	5/8/2018	1074.30	1077.74	5.08	1072.66	1.6
	6/24/19			4.33	1073.41	0.89
PZ-7	6/23/2017				1070	0.3
	8/4/2017				1069.8	0.5
	5/8/2018	1070.30	1074.08	3.69	1070.39	-0.1
	6/24/19			3.47	1070.61	-0.31
PZ-15	6/23/2017				1069.1	0.6
	8/4/2017				1068.2	1.5
	5/8/2018	1069.7	1072.67	3.92	1068.75	1.0
	6/24/19			2.80	1069.87	-0.17

b. Surface Water

Surface water runoff at the proposed mitigation bank site originates from uplands located north, west and south of the site. The historic USGS topographic map shows an intermittent stream traversing southeast through the site. See Figure 4, Appendix A. On-site reconnaissance from 2016-2018 revealed the stream had flowing to stagnant water flow. The drainage area encompassing the site is approximately 133 acres in size and consists primarily of agricultural land.

Benesch conducted an existing conditions hydrology model (HEC-HMS) at the site using average monthly rainfall amounts. Results from the model revealed that water from precipitation and runoff stay within the channel and road ditches and do not spill over to the floodplain. See Appendix G for Hydrologic Study.

Average annual rainfall for this area is 30.86 inches, most of it coming from April through October
(https://www.usclimatedata.com/climate/ashland/nebraska/united-states/usne0024).

6. Map and Photo Data

See Appendix A and B.

7. Site Map

See Figure 7 in Appendix A.

8. Biological and Ecological Characteristics of Existing Property

a. Areas Amenable to Restoration, Enhancement, or Creation

Approximately 47 acres of existing PEMA/C existing wetlands will be rehabilitated by ceasing farming activities, plugging drainage ditches, filling county road ditches and supplementing naturally colonizing vegetation with a diverse seed mix. Approximately 31 acres can be reestablished by restoring hydrology by plugging drainage ditches, eliminating a drainage culvert under Cooper Road and removing excess silt from post settlement floodplain sedimentation.

b. Existing Aquatic Habitat Description

Within the flood prone area, there is less than 10 percent coverage of habitat features present, the stream substrate is unstable and lacking, and habitat features, and pools are buried. The deepening of the intermittent channel is noticeable. The wetlands that do exist are comprised of a monoculture of cattails.

c. Wildlife Species Using Existing Habitat

The proposed mitigation bank site has very little benefits for native wildlife species due to farming practices and the lack of preferred cover.

d. Existing Upland Buffers

There is one existing buffer located on the southwest part of the site south of the manmade ditch. The buffer is approximately 1,300 feet long by 100 feet wide comprising 2.75 acres. The vegetation consists of cereal grains like wheat or oats.

e. Existing Disturbances

The site is disturbed annually by row crop farming practices. The site has also been ditched in two places to drain subsurface water to allow row crop farming within the floodplain. In addition, the Unnamed Tributary to Salt Creek has been channelized and cleaned to function like a drainage ditch. See the 1949 Aerial and Drainage Manipulation Figure in Appendix B for ditch locations and channelized tributary to Salt Creek. This site is also bisected by County Road 6 and Cooper Road. Both county roads have ditches adjoining the site which drain the existing wetlands.

f. Relation of existing wetlands and/or streams and/or riparian buffer to proposed mitigation

The existing wetlands and riparian area will be incorporated into the proposed mitigation plan by rehabilitating wetland functions currently affected by drainage ditches and farming practices.

II. Wetland Mitigation Bank Site Work Plan

A. Site Analysis

1. Conceptual Design

The overall mitigation bank site design concept is to rehabilitate 47 acres of existing wetlands that are currently being farmed or affected by farming practices and reestablish 31 acres of former wetlands that are no longer present. The historical 1949 aerial photo suggests that the entire floodplain once consisted of wetlands. The Unnamed Tributary to Salt Creek was not visible suggesting once water from tributary reached the floodplain, it dissipated into large wetlands area. See the 1949 aerial in Appendix B.

Approximately 47 acres of PEMA/C existing wetlands will be rehabilitated by ceasing farming activities, plugging drainage ditches and culverts, filling county road ditches, and diversifying wetland vegetation. Approximately 31 acres of non-wetland will be reestablished by removing excess silt from post-settlement floodplain sedimentation, restoring wetland hydrology and revegetating with diverse wetland plant seed. Past and current agricultural practices in the area allowed significant soil erosion which likely ended up as floodplain alluvium (Knox 2006 and Trimble 1999). This excess soil filled historic wetlands, increased depth to water table and disconnected the unnamed tributary from the floodplain. Furthermore, farming practices including leveling, deep cultivation and fertilizer application have degraded already impacted wetlands even further.

Soil borings collected from 20 locations throughout the farmed portion of existing wetlands to determine the depth of excess soil within the soil profile. The borings showed the excess soil as a modern colluvium that ranged from 0.8 to 2.2 feet deep from the surface. Considering the ground water table, removal of the excess soil in these areas would potentially create shallow water areas which is not an objective of this rehabilitation. Therefore, excess soil within the farmed wetlands area will not be removed. However, excess soil will be removed in areas that were not delineated as wetlands to reestablish wetlands. Excess soil at depths ranging from 0.8 to 2.3 feet will be removed in these areas. See Section II.B.3. for a grading detail and Figure 8a and 8b, Appendix A for the grading plan.

Restoration of site hydrology in the form of plugging ditches, filling road ditches and eliminating a 12-inch culvert on the Unnamed Tributary of Salt Creek near the southeast

end at Cooper Road will be a primary emphasis of the wetland restoration. The 12-inch culvert is 3 feet lower than existing twin culverts in the same location. Major efforts have been employed over time to drain the historic wetlands at the site. See 1949 Aerial and Drainage Manipulations Figure in Appendix B for locations of drainage manipulations. Also, see Section A.4. below for further details on proposed hydrology modifications.

There is a potential that a viable remnant seed bank exists within the former wetland topsoil, which could provide a seed source to revegetate the site. Research on remnant wetland seed banks has found that historic seed banks can be diverse and still viable (DeBerry and Perry 2000, Dahl and Nomsen 1987, Vandervalk, 1992). Rehabilitated wetlands will rely on this form of revegetation in addition to supplemental seeding with species from the referenced natural community of Eastern Sedge Meadow or Cattail Shallow Marsh. Note that the existing cattail marsh after considering comments from the IRT will be left as is. Reestablished wetlands will be vegetated with a native, wetland seed mix according to the reference communities. See Figure 9 for vegetation planting plan.

2. Post Construction Restored Aquatic Resources

The following wetland types are expected to develop from the wetland rehabilitation efforts: Palustrine Emergent, Temporarily/Seasonally Flooded (PEMA/C) and Palustrine Emergent, Semi permanently Flooded (PEMF). The following wetland type is expected to develop from the wetland reestablishment efforts: Palustrine Emergent, Temporarily/Seasonally Flooded (PEMA/C). See proposed Cowardin Classification map in Figure 10 of Appendix A.

The proposed wetland mitigation bank site is anticipated to provide the following wetland functions: Water storage, water filtration, open space and aesthetics, water quality improvement and wildlife habitat.

3. Upland Buffer

A 50-foot wide or greater buffer area will be established around the perimeter of the wetland mitigation bank site to filter sediment and other pollutants from overland flow draining through this area and to provide additional wildlife habitat. There are several areas near the corners of the site where there will be additional upland buffer areas adjacent to the required 50-foot buffer due to natural grade and wetland restoration limitations. In most areas the buffer will be situated in uplands however, there are portions of the buffer that will traverse through existing wetlands (Figure 7). The upland buffer areas will be planted with a native grass and forb species. Existing wetland areas within the buffer will not be seeded. See the vegetation planting plan shown on Figure 9 for buffer location. The upland buffer seed mix is provided in Appendix C. The upland buffer will be noted on the deed restriction.

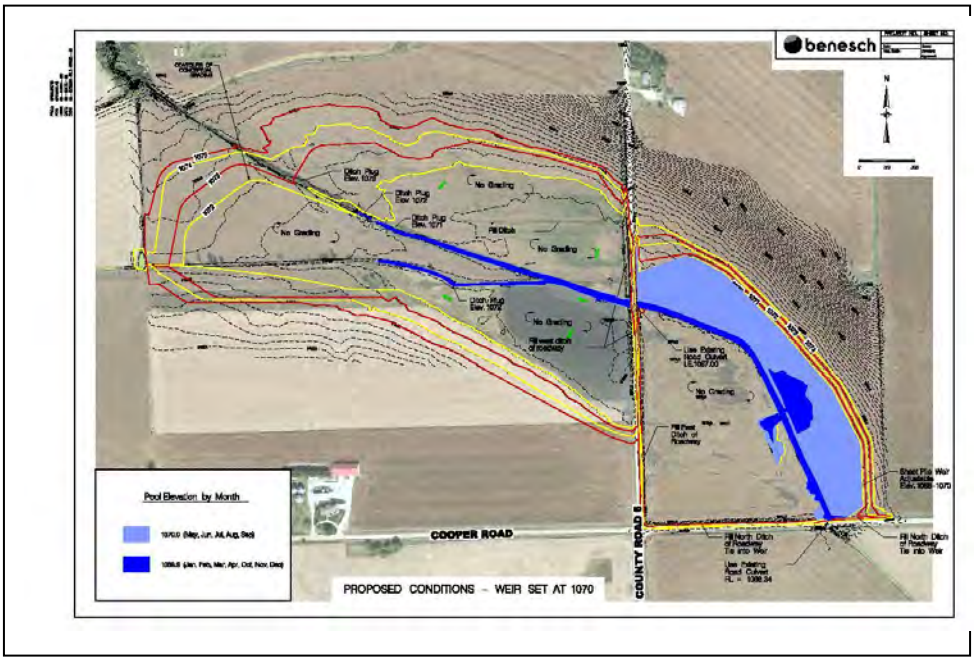
4. Hydrological Alterations

Existing hydrology will be modified by plugging drainage ditches, filling road ditches and abandoning 12-inch culvert which is 3 feet lower in elevation than the existing twin culverts under Cooper Road. This culvert appears to have been installed to lower the water elevation of the groundwater and tributary. An adjustable weir structure will also be installed on the south end of the tributary at the same elevation as the existing culverts under Cooper Road, which is 1068.0 feet above mean sea level (msl). The weir will have the option to add stop logs up to elevation 1070.0 for management purposes. Coordination and concurrence will need to be completed with the USACE and the IRT prior to the usage of the weir for management purposes. Ditch plugs will be installed within the tributary west of County Road 6 at three locations; at elevations 1071.0, 1072.0 and 1073.0 respectively. The manmade ditch on south side of parcel west of County Road 6 will plugged at elevation 1071.0. Another ditch north of the tributary and west of County Road 6 will be filled. Finally, road ditches on County Road 6 and Cooper Road will be filled. See Concept Design Plan in Figure 7 and Grading Plan in 8a and 8b of Appendix A for these locations.

These hydrologic modifications should slow the subsurface draining of wetlands and allow more frequent flood events onto the floodplain.

Benesch conducted a proposed conditions hydrology model at the site using HEC-HMS software. Results from the model revealed that surface water will remain within existing channel when the weir is set at an elevation of 1068.0 to 1069.0. At elevation 1070.0, minor flooding on the north side of the channel east of County Road 6 occurs. See Exhibit 1 below.

Exhibit 1. Proposed Conditions Water Surface Elevation by Month.



5. Seasonal Pool Elevations

Seasonal pool elevations will fluctuate between 1068.0 and 1070.0 feet above msl.

6. Access Roads and Fencing

A fence will be installed around the boundary of the site. See Figures 8a and 8b (Concept Grading Plan) for location of perimeter fence.

7. Adjacent Land Use

Land adjacent to the mitigation bank site consists of agricultural row crops on all sides.

B. Site Construction Activities

1. Water Control Measures

An adjustable weir will be placed on the tributary on the north side of Cooper Road. The weir will be adjustable from 1068.0 to 1070.0. See Appendix G for weir design plans.

2. Erosion Control Measures

A Stormwater Pollution Prevention Plan (SWPPP) will be submitted as part of the permitting process for the project and adhered to throughout the construction phase. The implementation of the SWPPP will prevent, to the maximum extent practicable, the release of pollutants in storm water runoff from the construction site to waters of the state of Nebraska.

3. Grading Plan

Grading equipment will be used to remove excess soil within the reestablished wetlands. Grading equipment will also be used to remove vegetation and perform selected minor grading within the rehabilitated wetlands. See the Concept Grading Plan located in Figures 8a (west of CR-6) and 8b (east of CR-6). The proposed grading surface for the reestablished wetlands was based on the depth of excess soil (Modern Colluvium) identified in the geotechnical report. The new wetland surface at the site will have an uneven, rough surface intentionally created to provide micro-topographic differences.

Ditch plugs will be created using on-site soils which will be compacted. A ditch plug specification from NRCS (See Appendix G) provides information of how the ditch plug will be constructed. Road ditches will also be filled with on-site soil removed from reestablished wetlands. This soil will be generally placed at a 3:1 slope and then compacted.

Channel cleanouts of the unnamed tributary of Salt Creek appears to have been stockpiled along the tributary in a few areas east and west of County Road 6. These areas will be restored to existing grade by removing excess soil. See Figures 7 and 8a and 8b, Appendix A for these locations.

Impacts to waterways on-site and adjacent wetlands outside the limits of construction (LOC) will be avoided during the construction. These wetlands will be protected by erosion control barriers and post grading best management practices (BMPs). Silt fencing will be strategically placed around the mitigation area to prevent migration of sediment onto or off the site. The silt fence will remain in place during construction and until vegetation is established in the disturbed areas.

A fence consisting of a four-wire barbed with wood posts will be installed around the property boundary. The site fencing will include access gates on each side of the tributary, and on each side of County Road 6.

4. Plantings

Wetland vegetation will be introduced into the rehabilitated and reestablished wetlands by drilling or broadcasting native wetland seed. A vegetation planting plan is shown on Figure 9, Appendix A. The seed mix consists of hardy native species adapted to temporarily to seasonally flooded (Wetland Mix) and semi permanently flooded water regimes (Wetland Low Mix) that will have a chance of withstanding invasion from weedy or invasive species. The specified wetland seed mix is provided in Appendix C. The cattail marsh located on the south side of the tributary west of County Road 6 will not be seeded.

Vegetation is also expected to establish from formerly buried seed and from adjacent wetland seed/propagules reaching the site. These species could have a competitive advantage and outcompete the seeds introduced to the site. The mitigation bank site will also be graded at select locations to have an undulated soil surface to increasing vegetation diversity.

5. Schedule

Grading is tentatively scheduled to begin in 2020. Seeding and planting will be completed early and late in the growing season, depending on when grading is completed and species planting requirements. Seed oats will be incorporated into the seed mixture to allow a temporary cover crop. Appendix D provides a tentative schedule to complete tasks necessary to develop the mitigation bank site.

C. Site Maintenance

Potential site maintenance and management activities include but are not limited to: re-grading, re-vegetation, weed management, invasive species management and correcting erosion problems. Specific management techniques are described below.

1. Vegetation Management Techniques

a. Restoration of failed plantings

Areas where vegetation fails to establish will be reseeded the following spring or fall to optimize success. Any significant erosion issues will be stabilized and reseeded.

b. Removal of non-target species

Invasive and noxious plant species such as *Lythrum salicaria*, *Phalaris arundinacea*, and *Phragmites australis* ssp. will be controlled by USACE approved methods including, but not limited to mowing, pulling, or chemical application with an appropriate aquatic herbicide will be controlled by spraying, cutting, and pulling.

c. Grazing and Mowing

Grazing and mowing of the site will be allowed on an as needed basis to help control and promote a diverse plant community.

d. Prescribed burning

Prescribed burns may also be used at the site as a maintenance tool on an as needed basis to help control vegetation and promote a diverse plant community.

2. Hydrology

a. Water Control Structures

One water control structure in the form of an adjustable weir is planned as part of this mitigation bank site to increase hydrology when needed for management purposes. The weir base elevation will be 1068.0 with the ability to adjust to 1070.0. See Appendix G for weir detail.

b. Seep Maintenance

The seep located on site will be avoided during grading activities but will be seeded to promote plant diversity. No maintenance is planned for this area of the site.

D. Performance Standards and Monitoring Requirements

Success of restored wetlands will be measured by comparing field monitoring results against performance standards developed for the wetland. The following performance standards will be used as a guideline to measure the overall success of the mitigation area annually and at the end of five years. NDOT will be responsible for compliance with the mitigation plan and with any required remediation, repair, maintenance, or management work.

Rehabilitated wetlands will be considered successful if farmed wetlands are replaced with PEMA/C and PEMF wetlands having a diverse and native vegetation composition that matches the assigned natural community of Nebraska (Rolfsmeier and Steinauer

2010), the historic wetland hydrology regime is restored, and the NeWRAM condition score is at or above the post rehabilitation score (see Table 2). Reestablished wetlands will be considered successful if native wetland vegetation from seed mix and natural colonization establishes into a PEMA/C wetland according to the referenced natural community of Nebraska, develops the historic wetland hydrology, and the NeWRAM condition score is at or above the post reestablished score (see Table 2).

It shall be noted that farmed wetlands and natural wetlands at the site are currently dominated by *Echinochloa muricata, Elymus trachycaulus, Panicum dichotomiflorum, Phalaris arundinacea, Persicaria pensylvanica, Amaranthus tuberculatus, Typha latifolia* and *Salix nigra*. These species may have an advantage establishing at the mitigation bank site. Management techniques will be discussed with the IRT and implemented as warranted.

Annual performance standards are described below for the Rehabilitated and Reestablished wetlands at the mitigation bank site which were referenced to the *Eastern Sedge Meadow/Cattail Marsh Community* (*Rolfsmeier and Steinauer, 2010*) and NeWRAM post rehabilitation/reestablished condition score.

Year 1 – The percent concurrence of dominant plants observed with diagnostic and noteworthy species associated with the *Eastern Sedge Meadow/Cattail Marsh Community* is ≥ 5%. Annual and perennial grasses and forbs recruited from the soil, the native wetland seed mixture, and propagules received from adjoining wetlands will begin to become reestablished. Weedy annual species may be present and abundant. Absolute ground cover is at least 25%. At least one primary hydrology indicator from the Midwest Regional Supplement is present. The source(s) of hydrology are appropriate for the target Nebraska wetland subclass (Riverine Floodplain). The duration of saturation and/or presence of surface water is appropriate for the target Cowardin water regime modifier (temporarily/seasonally flooded and semi permanently flooded). The NeWRAM condition score will be greater than 0.62.

Year 2 – The percent concurrence of dominant plants observed with diagnostic and noteworthy species associated with the *Eastern Sedge Meadow/Cattail Marsh Community* is ≥ 15%. Invasive species (e.g. *Phragmites spp., Phalaris spp.*) are neither dominant nor trending toward dominance. Weedy annuals may still be present or even dominant but should be less than Year 1. Absolute ground cover is at least 50%. At least one primary hydrology indicator from the Midwest Regional Supplement is present. The source(s) of hydrology are appropriate for the target Nebraska wetland subclass (Riverine Floodplain). The duration of saturation and/or presence of surface water is appropriate for the target Cowardin water regime modifier (temporarily/seasonally flooded and semi permanently flooded). The NeWRAM condition score will be greater than 0.62.

Year 3 – The percent concurrence of dominant plants observed with diagnostic and noteworthy species associated with the *Eastern Sedge Meadow/Cattail Marsh Community* is ≥25%. The plant distribution shall meet the dominance test standards in the 87 Manual and Regional Supplements. Additionally, there are at least three native hydrophytes among the list of dominants. Invasive species (e.g. *Phragmites spp., Phalaris spp.*) are neither dominant nor trending toward dominance. Weedy annuals may still be present but should be less than the previous year. Absolute ground cover is at least 75%. At least one primary hydrology indicator from the Midwest Regional Supplement is present. The source(s) of hydrology are appropriate for the target Nebraska wetland subclass (Riverine Floodplain). The duration of saturation and/or presence of surface water is appropriate for the target Cowardin water regime modifier (temporarily/seasonally flooded and semi permanently flooded). The NeWRAM condition score will be approaching 2.90.

Year 4 – The percent concurrence of dominant plants observed with diagnostic and noteworthy species associated with the *Eastern Sedge Meadow/Cattail Marsh Community* is ≥ 50%. The Year 3 thresholds continue to be met or exceeded. There are now three or more native hydrophytes among the list of dominants. Invasive species (e.g. *Phragmites spp., Phalaris spp.*) are neither dominant nor trending toward dominance. Weedy annuals may still be present but should be less than the previous year. Absolute ground cover is at least 75%. At least one primary hydrology indicator from the Midwest Regional Supplement is present. The source(s) of hydrology are appropriate for the target Nebraska wetland subclass (Riverine Floodplain). The duration of saturation and/or presence of surface water is appropriate for the target Cowardin water regime modifier (temporarily/seasonally flooded and semi permanently flooded). The NeWRAM condition score will be approaching 2.90.

Year 5 – The percent concurrence of dominant plants observed with diagnostic and noteworthy species associated with the *Eastern Sedge Meadow/Cattail Marsh Community* is ≥ 75%. The Year 4 thresholds have been maintained or surpassed and the site is successfully trending as a stable and self-sustaining site. Invasive species and weedy annuals are less than 10% and are not dominant. Noxious weeds and undesirable species are eliminated. Absolute ground cover is at least 75% or greater. At least one primary hydrology indicator from the Midwest Regional Supplement is present. The source(s) of hydrology are appropriate for the target Nebraska wetland subclass (Riverine Floodplain). The duration of saturation and/or presence of surface water is appropriate for the target Cowardin water regime modifier (temporarily/seasonally flooded and semi permanently flooded). The NeWRAM condition score will be equal to or greater than 2.90.

If the target vegetative thresholds above are not met or if it is determined by the USACE that hydrology is inadequate at any time, the permittee will undertake corrective actions, as directed by the USACE to remedy the failure. For all site management activities, the permittee will consult with the USACE prior to commencement of corrective action.

1. Goals and Construction Phases

The following goals were established for the mitigation project:

- Develop 81.75 credits of wetlands for NDOT future mitigation compensation.
    - Rehabilitate 47 acres of PEMA/C, PEMF, existing wetlands
    - Reestablish 31 acres of PEMA/C wetlands
    - Create 15 acres of upland buffer

Grading is tentatively scheduled to begin in 2020. Seeding and planting will be completed in the growing and/or dormant seasons throughout 2021, depending on when grading is completed and species planting requirements. Appendix D provides a tentative schedule to complete tasks necessary to develop the mitigation bank site.

2. Site Objectives and Functions Desired

After the proposed mitigation bank site has been approved by the IRT stewardship responsibility of the site will be the responsibility of NDOT. This mitigation wetland site has been designed to be self-maintaining. However, some long-term measures may require periodic site management (e.g. noxious weed management and sediment removal). These long-term maintenance activities will be considered on a case-by-case basis.

3. Assessment Methodology

Restored and rehabilitated wetlands would be evaluated using the Nebraska Wetland Rapid Assessment Method (NeWRAM v1.0). The NeWRAM condition score for the proposed reestablished and rehabilitated wetlands was 2.90. The baseline score for existing wetlands proposed to be rehabilitated was 0.62. Additional information about the score can be found in Appendix H.

Table 2. NeWRAM functional assessment for rehabilitated wetlands at the NDOT Ashland Wetland Bank Site

Variable	Existing Wetlands	Rehabilitated & Reestablished
V1-Watershed Land Cover	0.36	0.36
V2-Modifications to Watershed	0.0	0.0
V3-Buffer Continuity & Width	0.1	0.5
V4-Buffer Condition	0.1	1.0
V5-Wetland Vegetation	0.05	0.54
V6-Stressors to Wetland	0.1	0.75
V7-Wetland Land Use	0.1	0.75
NeWRAM Condition Score	**0.62**	**2.90**

4. Monitoring Requirements and Methods

Monitoring of the mitigation area will occur at least annually for five years for PEM wetlands starting the first growing season after construction is complete. Two monitoring events may be conducted each year, with the first event conducted early in the growing season (May-June) to monitor wetland hydrology, and the next event later in the growing season (August-September) to evaluate vegetation. During monitoring events the overall condition of the mitigation area, wetland conditions, noxious weeds, erosion concerns, sedimentation, silt fence condition, etc., will be noted. Wetland characteristics will be documented at several points within the mitigation bank site at established transects. Wetland boundaries and photo stations will be documented using GPS technology. A wetland monitoring report will be submitted to the USACE by December 1 each year.

1. Wetland Vegetation Sampling Methodology

Vegetation will be sampled in each plant community type using the plot (quadrant) based method along transects. Data for all Cowardin classification wetland types will be gathered. Transects will be located perpendicular to a baseline at intervals consistent with Part IV, Section E, in the 1987 USACE Manual. See Wetland Monitoring Map provided in Figure 11, Appendix A. Vegetation composition will be identified in each of the following vegetation stratums: herbs, shrubs, woody vines and trees. Absolute percent cover of species will be determined at each plot.

2. **Hydrology**
   Surface water depth will be measured each spring at each county road culvert and from groundwater monitoring wells that will located throughout the site. Observations of wetland hydrology indicators will also be recorded during annual monitoring events. Hydrology data will be presented in the annual monitoring report.

3. **Wetland Soils**
   Soil observations will be made at representative transect points to assess development of hydric soils at the site. Hydric soils present prior to mitigation construction are expected to persist. Soils without hydric characteristics may take many years to develop. The success of the mitigation bank site will not be contingent upon the development of hydric soils during the monitoring period.

4. **Photo Stations**
   There will be photo stations at various locations on the site to visually document temporal change of vegetation and hydrology in the wetland. Specific locations will be determined in the field.

E. Adaptive Management, Contingency and Remedial Action Plan

If the mitigation bank site fails to meet the performance standards, NDOT shall develop a plan for appropriate remedial action and submit it to USACE for approval, in coordination with the Interagency Review Team [IRT (as appropriate)], prior to implementation. The remedial actions will be based on information contained in the monitoring reports, and/or on-site inspections conducted by NDOT Environmental or District staff or by the IRT. NDOT will include information relative to the implementation and success of any remedial actions taken at the mitigation bank site in the annual monitoring report.

If the USACE determines the site has incurred a deficit because of pre-crediting, debiting of credits will immediately cease. NDOT will determine what remedial actions are necessary to correct the situation and submit them to the USACE, in coordination with the IRT (as appropriate), prior to implementation. Upon USACE approval, NDOT will then undertake those corrective measures.

If NDOT fails to implement the necessary remedial actions within 30 calendar days after notification by USACE or another authorizing agency, or within an established time frame agreed upon by USACE, the IRT (acting through the Chair) will notify NDOT and the appropriate authorizing agencies and will recommend appropriate remedial actions.

F. Long-term Management Provisions

NDOT either will provide long-term management of the Site or will transfer long-term management responsibilities to another USACE approved entity. NDOT will

provide the USACE with a long-term management strategy. Regardless, the wetlands, streams, and/or other aquatic resources at the site will be protected in perpetuity with the appropriate real estate arrangements. Such arrangements should effectively restrict harmful activities that might jeopardize the purpose of the site. Written documentation (letter format) of NDOT's financial resource commitments for long-term management will be provided to the USACE as part of a Site Development Plan. NDOT would provide the necessary financial commitment documentation to the USACE for long-term management by a third party should responsibilities for management for a Site be transferred (as defined in the Site Development Plan or later). Any transfer of responsibilities to a third party requires approval by the USACE prior to said transfer.

G. Credit Production

1. Assessment Methodology

The wetland assessment method used each year will follow the performance standards, NeWRAM, and general requirements in Section D. It should be noted that certain requirements and specifications may be modified based on site-specific conditions and additional research information from the literature.

2. Schedule of Credit Production

Credits will be developed by the bank sponsor and become available for debiting based on the stage and success of project according to procedures specified in the NDOT Wetland Bank Umbrella Instrument. It should be noted that 5% of the pre-credits become available after the Site Development Plan is approved, financial assurance is secured, and site protection is established. An additional 10% of pre-credits become available after construction is complete, and another 15% of the pre-credits become available after the first year of monitoring if the site meets the year 1 performance goals.

3. Ratio of Credits

Post construction aquatic resources are expected to develop because of the wetland reestablishment and wetland rehabilitation. The proposed bank is anticipated to have approximately 77.7 acres of Riverine Floodplain; Palustrine Emergent, Temporarily to Semi-permanently Flooded wetlands (PEMA, PEMC and PEMF). In addition, 25.6 acres of uplands consisting of reconstructed prairie is proposed as buffer around the wetland restoration.

A 1:1 (wetland acre to wetland credit) ratio will be applied to certified rehabilitated and reestablished wetlands based on the post rehabilitation and reestablishment NeWRAM scores being higher than the existing wetland score of 0.62. Pre-certified credits will have a higher ratio as defined in the Umbrella Mitigation Banking Agreement. Upland buffer credit will be applied at a 4:1 credit production ratio for a 50-foot width around perimeter of the mitigation bank which is only 15 of the total 25.6 acres. A buffer credit

ratio of 4:1 equals 3.75 wetland credits. Table 3 provides a summary of expected wetland types and areas.

Table 3. Expected wetland types, areas and credits from wetland restoration at Phase III.

Type	HGM	Cowardin	Area (acres)	Credits
Rehabilitated Wetland	Riverine Floodplain	PEMA, PEMC, PEMF	47	47 (@ 1:1)
Reestablished Wetland	Riverine Floodplain	PEMA, PEMC	31	31 (@1:1)
Created Buffer	NA	NA	15	3.75 (15@ 4:1)
Total Credits				**81.75**

Service Area

The service area for the proposed bank encompasses the Nebraska/Kansas Loess Hills Level IV Ecoregion with HUC 10200. It includes portions of HUC 1022201, 10200202 and 10200203. See the Bank Service Area map in Figure 2 of Appendix A.

Literature Cited

Core Team. Development, Field Testing, and Validation of the Nebraska Wetland Rapid Assessment Method (NeWRAM v1.0). pp. 67-124

Crumpton, W., A.G. Van der Valk, W. Hoyer, and D. Oserberg. 2012. *Wetland Restoration in Iowa- Changes and Opportunities.* The Iowa Policy Project.

Dahl, T.E. and D.E. Nomsen. 1987. *Seed Bank of a Drained Prairie Wetland.* Proceedings of the Society of Wetlands Scientists' Eighth Annual Meeting May 26-29, 1987.

Dahl, T.E. 1990. *Wetlands- Losses in the United States-1780's to 1980's.* US Department of Interior, Fish and Wildlife Service, Washington DC. 21 pp.

DeBerry, D.A., and J.E. Perry. 2000. *Wetland Seed Banks: Research in Natural and Created Wetlands. Wetlands Program Technical Report No. 00-4.* School of Marine Science, Virginia Institute of Marine Science, College of William and Mary.

Knox, J.C 2006. *Floodplain Sedimentation in the Upper Mississippi Valley: Natural Versus Human Accelerated.* Geomorphology 79:286-310.

LaGrange, T. 2015. *Wetland Program Plan for Nebraska.* Nebraska Game and Parks Commission. 72 pp.

Schneider, R., K. Stoner, G. Steinauer, M. Panella, and M. Humpert. 2011. *The Nebraska Natural Legacy Project: State Wildlife Action Plan. 2nd Edition.* Nebraska Game and Parks Commission. Lincoln, Nebraska.

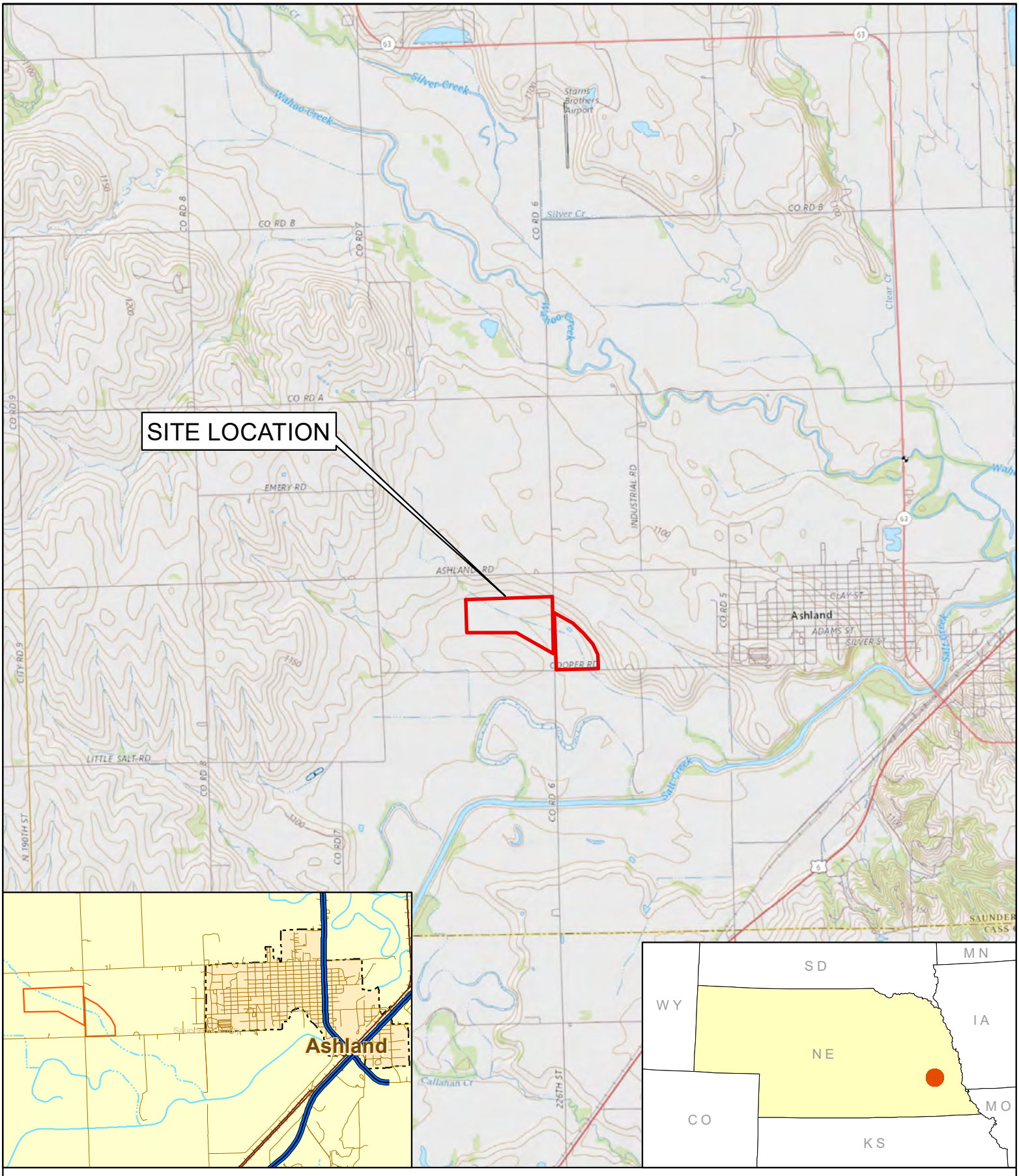
Trimble, S.W. 1999. *Decreased Rates of Alluvial Sediment Storage in the Coon Creek Basin, Wisconsin*, 1975-93. Science 285:1244-1246.

US Army Corps of Engineers (USACE) 2012. Code of Federal Regulations, Part 332— *Compensatory Mitigation for Losses of Aquatic Resources.* Title 33-Navigation and Navigable Waters. Volume 3.

Van der Valk, A.G., R.L. Pederson, and C.B. Davis. 1992. *Restoration and Creation of Freshwater Wetlands Using Seed Banks.* Wetlands Ecology and Management Vol.1 n. 4 pp. 191-197. SPB Academic Publishing

APPENDIX A

SITE MAPS



USGS Topographic Imagery
Ashland West Quad 1969

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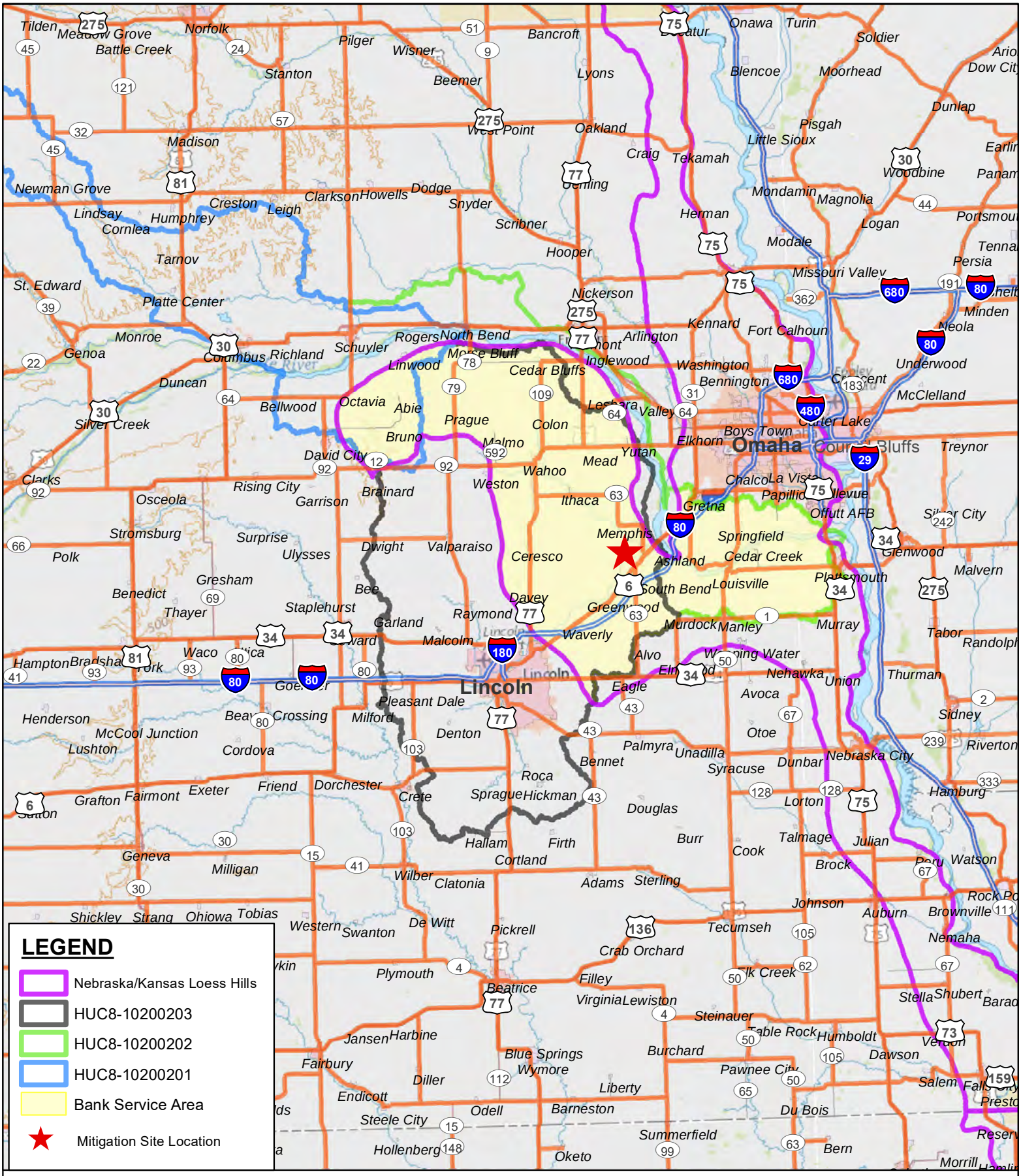
SITE LOCATION MAP - FIGURE - 1

Nebraska Department of Transportation
Project Number: MISC-79-2(1019)
CN: 10584B
Ashland Wetland MitigationBank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4



BANK SERVICE AREA - FIGURE - 2

Nebraska Department of Transporation
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CN: 10584B
Ashland Wetland Mitigation Bank
Saunders County, NE
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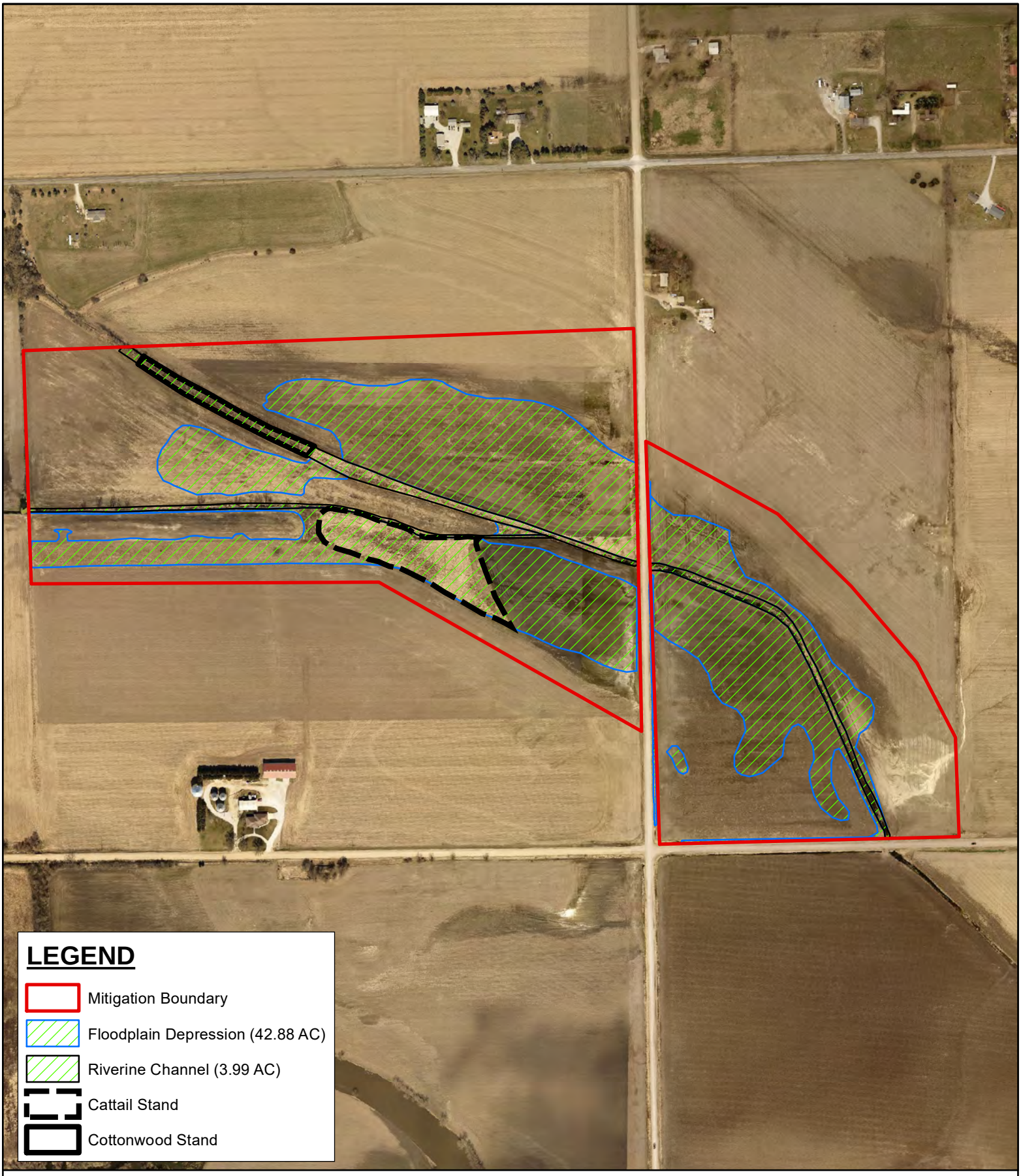

NAIP 2016 Saunders County Aerial Imagery

EXISTING WETLANDS MAP - FIGURE - 3

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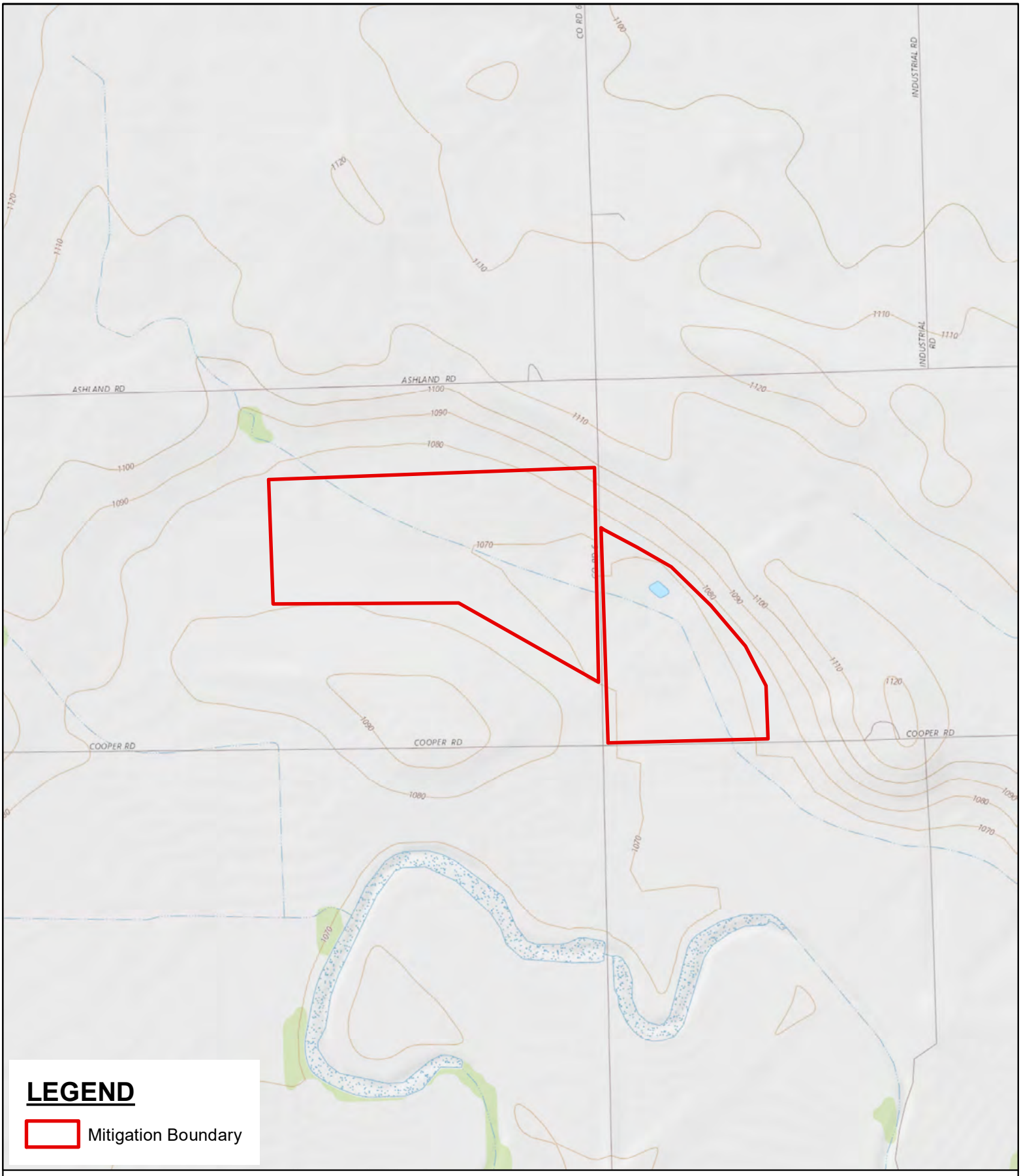

USGS Topographic Imagery
Ashland West Quad 1969

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USGS TOPOGRAPHIC MAP - FIGURE - 4

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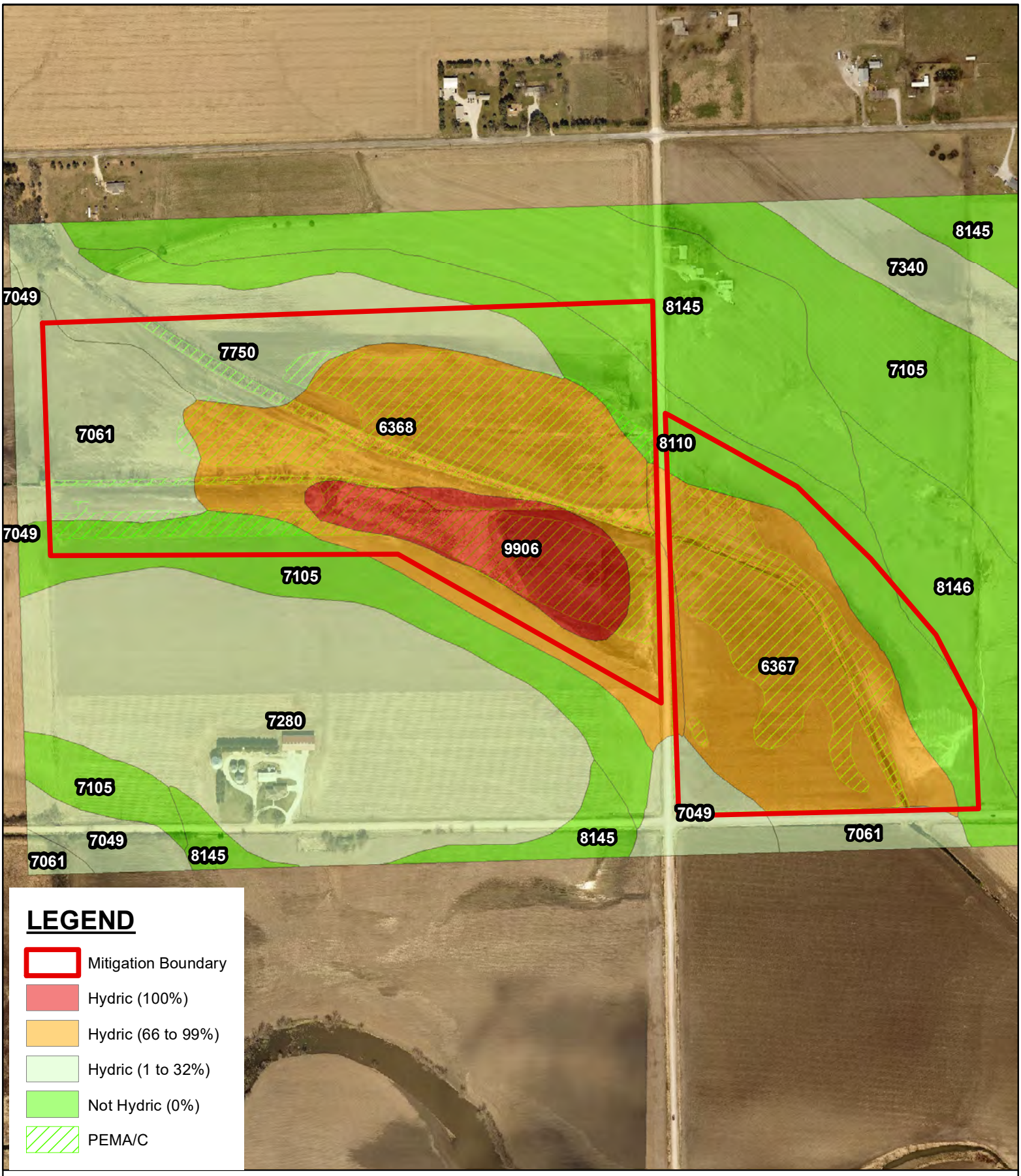

LEGEND

- Mitigation Boundary
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- PEMA/C

NIROC 2016 Saunders County Aerial Imagery

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HYDRIC SOILS MAP - FIGURE - 5

Nebraska Department of Transportation
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Ashland Wetland Mitigation Bank
Saunders County, NE
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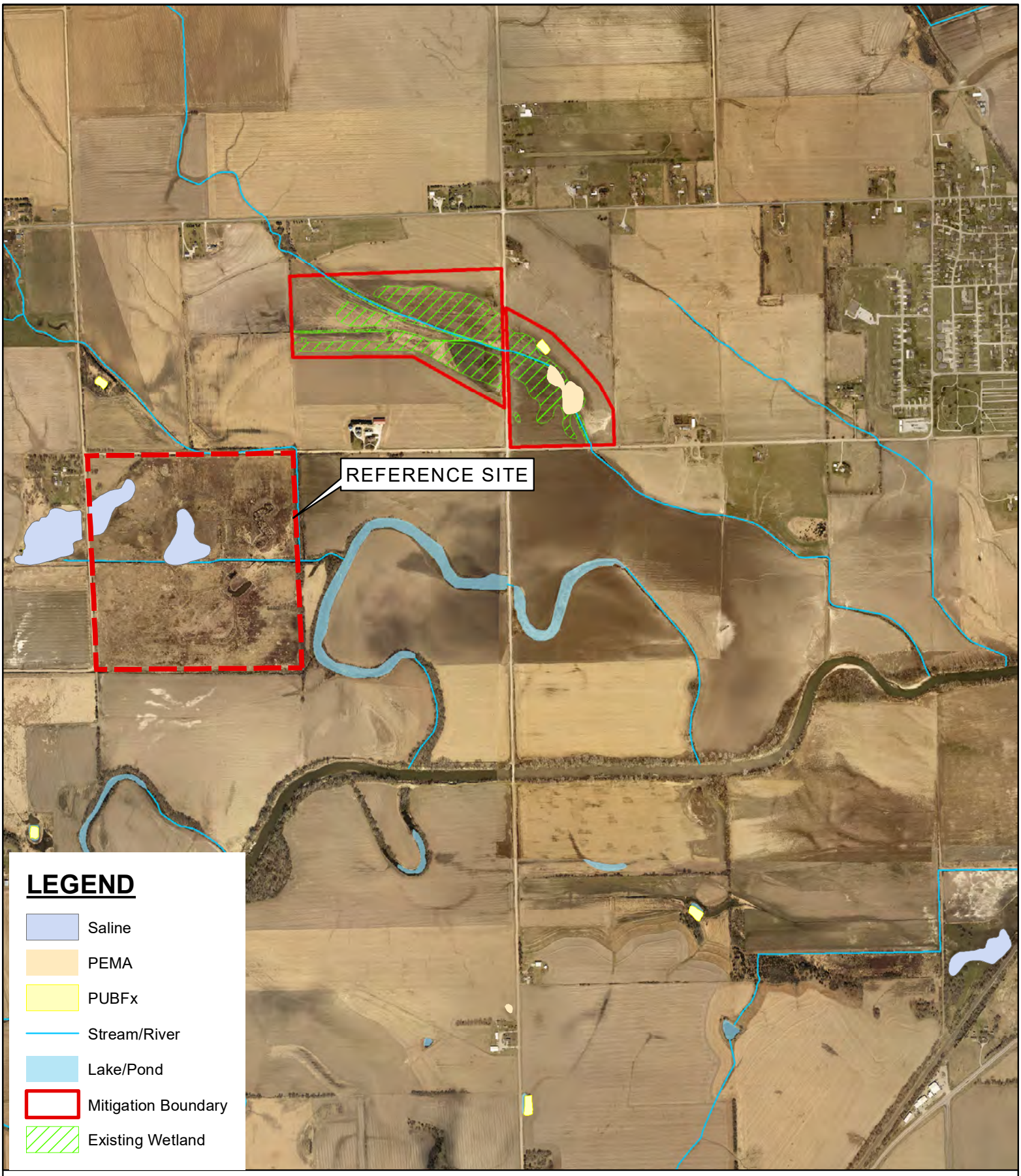

NIROC 2016 Saunders County Aerial Imagery

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NWI/NHD - FIGURE - 6

Nebraska Department of Transportation
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CN: 10584B
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

ASHLAND RD

CO RD 6

COOPER RD

LEGEND

- PROPERTY LINES
- DELINEATED WETLAND
- REMOVE STREAM CLEAN-OUT SPOIL TO NATURAL GRADE
- AREAS NOT TO BE DISTURBED
- CLEAR AND GRUB VEGETATION
- FILL TO SAUNDERS CO. R.O.W.

N

0 75' 150' 300'
SCALE

Leave Existing Cottonwood stand

Minor grading

Minor grading

Ditch Plug Elev. 1073

Ditch Plug Elev. 1072

Ditch Plug Elev. 1071

Minimal Grading

Minimal Grading

Fill Ditch

Minimal Grading

Ditch Plug Elev. 1072

Minimal Grading

Fill west ditch of roadway

Minor grading

Wire Fence

Leave existing Cattail Marsh

Wire Fence

Use Existing Road Culvert I.E.1067.00

Minimal Grading

Fill East Ditch of Roadway

Sheet Pile Weir Adjustable Elev. 1068-1070

Fill North Ditch of Roadway Tie into Weir

Use Existing Road Culvert I.E. 1068.00

Fill North Ditch of Roadway Tie into Weir

Abandon 12" culvert I.E. 1065.00

Figure 7 - Concept Design Plan

ROADWAY DESIGN DIVISION

PROJECT NO.	SHEET NO.
79-2(1019)	
C.N. 10584B	

PRELIMINARY PLAN
NOT FINAL - SUBJECT TO CHANGE

0 50' 100' 200'
SCALE

Leave Existing Cottonwood stand

50' BUFFER

Minor grading

Ditch Plug Elev. 1073

Ditch Plug Elev. 1072

Ditch Plug Elev. 1071

Minor grading

No Grading

Remove stream cleanout spoil - high spot

Fill Ditch

No Grading

1/4 1/4 SEC. LINE

1/4 SEC. LINE

Ditch Plug Elev. 1072

No Grading

Remove stream cleanout - high spot

Minor grading

Leave existing Cattail Marsh

Fill west ditch of roadway

1076 1075 1074 1073 1072 1077

1075.0 1080.0 1085.0 1070.0

Benesch

File: Grading Exhibit May 25 2018.dgn Date: 31-MAY-2018
Scale: 1:200

FIG 8A GRADING

ROADWAY DESIGN DIVISION

PROJECT NO.	SHEET NO.
79-2(1019)	
C.N. 10584B	

PRELIMINARY PLAN
NOT FINAL - SUBJECT TO CHANGE

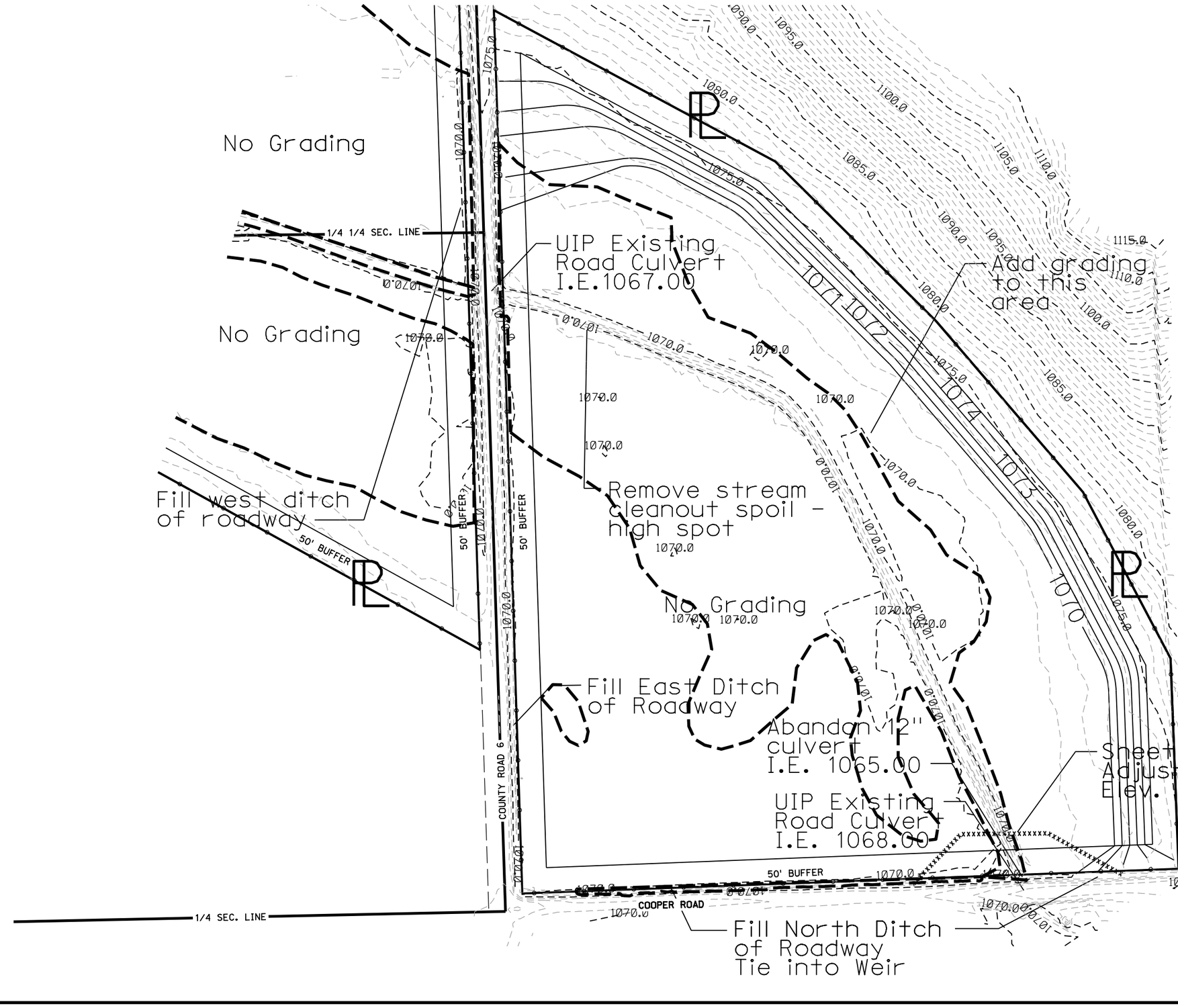

FIG 8B GRADING

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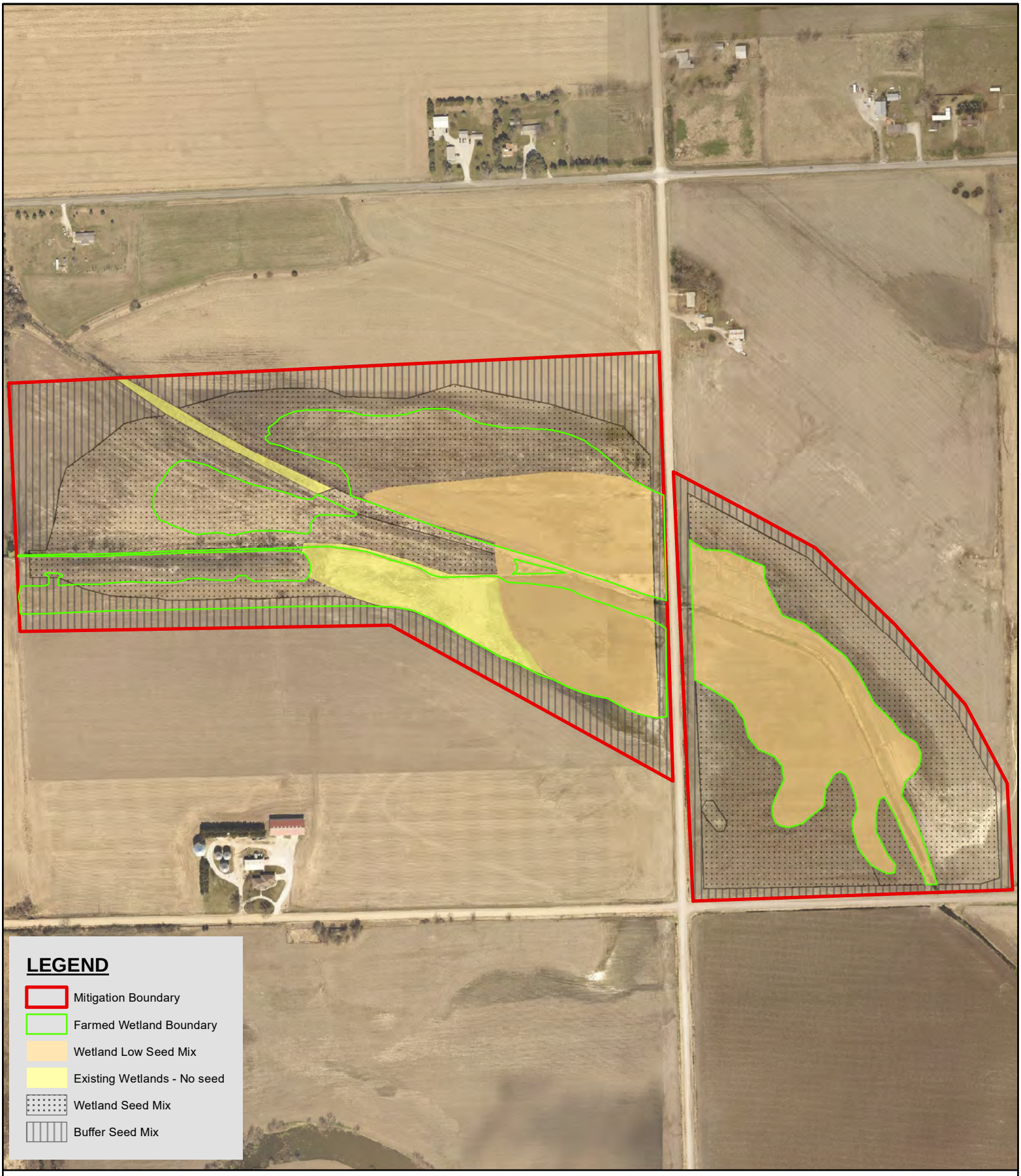
Benesch



NAIP 2016 Saunders County Aerial Imagery

VEGETATION PLANTING PLAN - FIGURE - 9

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Feet

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Ashland Wetland Bank
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NIROC 2016 Saunders County Aerial Imagery

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FIGURE 10 - PROPOSED COWARDIN CLASSIFICATION

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Ashland Wetland Mitigation Bank
Saunders County, NE
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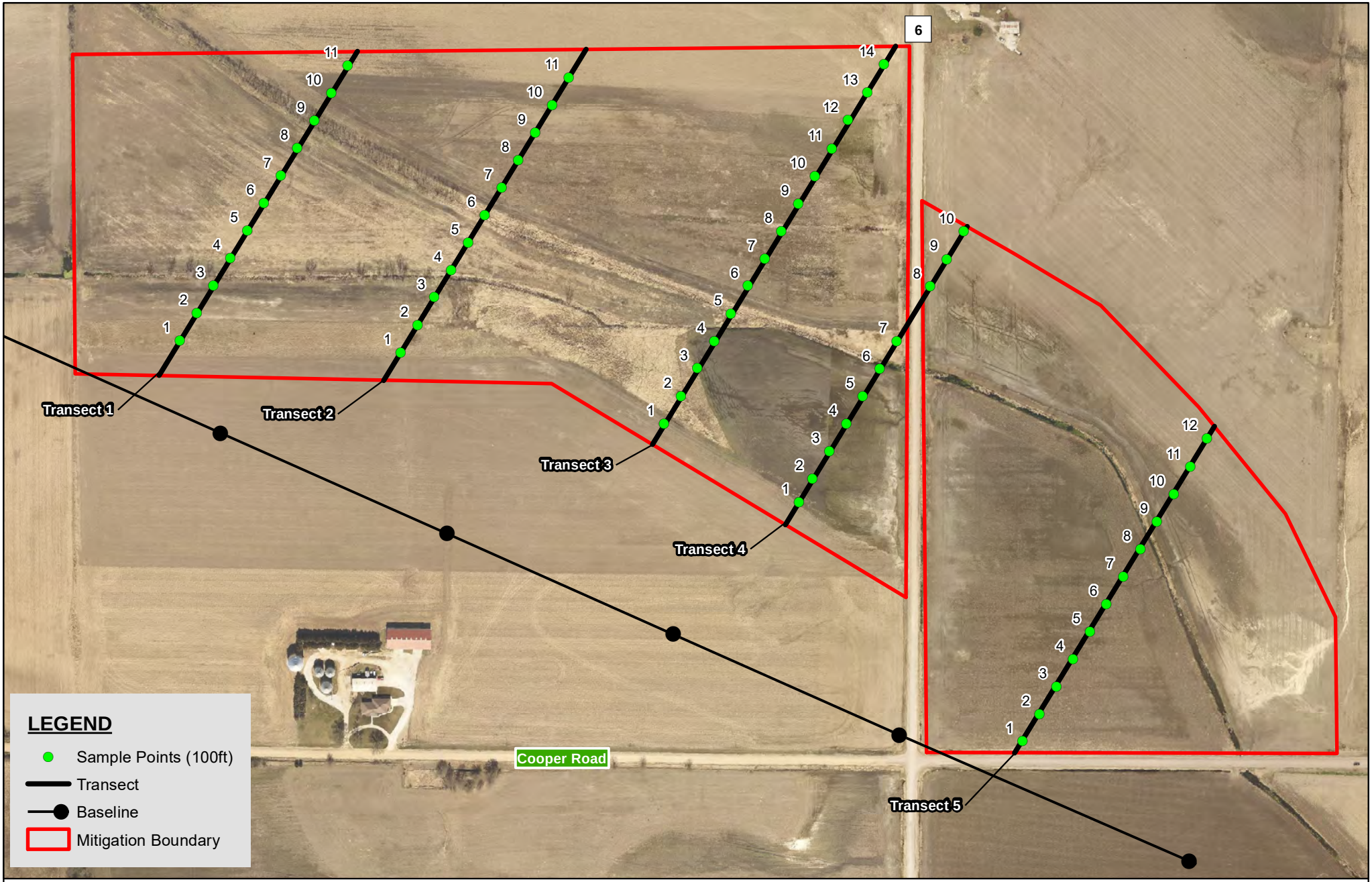

NAIP 2016 Saunders County Aerial Imagery

**Transect layout follows the USACE 87 Manual for sampling an area greater than 10 acres

0 200 400 Feet

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FIGURE 11 - MITIGATION MONITORING PLAN

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Ashland Wetland Bank
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APPENDIX B

HISTORIC AERIAL PHOTOGRAPHS

NAIP 1949 Saunders County Aerial Imagery

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0 150 300 600
Feet

1949 AERIAL & DRAINAGE MANIPULATIONS

Nebraska Department of Trasportation
Project Number: MISC-79-2 (1019)
CN: 10584B
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

benesch
engineers · scientists · planners

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NAIP 1949 Saunders County Aerial Imagery

N

0 150 300 600
Feet

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1949 AERIAL

Nebraska Department of Trasportation
Project Number: MISC-79-2 (1019)
CN: 10584B
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

NAIP 1955 Saunders County Aerial Imagery

N

0 150 300 600
Feet

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1955 AERIAL

Nebraska Department of Trasportation
Project Number: MISC-79-2 (1019)
CN: 10584B
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

NAIP 1965 Saunders County Aerial Imagery

N

0 150 300 600
Feet

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1965 AERIAL

Nebraska Department of Trasportation
Project Number: MISC-79-2 (1019)
CN: 10584B
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

LEGEND

Property Line (101.5 Acres)

NAIP 1971 Saunders County Aerial Imagery

N

0 150 300 600
Feet

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engineers · scientists · planners

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1971 AERIAL

Nebraska Department of Trasportation
Project Number: MISC-79-2 (1019)
CN: 10584B
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

APPENDIX C

WETLAND AND BUFFER SEED LISTS

SEEDING

Subsection 801.02 in the Standard Specifications is amended to include the following:

Type "Wetland Low (for "Cattail Shallow Marsh")"	Minimum Purity	Broadcast or Hydraulic Seeder Application Rate in lb. of Pure Live Seed/Acre	Approved Mechanical Drill Application Rate in lb. of Pure Live Seed/Acre
Rice cutgrass (Leersia oryzoides)	85	1	0.75
Giant bur-reed (Sparganium eurycarpum)	85	4	4
River bulrush (Bolboschoenus fluviatilis)	80	1.25	1
Broadleaf cattail (Typha latifolia)	85	0.2	0.1
Duck-potato arrowhead (Sagittaria cuneata)	85	8	7

Seeding

Subsection 801.02 in the Standard Specifications is amended to include the following:

Type “Wetland” (for “eastern sedge wet meadow”)	Minimum Purity	Broadcast Application Rate in lb. of Pure Live Seed/Acre	Approved Mechanical Drill Application Rate in lb. of Pure Live Seed/Acre
Foxtail barley (Hordeum jubatum)	85	7	5
Crested sedge (Carex cristatella)	85	0.5	0.3
Fox sedge (Carex vulpinoidea)	85	0.6	0.5
Woolly sedge (Carex pellita)	85	0.8	0.6
Saw-beak sedge (Carex stipata)	85	1	0.75
Dark green bulrush (Scirpus atrovirens)	80	0.2	0.15
Spikerush (Eleocharis palustris)	85	0.35	0.25
Torrey’s rush (Juncus torreyi)	85	0.05	0.04
Blue vervain (Verbena hastata)	85	0.25	0.2
Giant goldenrod (Solidago gigantea)	80	0.03	0.02
Oats/wheat*	90	16	13

* Wheat in the fall

Seeding

Subsection 801.02 in the Standard Specifications is amended to include the following:

Type "Buffer"	Minimum Purity	Broadcast Application Rate in lb. of Pure Live Seed/Acre	Approved Mechanical Drill Application Rate in lb. of Pure Live Seed/Acre
Slender wheatgrass	85		4.5
Western wheatgrass – Flintlock, Barton	85		4
Virginia wildrye – Omaha, native	85		4
Canada wildrye – Mandan, Homestead, Iowa or Nebraska native	85		5
Broom sedge (Carex scoparia)	85		0.03
Switchgrass – Blackwell, Pathfinder, Trailblazer	90		1.5
Indiangrass – NE-54, Oto, Holt	90		2.5
Little bluestem – Aldous, Blaze, Camper	60		2.5
Prairie cordgrass (Spartina pectinata)	75		1
Sand dropseed (Sporobolus cryptandrus)	90		0.2
Big bluestem – Bonanza, Champ, Kaw, Pawnee, Roundtree	60		2.5
New England aster (Aster novae-angliae)	85		0.15
Plains coreopsis (Coreopsis tinctoria)	90		0.1
Thickspike gayfeather (Liatris pycnostachya)	85		0.2
Butterfly milkweed (Asclepias tuberosa)	75		0.2
Oats/Wheat*	90		14

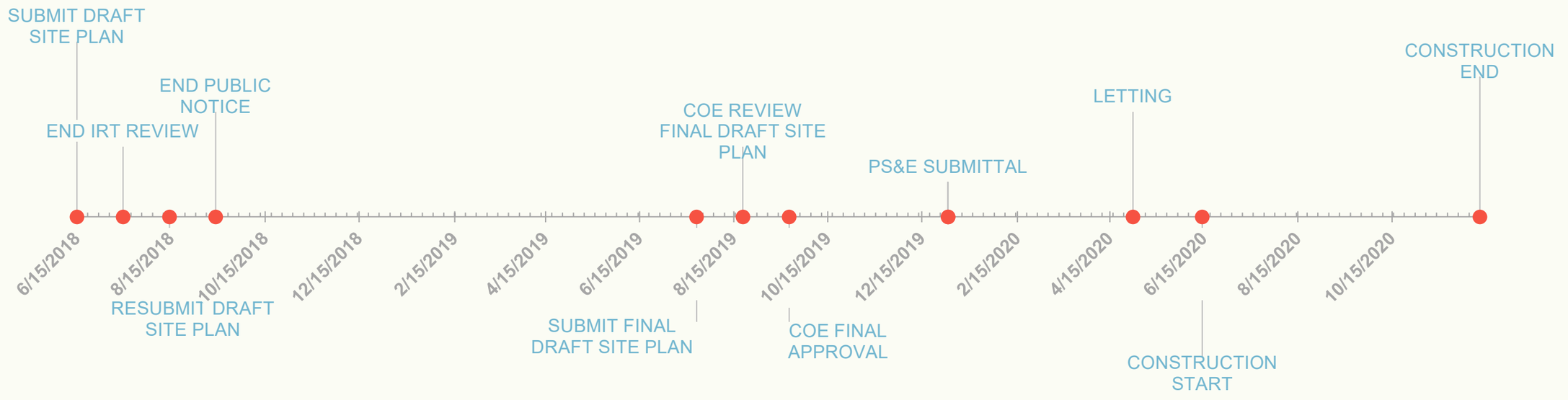
* Wheat in the fall

APPENDIX D

SCHEDULE

NDOT - Ashland Wetland Bank

TIMELINE



APPENDIX E

SAMPLE DEED RESTRICTION

Deed Restriction – template

COVENANT OF DEDICATION

(PERMITTEE) now stipulates to the following statements of fact, and further agrees to restrict the use and title of the realty described in Sheet 1 to this document (hereinafter referred to as the "Land") in accordance with the terms and conditions set forth herein.

STIPULATIONS OF FACT

1. That (PERMITTEE) is the applicant for Department of the Army permit number

(NUMBER) to place fill material in the wetlands located in (LEGAL DESCRIPTION); and that the U.S. Army Corps of Engineers has regulatory jurisdiction over the discharge of dredged or fill material into said wetlands pursuant to Section 404 of the Clean Water (33 USC 1344).

2. That (PERMITTEE) is the owner in fee of the real estate described in Attach 1.

3. That (PERMITTEE) and the Omaha District of the U.S. Army Corps of Engineers have reached an agreement whereby (PERMITTEE) will be permitted to discharge fill material in wetlands in accordance with the terms and conditions of Department of the Army permit number (NUMBER); and that in consideration for said discharge of fill material in the wetland, (PERMITTEE) will provide mitigation for the adverse environmental effects resulting from the placement of fill material in the wetland by dedicating the realty described in Appendix 1 for perpetual use as a conservancy area in accordance with the terms and conditions of this document and the above-mentioned permit.

4. That the above-mentioned dedication shall consist of the execution of this document by all parties necessary to restrict the use and title of the land; and that this document shall be recorded in the Office of the Register of Deeds for (COUNTY), (STATE).

5. That upon receipt of a certified copy of this document, as recorded in the Office of the County Register of Deeds for (COUNTY), (STATE), the District Engineer of the Omaha District of the U.S. Army Corps of Engineers will issue a validated permit, number (NUMBER) to (PERMITTEE); and that said permit shall be issued in consideration for the execution of this Covenant.

6. That the terms and conditions of this Covenant of Dedication shall, as of the date of execution of this document, bind (PERMITTEE) to the extent of his legal and/or equitable interest in the land; and that this Covenant shall run with the land and be binding on (PERMITTEE) and its successors and assigns forever.

7. That the terms and conditions of this Covenant shall be both implicitly and explicitly included in any transfer, conveyance, or encumbrance of the Land or any part thereof, and that any instrument of transfer, conveyance, or encumbrance affecting all or any part of the Land shall set forth the terms and conditions of this document either by reference to this document or set forth in full text.

DEED AND USE RESTRICTIONS

(PERMITTEE) hereby warrants that he is the owner in fee of the realty described in Appendix 1; and that the Land is hereby dedicated in perpetuity for use as a conservancy area.

(PERMITTEE) hereby agrees to restrict the use and title of the Land as follows:

1. There shall be no construction or placement of structures or mobile homes, fences, signs, billboards or other advertising material, or other structures, whether temporary or permanent, on the land.

2. There shall be no filling, draining, excavating, dredging, mining, drilling or removal of topsoil, loam, peat, sand, gravel, rock, minerals or other materials.

3. There shall be no building of roads or paths for vehicular or pedestrian travel or any change in the topography of the land.

4. There shall be no removal, destruction, or cutting of trees or plants; spraying with biocides, insecticides, or pesticides; grazing of animals, farming, tilling of soil, or any other agricultural activity. Management activities are acceptable upon approval from the Corps.

5. There shall be no operation of all-terrain vehicles or any other type of motorized vehicle on the land.

6. This Covenant of Dedication may be changed, modified or revoked only upon written approval of the District Engineer of the Omaha District of the U.S. Army Corps of Engineers. To be effective, such approval must be witnessed, authenticated, and recorded pursuant to the law of the State of (STATE).
This Covenant needs to be reviewed by the Corps of Engineers prior to signature to assure compliance with permit conditions.

USACE representative's initial _____

7. This Covenant is made in perpetuity such that the present owner and its heirs and assigns forever shall be bound by the terms and conditions set forth herein.

By:
(PERMITTEE)

Executed before me this ____ day of _____, 20____, by (PERMITTEE) who is personally known to me.

_____ My commission expires_____
Notary Public

APPENDIX F

FINANCIAL ASSURANCE

NEBRASKA

Good Life. Great Journey.

DEPARTMENT OF TRANSPORTATION

June 14, 2018

Matt Wray
Regulatory Project Manager
US Army Corps of Engineers
Nebraska Regulatory Office
8901 So. 154th Street, Suite 1
Omaha, NE 68138-3621
Matt.T.Wray@usace.army.mil

re: Proposed NDOT Ashland Wetland Mitigation Bank
Approximate 101.5-ac parcel
East & West of Saunders Co. Rd. 6
North of Cooper Road
Sections 3 & 4, T12N, R9E, Saunders Co.
NDOT CN 10584B

Attention Mr. Wray:

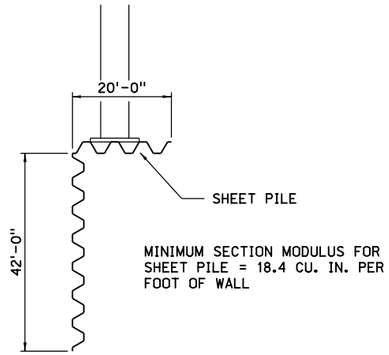
Pertaining to the proposed Ashland Wetland Mitigation Bank site, to be constructed during the 2019 construction season, the Nebraska Department of Transportation (NDOT) would be responsible for all costs associated with site construction, maintenance, protection, monitoring, corrective actions, and long term management. NDOT has adequate funding to facilitate all noted costs.

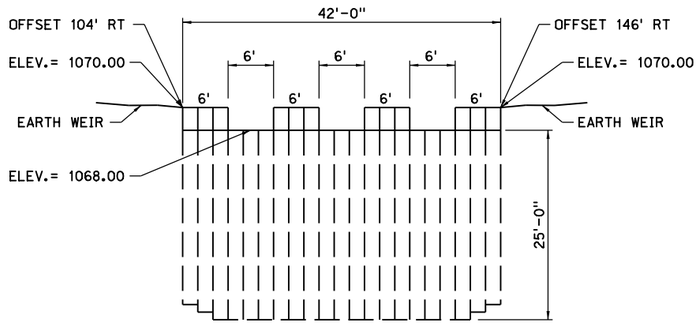
Thomas Goodbarn, P.E.
Highway District Engineer, District 1
Nebraska Department of Transportation
302 Superior Street
Lincoln, NE 68521-2481

Kyle Schneweis, P.E., Director
Department of Transportation
1500 Highway 2
PO Box 94759
Lincoln, NE 68509-4759
OFFICE 402-471-4567 FAX 402-479-4325
NDOT.ContactUs@nebraska.gov
dot.nebraska.gov

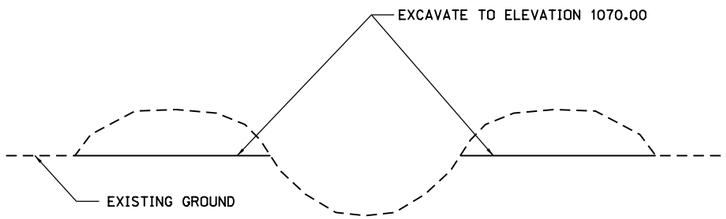
APPENDIX G

ENGINEERING PLANS & FLUVAQUENT GEOTECHNICAL INVESTIGATION MEMO





SHEET PILE



CHANNEL CLEANOUT

DITCH PLUG SPECIFICATIONS

WING DIKE :

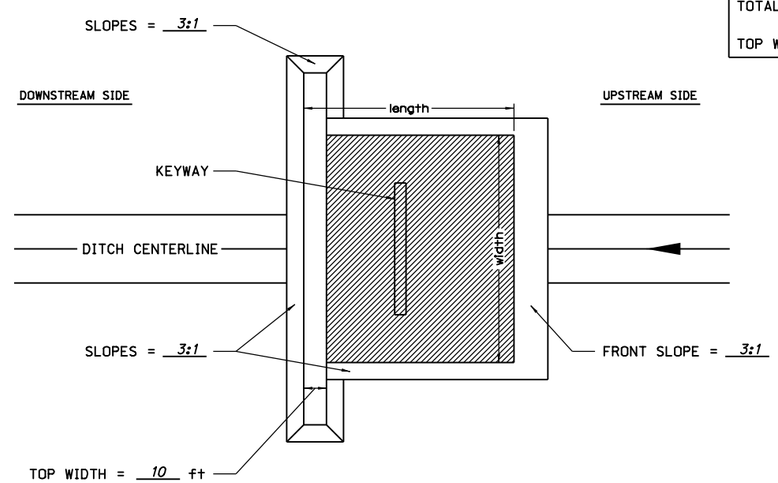
TOTAL LENGTH = _____ ft

TOP WIDTH = 10 ft

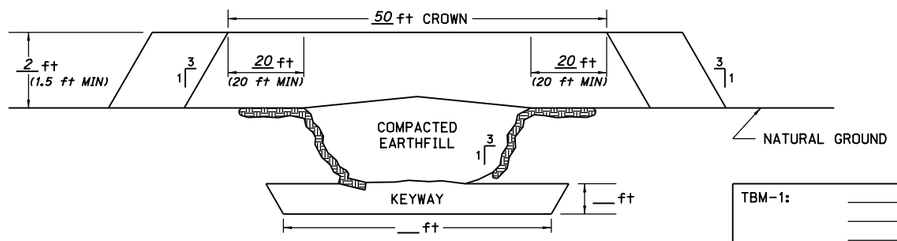
DITCH PLUG :

TOTAL LENGTH = _____ ft

TOP WIDTH = _____ ft



PLAN VIEW



TBM-1: _____

Elevation = _____

CROSS SECTION - FRONT VIEW

SHEET PILE & DITCH PLUG DETAILS

Engineering Job Sheet – Ditch Plug

Where open channels were previously constructed to drain wetlands, the channel will be filled with earth to restore the wetland hydrology as close as possible to the pre-drained or natural condition.

Design Considerations

- Provisions will be made to store, pass or divert the flow from a 10-year frequency 24-hour storm.
- A keyway will be installed perpendicular to the ditch bottom and shall extend a minimum of 10 feet past the existing ditch bottom. The keyway shall be constructed of non-sandy soils.
- The minimum length of the channel to be filled will be based on the permeability of the backfill material. The minimum length for non-sandy soils is 25 feet and 50 feet for sandy soils.
- The fill for the ditch plug will be compacted to achieve the density of the adjacent material.
- The plug shall be **crowned** to a minimum of 1.5 ft above the lowest existing channel bank.
- Wing dikes are an integral part of the ditch plug system because they protect the plug against washout during storm events.
- Wing dikes should be constructed to protect the downstream side of the ditch plug during storm events.
- Wing dikes may also be utilized to enhance an area by providing some shallow (<24") surface water storage.
- Wing dikes should be tied into natural ground at the same elevation as the desired restoration or enhancement level.

Construction Techniques

- Grub and remove all organic soils, woody materials, and other debris from the foundation of the plug including the side slopes and bottom.

- The ditch side slopes shall be pulled back on a 3:1 (H:V) to create the proper bonding surface between the existing soil and the new backfill material.

- A keyway trench shall be excavated to a depth 2.0 feet below the existing ditch bottom and shall extend a minimum of 10 feet into each bank. The trench shall be backfilled and compacted with non-sandy material to the elevation of the existing ditch bottom.

- The backfill for the plug and crown shall be placed in 9 inch loose lifts and compacted to a 6 inch layer.

- The equipment and specific compaction methods to be utilized shall be discussed and agreed upon by the landowner, contractor, and NRCS.

- The ditch plug location shall be marked in the field by NRCS and shall not be moved or altered under any circumstance, unless authorized by NRCS.

- Vegetation of the finished plug shall be in accordance with NRCS specifications.

Operation and Maintenance

- The plug should be evaluated for signs of erosion following heavy or unusual storm events.

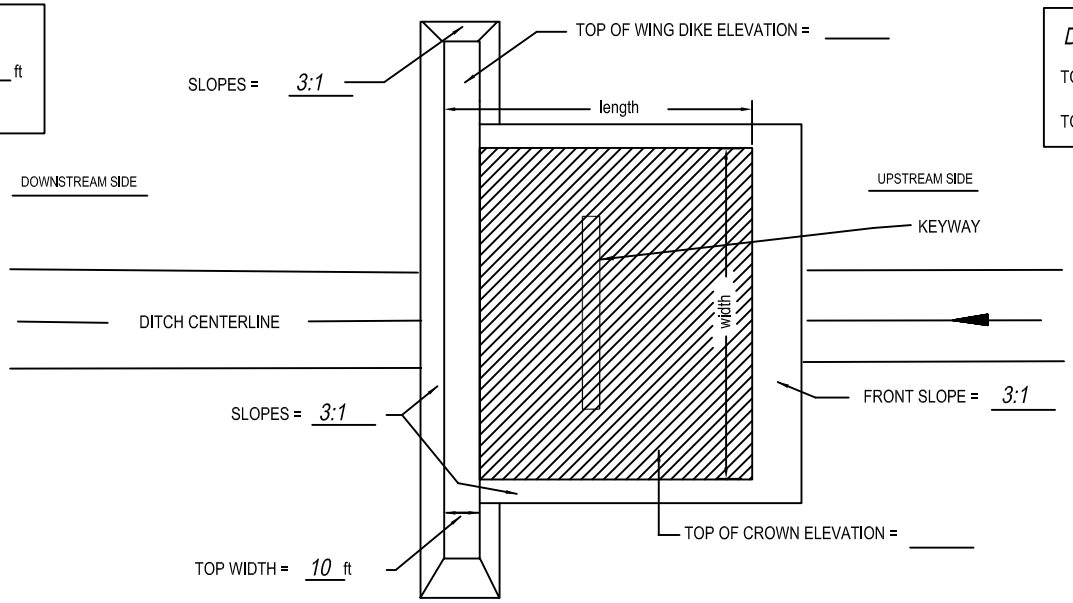
- The plug should be mowed at least once a year to minimize the growth of woody vegetation, thus maintaining the structural integrity of the plug.

DITCH PLUG SPECIFICATIONS

WING DIKE:

TOTAL LENGTH = ____ ft

TOP WIDTH = *10* ft

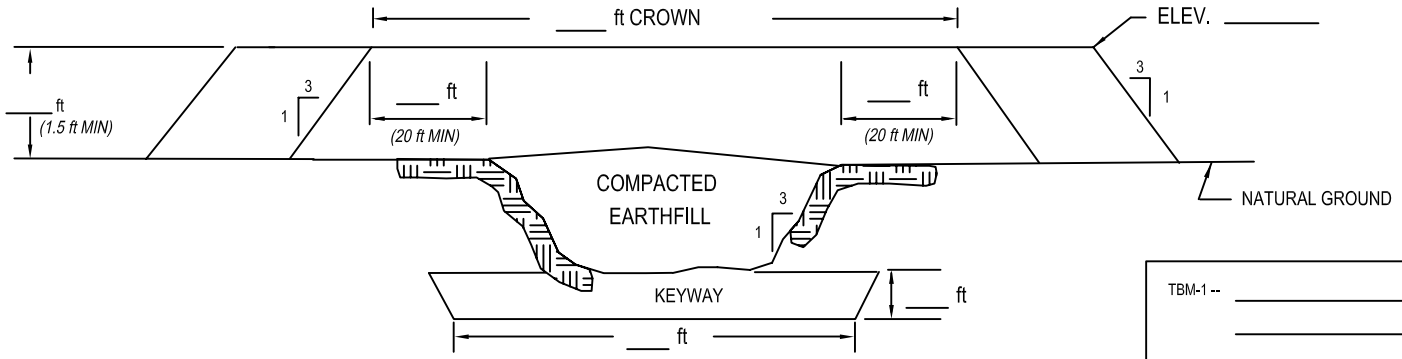


PLAN VIEW

DITCH PLUG:

TOTAL LENGTH = ____ ft

TOP WIDTH = ____ ft



CROSS SECTION - FRONT VIEW

TBM-1 -- _____

_____

_____

Elevation = _____

Drawing adapted from South Carolina WRPplug.dwg

REVISIONS		
DATE	APPROVED	TITLE

Date

Designed | Drawn | Checked | Approved

____ COUNTY, GEORGIA

DETAIL SHEET - DITCH PLUG and WING DIKE

NRCS Natural Resources Conservation Service United States Department of Agriculture

File Name: WRPplug.dwg

Drawing Name: Wetland Ditch Plug

00/00/00 00:00

Sheet 1 of 1

GEOTECHNICAL REPORT

GEOTECHNICAL DATA REPORT

Nebraska Department of Transportation
Ashland Wetland Mitigation Site
Sections 3 & 4, Township 12 North, Range 9 East
Saunders County, NE

PREPARED FOR

Nebraska Department of Transportation
c/o Mr. Patrick Sward, JD
1500 State Highway 2
Lincoln, Nebraska 68508

August 10, 2017

benesch
engineers · scientists · planners

Alfred Benesch & Company
825 "M" Street, Suite 100
Lincoln, NE 68508-2958
www.benesch.com
P 402-479-2200
F 402-479-2276

August 10, 2017

Nebraska Department of Transportation
c/o Mr. Patrick Sward, JD
1500 State Highway 2
Lincoln, NE 68509

REFERENCE: Geotechnical Data Report
Ashland Wetland Mitigation Bank Site
Sections 3 & 4, Township 12 North, Range 9 East
Saunders County, Nebraska

Dear Mr. Sward:

Alfred Benesch & Company (Benesch) is pleased to submit the enclosed report that summarizes the findings of a geotechnical engineering study and provides recommendations related to the wetland mitigation for the referenced project.

If any questions arise concerning this report or if additional information is needed about soil conditions at this site, please contact Benesch for assistance.

Respectfully yours,

Brandon Desh

Brandon Desh, P.E.
Geotechnical Engineer

Enclosures

Electronic Copy: NDOT, c/o Mr. Patrick Sward, JD

TABLE OF CONTENTS

1.0 INTRODUCTION

Alfred Benesch & Company (Benesch) has been requested by Nebraska Department of Transportation (NDOT) to perform soil characterization and install piezometers for groundwater monitoring for a compensatory wetland mitigation site located 1 mile west of Ashland, Saunders County, Nebraska in sections 3 and 4 of Township 12 North, Range 9E. The proposed wetland mitigation includes enhancement of existing farmed wetlands, restoring former wetlands and reconstructing wetlands.

Benesch performed the following services: (a) auger borings, soil sampling, and installation of piezometers to determine the groundwater levels and depth, (b) characterization of soils for texture, color, density, moisture content and soil permeability in the upper 2 to 3.5 feet, and (c) performing laboratory salinity and permeability tests on in situ samples collected from the proposed site.

2.0 SUBSURFACE EXPLORATION

A program of borings and soil sampling was performed at the project site on June 22 and 23, 2017. Twenty-one (21) exploratory borings were advanced to a depth of 2 to 3.5 feet below the existing grade to establish the characterization of soils for texture, color, density, moisture content and soil permeability in the area under consideration.

The borings were made in accordance with ASTM D 1452, Standard Practice for Soil Investigation and Sampling by Auger Borings. The machine-driven borings used a continuous-flight auger having a diameter of 6 inches. The bore holes were stable and casing was not required. A piezometer was installed at three (3) of the boring locations (PZ-4, PZ-7, PZ-15) to a depth of approximately 12 feet to allow for monitoring of the groundwater at the site.

The vicinity map and the boring location plan are presented in Appendix A. The boring logs (see Appendix B) present the data obtained in the subsurface exploration. The logs include the surface elevations, the approximate depths and elevations of major changes in the character of the subsurface materials, visual descriptions of the materials in accordance with the criteria presented in Appendix C, groundwater data, and the locations of undisturbed samples of soil.

The locations and elevations of the borings and piezometers were determined by a Benesch survey crew. Water level readings were made in the auger borings at times and under conditions stated on the boring logs.

3.0 LABORATORY ANALYSES

The undisturbed soil samples obtained during the subsurface exploration were examined in the laboratory by a member of Benesch's professional engineering staff to supplement the field identification. Standard tests were performed on selected samples to determine the engineering properties of the foundation materials.

The moisture contents and dry unit weights of selected undisturbed soil samples were determined in the laboratory. These test results are presented in the boring logs opposite the respective sample locations. The moisture contents were determined in accordance with either ASTM D 4643, Standard Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method, or ASTM D 2216, Standard Test Method for Determination of Water (Moisture) Content of Soil and Rock by Mass. The dry unit weights were determined in accordance with the Displacement Method of the Corps of Engineers, EM1110-2-1906, Appendix II, Unit Weights, Void Ratio, Porosity, and Degree of Saturation. These data correlate with the strength and compressibility of the soil. High moisture content and low density usually indicate low strength and high compressibility.

The permeability of three (3) in situ samples of onsite lean clay topsoil and alluvial fat clay soils were determined in the laboratory in accordance with USACE EM1110-2-1906. The results of the permeability tests are shown in Table 1 below.

TABLE 1
PERMEABILITY TEST DATA

Boring No.	Soil Type (Group)	Depth ft	Elevation Ft	Moisture, %	Permeability
PZ-4	Recent alluvial topsoil (CL)	1.1-1.7	1073.2-1072.6	39.2	1.4 E-03
PZ-7	Alluvial clay (CH)	1.0-1.6	1069.3-1068.7	40.1	7.0 E-08
PZ-15	Alluvial clay (CH)	1.0-1.6	1068.7-1068.1	38.4	4.6 E-08

The permeability of the recent alluvial topsoil (CL) soils encountered at PZ-4 is indicative of the porous nature of the material with a permeability similar to a well graded granular material and would likely detain water for a short period of time. The permeability of the alluvial clay (CH) soils encountered at PZ-7 and PZ-15 was very tight and would detain water for a longer period of time and even could retain water for some period of time.

The salinity of the surficial soils at three (3) of the boring locations were determined by Midwest Laboratories using the Paste EC Method. A summary of the test results are presented in Table 2.

TABLE 2
SALINITY TEST DATA

Boring No.	Soil Type (Group)	Depth Ft	Elevation Ft	Salinity, mmhos/cm
PZ-7	Alluvial clay(CH)	0.0-0.25	1069.7-1069.45	1.1
PZ-7	Alluvial clay (CH)	0.5-0.75	1069.2-1068.95	0.8
PZ-7	Alluvial clay (CH)	1.0-1.17	1068.7-1068.53	0.7
B-11	Modern colluvium (CH)	0.0-0.25	1074.6-1074.35	0.8
B-11	Recent topsoil (CH)	0.5-0.75	1074.1-1073.85	0.8
B-11	Recent topsoil (CH)	1.0-1.17	1073.6-1073.43	0.8
B-14	Alluvial clay (CH)	0.0-0.25	1069.4-1069.15	1.5
B-14	Alluvial clay (CH)	0.5-0.75	1068.9-1068.65	1.5
B-14	Alluvial clay (CH)	1.0-1.17	1068.4-1068.23	1.4

The results of all the salinity tests are lower than the 4 to 12 mmhos/cm commonly associated with saline wetlands.

4.0 GEOLOGY AND SITE CONDITIONS

The project site lies in the Dissected Till Plains section of Nebraska, a part of the Central Lowland province of the Interior Plains physiographic division[1]. The project site is located in Saunders County on alluvial bottomlands near Salt Creek. The bottomlands are a flood plain setting consisting of relatively deep deposits of alluvium. Soils generally consist of silty and clayey alluvium near the surface. The subsurface materials encountered at the boring locations are briefly described below in descending order of occurrence. Detailed descriptions are provided in the boring logs, which are presented in Appendix C.

SOIL ZONE	DESCRIPTION
Modern Colluvium	Silty clay loam, sandy clay loam, silt, sandy loam; low to medium plasticity; wet to saturated; fine grained soils were stiff and course grained soils were very loose to med. dense.
Colluvium	Silty clay loam; medium plasticity; very wet; medium stiff to stiff.
Recent Alluvial Clay	Silty clay loam, fat clay; medium to high plasticity; very wet; soft to stiff.
Alluvial Clay	Silty clay loam, fat clay; medium to high plasticity; wet to saturated; soft to stiff.
Modern Topsoil	Silty clay loam; medium plasticity; stiff, wet.
Recent Alluvial Topsoil	Silty clay, silty clay loam, fat clay; medium to high plasticity; wet to saturated; very soft to stiff; slightly to moderately porous.
Alluvial Topsoil	Fat clay, lean clay; medium to high plasticity; wet to very wet; medium stiff.
Topsoil	Silty clay loam, silty clay; medium plasticity; wet; medium stiff to stiff.
Recent Subsoil	Silty clay; medium plasticity; wet; medium stiff.
Subsoil	Fat clay; high plasticity; wet, stiff.
Lower Subsoil	Fat clay; high plasticity; wet, stiff.
Peoria	Silty clay, silty clay loam, silt; low to medium plasticity; saturated; medium stiff to stiff.

[1] Physiographic Provinces of North America, Map by A. K. Lobeck, 1948; The Geographical Press; Columbia University, New York

Generally from a review of the samples collected, the silty clay (CL) recent alluvial topsoil appears to the be historic wetland surface and was encountered below a layer of silty clay loam (CL) modern colluvium in most of the locations on west side of site and below a layer of fat (CH) alluvial clay zone on the east side of the site.

Groundwater was encountered at elevations ranging from 0.0 to 3.4 feet below existing grade. The water table could be expected to fluctuate several feet depending on surface drainage, rainfall, irrigation, vegetation, temperature, and other factors. The groundwater levels measured to date in the three (3) piezometers are presented in Table 3 below.

TABLE
MEASURED GROUNDWATER LEVELS IN PIEZOMETERS

Piezometer No.	Date	Elevation of Water (ft)	Depth Below Existing Grade (ft)
PZ-4	6/23/17	1072.6	1.7
	8/4/17	1071.7	2.6
PZ-7	6/23/17	1070.0	0.3
	8/4/17	1069.8	0.5
PZ-15	6/23/17	1069.1	0.6
	8/4/17	1068.2	1.5

5.0 APPLICABILITY OF RESULTS

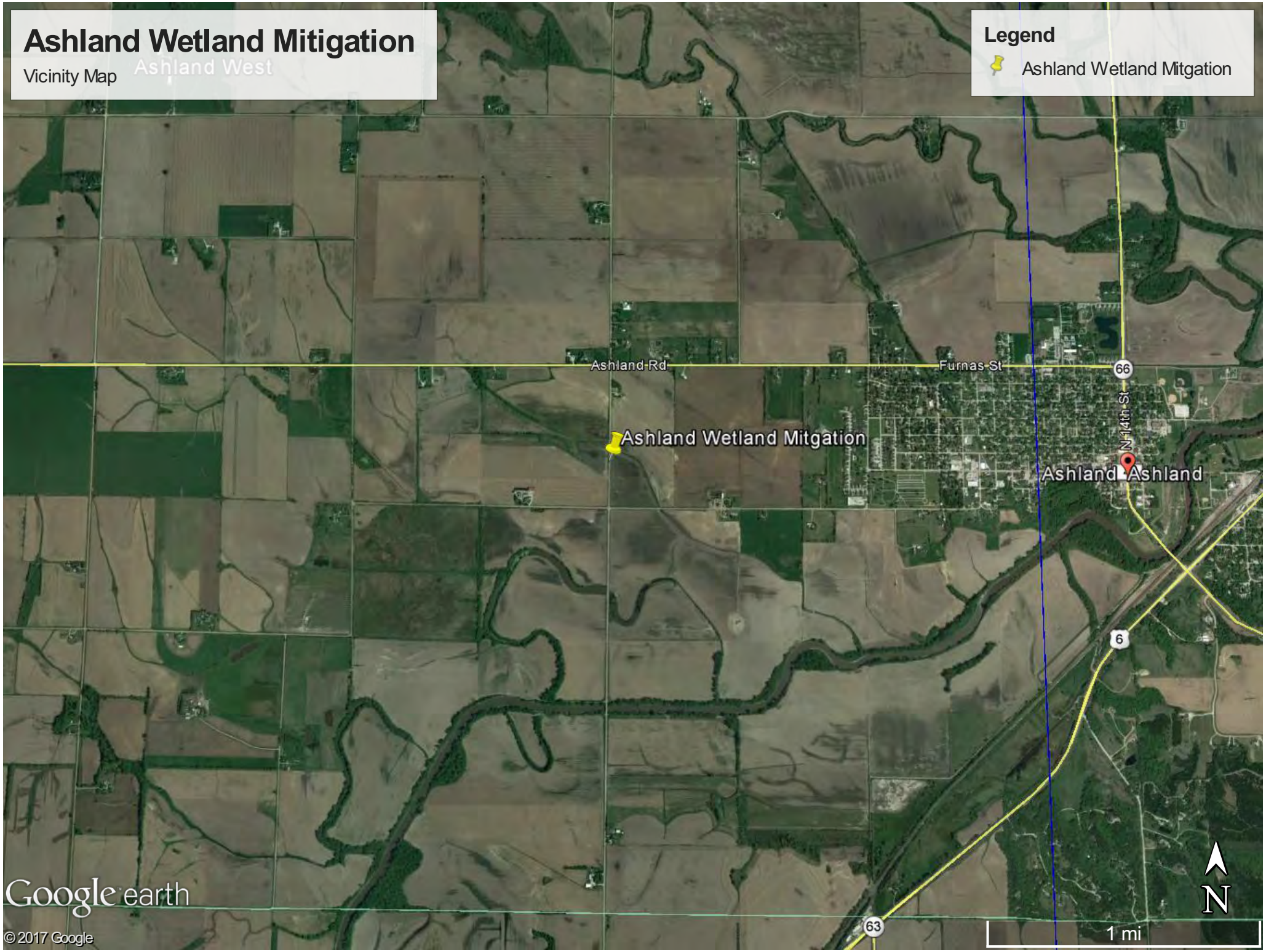
The boring logs and related information depict subsurface conditions only at the specific boring locations and at the time of the subsurface exploration. Soil conditions might differ between the exploratory borings and might change with the passage of time. The nature and extent of any variations between the boring locations or of any changes in soil conditions might not become evident until grading operations for the referenced project have begun.

Benesch should be contacted if any questions arise concerning this report. This report shall not be reproduced, except in full, without the written approval of Alfred Benesch & Company.

Prepared By:

Brandon Desh, P.E.
Geotechnical Engineer

APPENDIX A. VICINITY MAP AND BORING LOCATION PLAN


Ashland Wetland Mitigation
Vicinity Map
Ashland West
Legend
Ashland Wetland Mitgation
Ashland Rd
Furnas St
66
N 14th St
Ashland Wetland Mitgation
Ashland
Ashland
6
63
Google earth
© 2017 Google
N
1 mi


Ashland Wetland Mitigation
Boring Location Plan
Legend
Boring
Piezometer
B-1
B-2
B-3
P-4
B-10
B-5
B-6
P-7 (Saline)
B-19
B-8
B-9
B-12
B-21
B-13
B-11 (Saline)
B-14 (Saline)
6
P-15
B-16
B-17
B-18
B-20
Cooper Rd
Google earth
© 2017 Google
N
1000 ft

APPENDIX B. BORING LOGS

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 461,211.1; E 2,629,949.5

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-01

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▽ Groundwater was not encountered

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	MOISTURE (%)	SAND CONTENT (%)	DEPTH (feet)
1074.3	0.0		SILT CLAY LOAM (CL); 0-5% fine sand; very dark brown (7.5YR 2.5/2) mottled with very dark gray (10 YR 2/1) and grayish brown (10YR 5/2); medium plastic; wet; stiff; 3"-thick root zone. (Modern Colluvium)		22.4	3	0.0
1073.4	0.9		SILTY CLAY (CL); 0-5% fine sand; black (10 YR 2/1); medium plastic; wet; stiff; friable, slightly porous. (Recent Alluvial Topsoil)		37.6	4.4	
1072.3	2.0		Boring Terminated at: 2.0ft				2.5
							5.0
							7.5
							10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 1

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 461,196.7; E 2,630,321.1

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-02

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 1.8 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1073.4	0.0		SILTY CLAY LOAM (CL); 0-5% fine sand; very dark grayish brown (10 YR 3/2); medium plastic; wet; stiff; with few brown (10YR 4/3) silty clay seams; 4"-thick root zone (sparse). (Modern Colluvium)		0.0
1071.5	1.9		SILTY CLAY (CL); very dark gray (10YR 3/1); medium plastic; saturated; medium stiff; friable. (Recent Topsoil)		
1071.0	2.4		SILTY CLAY (CL); black (10YR 2/1); medium plastic; saturated; soft to medium stiff; friable, slightly porous. (Recent Topsoil)		2.5
1070.2	3.2		Boring Terminated at: 3.2ft		5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 2

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 461,185.5; E 2,631,867.1

JOB NO.: 120472
RIG / METHOD: Bobcat / Boll Sampler
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-03

SHEET 1 of 1

DATE: 6-22-2017

WATER LEVELS ▽ Groundwater was not encountered

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	MOISTURE (%)	SAND CONTENT (%)	DEPTH (feet)
1073.7	0.0		SANDY CLAY LOAM (SC); 50-60% fine sand; 40-50% medium plastic fines; brown (10YR 3/3); moist; loose to medium dense. (Modern Colluvium)		11.7	56	0.0
1072.8	0.9		SILTY CLAY LOAM (CL); 10-15% fine sand; very dark brown (10YR 2/2); medium plastic; very wet; medium stiff to stiff. (Colluvium)		33.6	13	
1072.1	1.6		Same as above except soft. (Colluvium)				
1071.7	2.0		Boring Terminated at: 2.0ft				2.5
							5.0
							7.5
							10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 3

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,991.94; E 2,629,875.63

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: PZ-4

SHEET 1 of 1

DATE: 6-22-2017

WATER LEVELS ▼ 3.8 IAD ▼ 1.7 on 6-23-2017

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DEPTH (feet)
1074.3	0.0		SILTY CLAY LOAM (CL); very dark rown (10 YR 2/2); medium plastic; wet; stiff; slightly porous, friable; sparse-moderate root zone 3"-thick. (Modern Topsoil)		1.2*			0.0
1073.7	0.6		SILTY CLAY (CL); very dark grayish brown (10 YR 3/2); medium plastic; wet; medium stiff. (Modern Subsoil)			91.3	29.4	
1073.2	1.1		SILTY CLAY (CL); black (10 YR 2/1); medium plastic; very wet to saturated; medium stiff; slightly to moderately porous, very friable. (Recent Alluvial Topsoil)	41	0.75*			
					0.75*			
1072.0	2.3		SILTY CLAY (CL); black (10 YR 2/1); medium plastic; saturated; medium stiff; moderately porous, very friable; trace amount of small Manganese nodules. (Recent Allluvial Topsoil)		0.75*			2.5
					0.9*	82.3	35	
1070.8	3.5		SILTY CLAY (CL-CH); black (10 YR 2/1); medium to high plasticity; saturated; medium stiff to stiff; moderately porous, subangular blocky structure; moderate amount of small manganese nodules. (Recent Alluvial Subsoil)	42	1.0*			
1070.0	4.3		SILTY CLAY (CL); very dark brown; medium plastic; saturated; medium stiff. (Alluvial Clay)		1.2*			
1069.3	5.0		CLAY (CH); very dark gray mottled with dark yellowish red; high plasticity; saturated; stiff to very stiff. (Alluvial Clay)					5.0
1067.8	6.5		CLAY (CH); dark gray heavily mottled with light gray, olive brown, and yellowish red; high plasticity; saturated; stiff to very stiff. (Alluvial Clay)					
1067.3	7.0		CLAY (CH); light gray mottled with gray, light olive brown, and yellowish red; high plasticity; saturated; stiff to very stiff. (Alluvial Clay)					7.5
1065.3	9.0		SILTY CLAY (CL); light gray mottled with light olive brown and yellowish red; medium plastic, saturated; stiff. (Peoria)					
1064.3	10.0		SILTY CLAY (CL); light gray mottled with light olive brown and yellowish red; medium plastic, saturated; soft to medium stiff. (Peoria)					10.0
1062.3	12.0		Boring Terminated at: 12.0ft					12.5
								15.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

* Unconfined compressive strength was estimated using a calibrated hand penetrometer.

Figure B - 4

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,772.1; E 2,629,857.4

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-05

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 2.2 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1073.6	0.0		SILTY CLAY LOAM (CL); very dark grayish brown (10 YR 3/2); medium plastic; wet; medium stiff; 0.5" silt seam at bottom; 6"- thick root zone. (Modern Colluvium)		0.0
1072.8	0.8		SILTY CLAY LOAM (CL); very dark gray (10 YR 3/1); medium plastic; wet; soft to medium stiff; friable. (Recent Alluvial Clay)		
1072.1	1.5		CLAY (CH); black (10 YR 2/1); high plasticity; wet; medium stiff to stiff; slickensides. (Recent Alluvial Clay)		
1071.8	1.8		SILTY CLAY (CL); black (10 YR 2/1); medium plastic; very wet to saturated; soft to medium stiff; friable, moderately porous. (Recent Alluvial Topsoil)		
1071.4	2.2		Same as above except saturated. (Recent Alluvial Topsoil)		2.5
1071.1	2.5		Boring Terminated at: 2.5ft		5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 5

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,806.9; E 2,630,529.0

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-06

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▽ Groundwater was not encountered

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1072.1	0.0		SILTY CLAY LOAM (CL); black (10 YR 2/1); medium plastic; very wet; soft. (Alluvial Clay)		0.0
1071.8	0.3		CLAY (CH); very dark gray (10 YR 3/1); high plasticity; wet; stiff; root zone 6" -thick. (Alluvial Clay)		
1070.2	1.9		SILTY CLAY LOAM (CL); black (10 YR 2/1); medium plastic; very wet; soft; friable, moderately porous. (Recent Alluvial Topsoil)		
1069.8	2.3		Boring Terminated at: 2.3ft		2.5
					5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 6

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,921.20; E 2,631,867.93

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: PZ-7
SHEET 1 of 1
DATE: 6-22-2017

WATER LEVELS ▼ 1.5 IAD ▼ 0.3 on 6-23-2017

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DEPTH (feet)
1070.3	0.0		CLAY (CH); trace of shells; very dark gray (10 YR 3/1); high plasticity; very wet; soft; 6"-thick abundant root zone; slightly to moderately porous. (Alluvial Clay)		0.3*			0.0
1069.4	0.9		CLAY (CH); black (10YR 2/1); high plasticity; saturated; medium stiff. (Alluvial Clay)	71	0.75*	74.0	44.9	
1068.7	1.6		CLAY (CH); black (10YR2/1); high plasticity; saturated; medium stiff. (Alluvial Clay)					
1068.1	2.2		SILTY CLAY (CL); trace of small lime concretions; very dark gray (10 YR 3/1); medium plasticity; saturated; soft to medium stiff; friable; slightly porous. (Alluvial Clay)		0.5*			2.5
1067.2	3.1		CLAY (CH); trace of small lime concretions; very dark gray (10YR 3/1); high plasticity; saturated; stiff. (Alluvial Clay)	72	1.0*	85.3	32.4	
1066.3	4.0		CLAY (CH); very dark gray (10YR 3/1); high plasticity; saturated; stiff. (Alluvial Clay)		1.2*			5.0
1064.8	5.5		CLAY (CH); trace of small lime concretions; dark gray with very dark gray; high plasticity; saturated; stiff to very stiff. (Peoria)					
1063.8	6.5		CLAY (CH); gray heavily mottled with dark yellowish brown; high plasticity; saturated; stiff to very stiff. (Peoria)					
1062.8	7.5		SILTY CLAY (CL); gray mottled with dark yellowish brown; medium plasticity; saturated; stiff. (Peoria)					7.5
1060.3	10.0		SILTY CLAY (CL-CH); light gray heavily mottled with dark yellowish brown and yellowish red; medium to high plasticity; saturated; stiff. (Peoria)					10.0
1059.3	11.0		SILTY CLAY (CL); light gray heavilty mottled with yellowish red; medium plasticity; saturated; medium stiff to stiff. (Peoria					
1058.3	12.0		Boring Terminated at: 12.0ft					12.5
								15.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

* Unconfined compressive strength was estimated using a calibrated hand penetrometer.

Figure B - 7

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,572.2; E 2,629,854.4

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-08

SHEET 1 of 1

DATE: 6-23-2017

WATER LEVELS ▽ Groundwater was not encountered

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	MOISTURE (%)	SAND CONTENT (%)	DEPTH (feet)
1074.5	0.0		SILTY CLAY LOAM (CL); 0-5% fine sand; medium plastic; very dark brown (10YR 3/2) with very dark grayish brown (10YR 2/2); dry; very stiff; trace of roots throughout; disturbed by plow. (Modern Colluvium)		14.6	3.7	0.0
1073.7	0.8		SILTY CLAY LOAM (CL); 0-5% fine sand; medium plastic; very dark gray (10YR 3/1); moist to wet; stiff; friable; slightly porous. (Recent Topsoil)				
1073.2	1.3		CLAY (CH); 0-5% fine sand; high plastic; very dark gray (10YR 3/1); wet; stiff. (Subsoil)		30.5	2.1	
1072.9	1.6		CLAY (CH); 0-5% fine sand; high plastic; dark brown (10YR 2/2) slightly mottled with very dark gray (10YR 3/1); 5-10% iron-staining; wet; stiff. (Subsoil)				
1072.3	2.2		CLAY (CH); high plastic; olive brown (2.5Y 4/3) mottled with dark gray; 5-10% iron-staining; wet; stiff. (Lower Subsoil)				2.5
1072.0	2.5		Boring Terminated at: 2.5ft				5.0
							7.5
							10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 8

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,577.0; E 2,630,508.2

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-09

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▽ Groundwater was not encountered

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	MOISTURE (%)	SAND CONTENT (%)	DEPTH (feet)
1077.3	0.0		SILTY CLAY LOAM (CL); very dark grayish brown (10 YR 3/2); medium plastic; wet; stiff. (Modern Colluvium/Plow Zone)		18.4	1	0.0
1076.0	1.3		SILTY CLAY LOAM (CL); very dark gray (10 YR 3/1); medium plastic; wet; medium stiff; friable, slightly porous. (Recent Topsoil)		32	1.7	
1075.4	1.9		SILTY CLAY LOAM (CL); very dark gray (10 YR 3/1); medium plastic; very wet; soft; friable, slightly porous. (Recent Topsoil)				
1074.8	2.5		Boring Terminated at: 2.5ft				2.5
							5.0
							7.5
							10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 9

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 461,191.1; E 2,631,274.9

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-10

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 1.0 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1071.4	0.0		SILT (ML); very dark grayish brown (10YR 3/2); low plasticity; very wet; very loose. (Modern Colluvium)		0.0
1071.2	0.2		SILTY CLAY LOAM (CL); very dark gray 10YR 3/1); medium plastic; wet; medium stiff to stiff. (Modern Colluvium)		
1070.8	0.6		SILTY CLAY LOAM (CL); very dark gray (10YR 3/1) mottled with dark reddish brown; medium plastic wet; stiff. (Modern Colluvium)		
1070.3	1.1				
1070.2	1.2		Same as above except with thin brown (10YR 5/3) silt seams; saturated; (Modern Colluvium)		
			SILTY CLAY LOAM (CL); black; medium plastic; saturated; medium stiff to stiff; friable; slightly porous. (Recent Alluvial Topsoil)		2.5
1068.5	2.9		Boring Terminated at: 2.9ft		5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 10

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,242.7; E 2,631,927.0

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-11

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▽ Groundwater was not encountered

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1074.6	0.0		CLAY (CH); very dark gray (10 YR 3/1); high plasticity; wet; soft to medium stiff; no structure. (Alluvial Clay)		0.0
1074.1	0.5		CLAY (CH); black (10 YR 2/1); high plasticity; wet; soft; friable. (Recent Alluvial Topsoil)		
1072.6	2.0		Boring Terminated at: 2.0ft		2.5
					5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 11

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,700.2; E 2,632,422.3

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-12

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 1.8 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1072.4	0.0		SANDY LOAM (SM); 70-80% fine sand; light yellowish brown with dark grayish brown (10 YR); low plasticity; wet; loose. (Modern Colluvium)		0.0
1072.2	0.2		SILTY CLAY LOAM (CL); 5-15% fine sand; very dark brown (10 YR); medium plastic; wet; medium stiff; small silty sand pockets (1/4"). (Modern Colluvium)		
1070.8	1.6		SILTY CLAY LOAM (CL); 0-5% fine sand; very dark gray (10 YR); medium plastic; very wet to saturated; very soft to soft; friable, slightly to moderately porous. (Recent Alluvial Topsoil)		
1070.2	2.2		SILTY CLAY LOAM (CL); very dark gray (10 YR); medium plastic; saturated; very soft to soft; friable, slightly to moderately porous. (Recent Alluvial Topsoil)		2.5
1069.5	2.9				
1069.4	3.0		CLAY (CH); very dark gray (10 YR); high plasticity; saturated; stiff to medium stiff. (Alluvial Clay)		
			Boring Terminated at: 3.0ft		5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 12

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,421.7; E 2,632,439.3

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-13

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 2.5 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1069.7	0.0		CLAY (CH); very dark brown (10 YR 2/2); high plasticity; wet; medium stiff; 3" root zone. (Alluvial Clay - Plow Zone)		0.0
1068.8	0.9		CLAY (CH); black (10 YR 2/1); high plasticity; wet; stiff. (Alluvial Clay)		
1068.5	1.2		SILTY CLAY; (CL); black (10 YR 2/1); medium plastic; wet; medium stiff; friable. (Alluvial Clay)		
1068.2	1.5		CLAY (CH); very dark gray (10 YR 3/1); high plasticity; wet; stiff. (Alluvial Clay)		
1067.5	2.2		SILTY CLAY LOAM (CL); very dark gray (10 YR 3/1); very wet to saturated; soft to medium stiff; friable; slightly porous. (Recent Alluvial Topsoil)		2.5
1066.5	3.2		Boring Terminated at: 3.2ft		5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 13

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,238.6; E 2,632,447.3

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-14

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 2.9 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	MOISTURE (%)	SAND CONTENT (%)	DEPTH (feet)
1069.4	0.0		CLAY (CH); very dark gray (10YR 2/2); high plasticity; trace of fine sand; wet; medium stiff; 6"-thick root zone. (Alluvial Clay)		31.3	1.7	0.0
1068.0	1.4		CLAY (CL/CH); black (10YR 2/1); high plasticity; trace of fine sand; wet; medium stiff; friable; subangular blocky structure; with clay skins. (Alluvial Topsoil)				
1066.9	2.5		CLAY (CL); very dark gray (2.5Y 3/1); medium plasticity; very wet; medium stiff; friable. (Alluvial Topsoil)				2.5
1066.4	3.0		SILTY CLAY (CL); very dark grayish brown (2.5Y 3/2); medium plasticity; saturated; medium stiff. (Alluvial Clay)				
1065.9	3.5		Boring Terminated at: 3.5ft				5.0
							7.5
							10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 14

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 459,981.69; E 2,632,460.82

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: PZ-15

SHEET 1 of 1

DATE: 6-22-2017

WATER LEVELS ▼ 8.9 IAD ▼ 0.6 on 6-23-2017

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DEPTH (feet)
1069.7	0.0		CLAY (CH); black (10 YR 2/1); high plasticity; wet; stiff; subangular blocky; 8"-thick root zone (Alluvial Clay)		1.2*			0.0
1068.7	1.0		CLAY (CH); black (7.5 YR 2.5/1); high plasticity; very wet; stiff. (Alluvial Clay)	151	1.3*	83.2	35.9	
1068.1	1.6		SILTY CLAY (CL); black (10 YR 2/1) slightly mottled with very dark grayish brown; saturated; medium stiff to stiff; friable, slightly porous. (Alluvial Topsoil)		1.25*			
1067.6	2.1		SILTY CLAY (CL); very dark gray (10 YR 3/1) mottled with very dark brown (10 YR 2/2); medium plasticity; saturated; very stiff; with small manganese nodules; slightly porous, friable. (Alluvial Topsoil)		1.35*			2.5
1066.8	2.9		CLAY (CH); very dark gray (10 YR 3/1); high plasticity; saturated; stiff. (Alluvial Clay)	152	2.5*	87.3	33.1	
1065.9	3.8		CLAY (CH); very dark gray; high plasticity; very wet to saturated; medium stiff to stiff. (Alluvial Clay)		1.25*			
1063.7	6.0		CLAY (CH); black; high plasticity; very wet to saturated; stiff. (Alluvial Clay)		1.1*			5.0
1062.7	7.0		CLAY; (CH); very dark gray heavily mottled with olive brown and gray; high plasticity; very wet; very stiff. (Peoria)					7.5
1061.7	8.0		SILTY CLAY (CL); olive brown mottled with gray slightly mottled with dark reddish brown; saturated; medium stiff. (Peoria)					
1060.7	9.0		SILTY CLAY LOAM (CL); gray heavilty mottled with olive brown and dark yellowish brown; saturated; medium stiff. (Peoria)					10.0
1059.2	10.5		SILT (ML); light olive brown; low plasticity; saturated; very loose. (Peoria)					
1058.7	11.0		SILTY CLAY LOAM (CL); gray mottled with dark reddish brown; medium plasticity saturated; medium stiff to stiff. (Peoria)					12.5
1057.2	12.5		Boring Terminated at: 12.5ft					15.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

* Unconfined compressive strength was estimated using a calibrated hand penetrometer.

Figure B - 15

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,002.7; E 2,632,764.2

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-16

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▽ Groundwater was not encountered

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1070.1	0.0		CLAY (CH); high plastc; very dark brown (10YR 3/2); wet; stiff; 7"-thick root zone. (Alluvial Clay)		0.0
1069.5	0.6		CLAY (CH); black (10YR 2/1); high plastic; wet; stiff; subangular blocky structure. (Alluvial Clay)		
1068.2	1.9		CLAY (CH); very dark gray (10YR 3/1); high plastic; wet; medium stiff to stiff. (Alluvial Clay)		
1067.8	2.3				
1067.6	2.5		CLAY (CH); black (10YR 2/1); high plastic; wet; medium stiff to stiff. (Alluvial Clay)		2.5
			Boring Terminated at: 2.5ft		5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 16

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 459,536.6; E 2,632,466.5

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-17

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 2.4 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1069.9	0.0		CLAY (CH); very dark brown (10 YR 2/2); high plasticity; wet; soft to medium stiff; 7"-thick root zone. (Alluvial Clay)		0.0
1069.1	0.8		SILTY CLAY LOAM (CL); very dark brown (10 YR 2/2); medium plastic; very wet; medium stiff. (Alluvial Clay)		
1068.1	1.8		SILTY CLAY (CL); black (10 YR 2/1); medium plastic; very wet to saturated; medium stiff; friable; slightly to moderately porous. (Alluvial Topsoil)		2.5
1067.2	2.7		CLAY (CH); very dark gray (10 YR 3/1); high plasticity; saturated; medium stiff to stiff. (Subsoil)		
1066.9	3.0		Boring Terminated at: 3.0ft		5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 17

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 459,545.8; E 2,632,767.7

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-18

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▽ Groundwater was not encountered

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1069.6	0.0		CLAY (CH); black (10 YR); high plasticity; wet; soft to medium stiff. (Alluvial Clay)		0.0
1068.6	1.0		SILTY CLAY (CL); very dark grayish brown (10 YR); medium plastic; wet; medium stiff. (Alluvial Clay)		
1068.1	1.5		CLAY (CH); very dark gray (10 YR); high plasticity; wet; stiff. (Alluvial Clay)		
1067.6	2.0		SILTY CLAY; (CL); black (10 YR); medium plastic; very wet to saturated; soft; friable; slightly porous. (Alluvial Topsoil)		
1067.1	2.5		Boring Terminated at: 2.5ft		2.5
					5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 18

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 461,037.9; E 2,631,369.4

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-19

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 0.0 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1070.6	0.0		SILTY CLAY LOAM (CL); very dark gray (10 YR 3/1); medium plastic; saturated; very soft; 6"-thick root zone. (Modern Colluvium)		0.0
1070.2	0.4		CLAY (CH); very dark gray (10YR 3/1) slightly mottled with dark reddish brown (10 YR); high plasticity; saturated; medium stiff to stiff. (Alluvial Clay)		
1069.3	1.3		CLAY (CH); black (10 YR 2/1); high plasticity; saturated; medium stiff. (Alluvial Clay)		
1068.6	2.0		CLAY (CH); black (10 YR 2/1); high plasticity; saturated; medium stiff; slightly porous. (Alluvial Clay)		
1068.3	2.3		Boring Terminated at: 2.3ft		2.5
					5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 19

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 459,501.1; E 2,633,253.1

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-20

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 3.4 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1070.6	0.0		SILT (ML); brown (7.5 YR 5/3); low plasticity; moist; loose. (Modern Colluvium)		0.0
1070.4	0.2		SILTY CLAY LOAM (CL); very dark grayish brown (10 YR); medium plastic; wet; medium stiff to stiff. (Topsoil/Plow Layer)		
1069.2	1.4		SILTY CLAY; (CL); black (10 YR); medium plastic; wet; medium stiff; friable; slightly porous. (Topsoil)		
1068.5	2.1		CLAY (CH); very dark gray (10 YR); high plasticity; wet; medium stiff to stiff. (Subsoil)		
1068.3	2.3		SILTY CLAY LOAM (CL); black (10 YR); medium plastic; very wet to saturated; soft to medium stiff; friable; slightly porous. (Recent Alluvial Topsoil)		2.5
1067.4	3.2		CLAY (CH); black (10 YR); high plasticity; very wet to saturated; medium stiff. (Recent Alluvial Clay)		
1067.1	3.5		Boring Terminated at: 3.5ft		5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 20

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PROJECT: Ashland Mitigation Site
Cooper Road & Road 6, Ashland, NE

LOCATION: N 460,439.5; E 2,631,269.3

JOB NO.: 120472
RIG / METHOD: Bobcat / Straight Auger
CREW: O'Malley & GBW

BORING LOG

BORING No.: B-21

SHEET 1 of 1

DATE: 6-27-2017

WATER LEVELS ▼ 0.0 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	DEPTH (feet)
1074.4	0.0		SILTY CLAY; (CL); black (10 YR); medium plastic; saturated; very soft; moderately porous. (Alluvial Clay)		0.0
1073.9	0.5		CLAY (CH); very dark gray (10 YR); high plasticity; saturated; medium stiff. (Alluvial Clay)		
1073.4	1.0		CLAY (CH); very dark gray (10 YR); high plasticity; saturated; stiff. (Alluvial Clay)		2.5
1071.4	3.0		CLAY (CH); very dark gray mottled with very dark grayish brown (10 YR); high plasticity; saturated; stiff. (Alluvial Clay)		
1070.9	3.5		Boring Terminated at: 3.5ft		5.0
					7.5
					10.0

BORING LOG ASHLAND MITIGATION SITE BORING LOGS.GPJ HWS.GDT 8/8/17

Figure B - 21

APPENDIX C. CRITERIA USED FOR SOIL CLASSIFICATION

USCS SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LESS THAN 5% FINES)		GW	WELL-GRADED GRAVEL
				GP	POORLY-GRADED GRAVEL
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (MORE THAN 12% FINES)		GM	SILTY GRAVEL (LOW PLASTIC FINES)
				GC	CLAYEY GRAVEL (MEDIUM TO HIGH PLASTIC FINES)
MORE THAN 50% OF MATERIALS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LESS THAN 5% FINES)		SW	WELL-GRADED SAND
				SP	POORLY-GRADED SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (MORE THAN 12% FINES)		SM	SILTY SAND (LOW PLASTIC FINES)
				SC	CLAYEY SAND (MEDIUM TO HIGH PLASTIC FINES)
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	SILT (0-15% SAND) SILT WITH SAND (15-30% SAND) SANDY SILT (30-50% SAND)
				CL	LEAN CLAY (0-15% SAND) LEAN CLAY WITH SAND (15-30% SAND) SANDY LEAN CLAY (30-50% SAND)
				OL	ORGANIC SILTS AND LEAN CLAYS
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	ELASTIC SILT (0-15% SAND) ELASTIC SILT WITH SAND (15-30% SAND) SANDY ELASTIC SILT (30-50% SAND)
				CH	FAT CLAY (0-15% SAND) FAT CLAY WITH SAND (15-30% SAND) SANDY FAT CLAY (30-50% SAND)
				OH	ORGANIC ELASTIC SILTS AND FAT CLAYS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

GENERAL NOTES

CRITERIA FOR DESCRIBING CLAY SOILS

MOISTURE CONDITION

Description	Criteria
Dry	Absence of moisture, dusty, dry to touch.
Moist	Damp, slightly wet, moisture content below plastic limit.
Wet	Moisture content above the plastic limit.
Saturated	Very wet. Usually soil is below the water table.

CONSISTENCY

Description	Penetration Resistance, N_{60} (blows/ft)[1]
Very Soft	Less than 3
Soft	3 to 4
Medium Stiff	5 to 8
Stiff	9 to 16
Very Stiff	16 to 32
Hard	Greater than 32

CRITERIA FOR DESCRIBING GRANULAR SOILS

MOISTURE CONDITION

Description	Criteria
Dry	Absence of moisture, dry to the touch.
Moist	Damp but no visible free water.
Wet	Visible free water.
Saturated	Usually soil is below water table.

DENSITY

Description	Penetration Resistance, N_{60} (blows/ft)[1]
Very Loose	Less than 5
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	Greater than 50

CRITERIA FOR DESCRIBING ROCK

STRENGTH/HARDNESS

Description	Criteria
Very Soft	Permits denting by moderate pressure of the fingers.
Soft	Resists denting by the fingers, but can be abraded and pierced to a shallow depth by a pencil point.
Moderately Soft	Resists a pencil point, but can be scratched and cut with a knife blade.
Moderately Hard	Resistant to abrasion or cutting by a knife blade, but can be easily dented or broken by light blows of a hammer.
Hard	Can be deformed or broken by repeated moderate hammer blows.
Very Hard	Can be broken only by heavy, and in some rocks, repeated hammer blows.

[1]Blow counts shown on the boring logs are those recorded directly in the field and have not been corrected for hammer efficiency. The boring log blow counts must be corrected to an equivalent hammer efficiency of 60% in order to use the criteria in this table.

ROCK QUALITY DESIGNATION (RQD)

This is a general method by which the quality of the rock at a site is obtained based on the relative amount of fracturing and alteration.

The Rock Quality Designation (RQD) is based on a modified core recovery procedure that, in turn, is based indirectly on the number of fractures (except those due directly to drilling operations) and the amount of softening or alteration in the rock mass as observed in the rock cores from a drill hole. Instead of counting the fractures, an indirect measure is obtained by summing the total length of core recovered by counting only those pieces of hard and sound core which are 4 inches or greater in length. The ratio of this modified core recovery length to the total core run length is known as the RQD.

An example is given below from a core run of 60 inches. For this particular case, the total core recovery is 50 inches yielding a core recovery of 83 percent. On the modified basis, only 38 inches are counted the RQD is 63 percent.

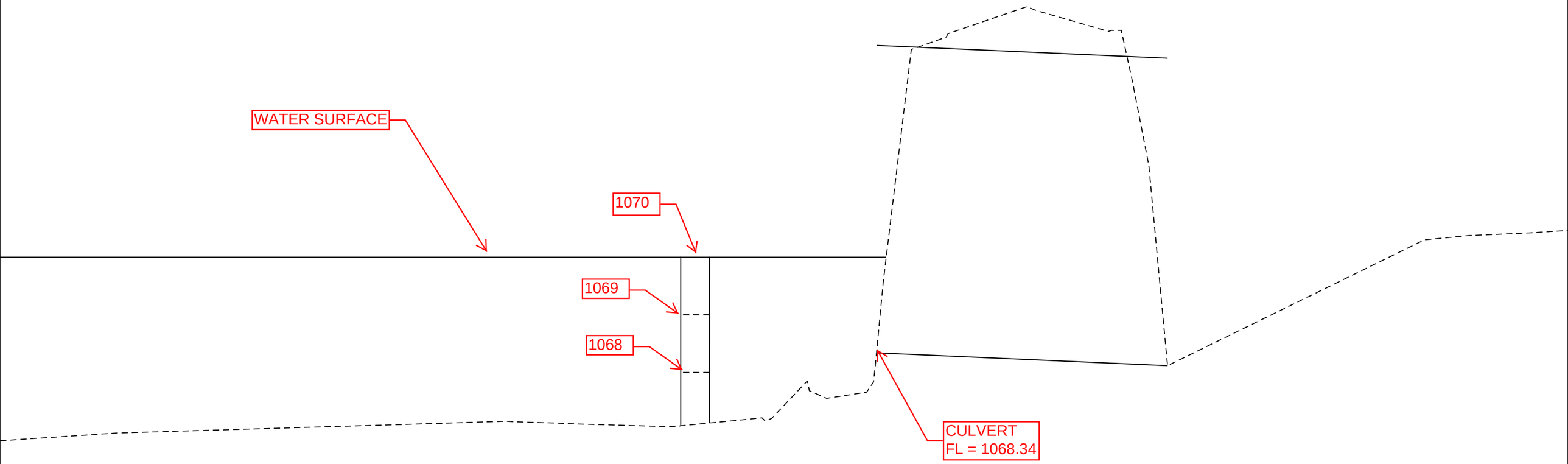
CORE RECOVERY, in	**MODIFIED CORE RECOVERY, in**
10	10
2	-
2	-
3	-
4	4
5	5
3	-
4	4
6	6
4	4
2	-
5	5
50	38

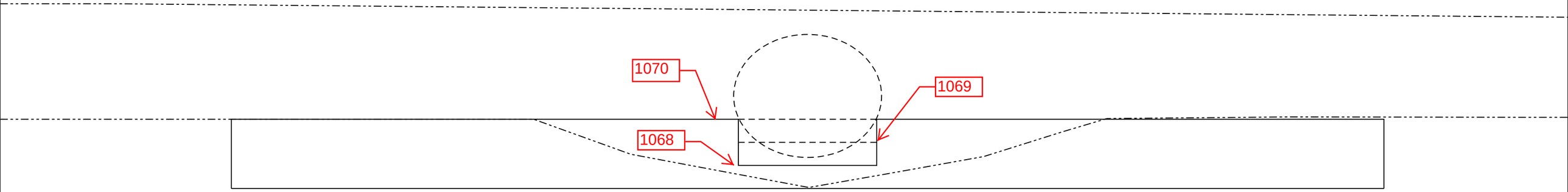
% Core Recovery = 50/60 = 83%; RQD = 38/60 = 63%

A general description of the rock quality can be made for the RQD value as follows:

RQD	**DESCRIPTION OF ROCK QUALITY**
0 – 25	Very Poor
25 – 50	Poor
50 – 75	Fair
75 – 90	Good
90 – 100	Excellent

HYDROLOGY STUDY

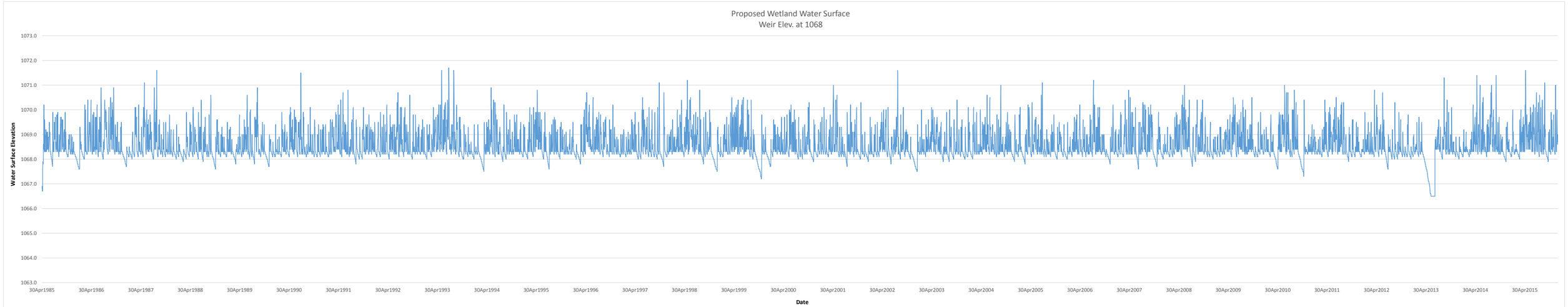

WATER SURFACE
1070
1069
1068
CULVERT
FL = 1068.34


1070
1069
1068

PROPOSED
SHEET PILE

FL.1068.3380

WEIR SET AT 1068												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	1066.9	1068.5	1068.7	1068.4	1068.8	1068.9	1068.7	1068.4	1068.4
1986	1067.9	1068.4	1068.5	1069.1	1068.8	1068.8	1068.8	1069.1	1069.2	1069.0	1068.5	1068.4
1987	1068.0	1068.3	1068.9	1068.5	1069.1	1068.8	1068.6	1069.3	1068.6	1068.4	1068.6	1068.4
1988	1068.3	1068.3	1068.2	1068.6	1068.8	1068.6	1068.7	1068.6	1068.7	1068.0	1068.6	1068.4
1989	1068.4	1068.5	1068.2	1068.5	1068.4	1069.0	1068.6	1068.6	1068.8	1068.6	1068.0	1068.3
1990	1068.4	1068.4	1068.7	1068.4	1069.0	1068.8	1069.0	1068.6	1068.4	1068.5	1068.5	1068.5
1991	1068.6	1068.3	1068.8	1068.9	1068.8	1068.9	1068.6	1068.6	1068.4	1068.5	1068.8	1068.6
1992	1068.6	1068.4	1068.7	1068.7	1068.6	1068.6	1069.2	1068.7	1068.8	1068.5	1068.7	1068.6
1993	1068.6	1068.5	1068.6	1068.9	1069.3	1069.3	1069.4	1069.0	1068.9	1068.6	1068.5	1068.4
1994	1068.3	1068.4	1068.0	1068.3	1068.8	1069.1	1068.9	1068.4	1068.6	1068.6	1068.6	1068.6
1995	1068.5	1068.4	1068.7	1068.9	1069.3	1068.6	1068.3	1068.5	1068.8	1068.5	1068.6	1068.4
1996	1068.6	1068.2	1068.3	1068.7	1069.3	1068.8	1068.8	1068.8	1068.8	1068.5	1068.7	1068.5
1997	1068.4	1068.5	1068.4	1068.8	1068.5	1068.8	1068.9	1068.5	1068.6	1068.7	1068.3	1068.4
1998	1068.6	1068.5	1068.8	1068.7	1069.2	1069.2	1068.8	1068.9	1068.3	1068.7	1068.6	1067.9
1999	1068.4	1068.5	1068.5	1069.1	1069.2	1068.9	1068.9	1068.8	1068.6	1068.0	1067.8	1068.4
2000	1068.0	1068.6	1068.6	1068.6	1068.7	1068.9	1068.9	1068.4	1068.5	1068.7	1068.6	1068.4
2001	1068.5	1068.7	1068.4	1068.7	1069.2	1068.5	1068.4	1068.4	1068.8	1068.7	1068.4	1068.4
2002	1068.3	1068.4	1068.5	1068.8	1069.0	1068.4	1068.4	1069.1	1068.5	1068.8	1068.3	1068.0
2003	1068.1	1068.5	1068.5	1068.7	1068.9	1068.9	1068.4	1068.5	1068.6	1068.5	1068.6	1068.4
2004	1068.5	1068.4	1068.8	1068.5	1068.9	1068.8	1068.9	1068.5	1068.8	1068.4	1068.8	1068.2
2005	1068.5	1068.7	1068.3	1068.9	1068.6	1068.9	1068.8	1068.4	1068.4	1068.6	1068.5	1068.5
2006	1068.4	1068.3	1068.7	1068.9	1068.6	1068.5	1068.6	1069.2	1068.9	1068.5	1068.2	1068.5
2007	1068.5	1068.6	1068.7	1068.8	1069.0	1068.6	1068.4	1069.3	1068.7	1069.0	1068.1	1068.6
2008	1068.4	1068.4	1068.4	1068.9	1069.1	1069.3	1068.8	1068.2	1068.9	1068.9	1068.5	1068.4
2009	1068.4	1068.4	1068.4	1068.8	1068.6	1069.3	1068.8	1069.0	1068.6	1068.9	1068.2	1068.6
2010	1068.5	1068.5	1068.6	1068.0	1068.7	1069.3	1069.0	1068.7	1068.9	1067.9	1068.3	1068.4
2011	1068.5	1068.4	1068.4	1068.9	1068.9	1069.0	1068.9	1069.0	1068.5	1068.4	1068.5	1068.6
2012	1068.3	1068.7	1068.5	1068.7	1068.9	1068.9	1068.1	1068.4	1068.4	1068.6	1068.3	1068.5
2013	1068.3	1068.4	1068.6	1068.1	1067.2	1066.5	1068.4	1068.5	1069.0	1068.7	1068.5	1068.3
2014	1068.3	1068.5	1068.3	1068.9	1068.9	1069.2	1068.6	1069.3	1068.9	1068.8	1068.4	1068.5
2015	1068.3	1068.5	1068.4	1068.9	1069.3	1069.1	1069.1	1069.1	1069.1	1068.3	1068.7	1068.9
Average	**1068.4**	**1068.5**	**1068.5**	**1068.6**	**1068.8**	**1068.8**	**1068.7**	**1068.8**	**1068.7**	**1068.6**	**1068.4**	**1068.4**
Depth	**1.5**	**1.6**	**1.6**	**1.7**	**1.9**	**1.9**	**1.8**	**1.9**	**1.8**	**1.7**	**1.5**	**1.5**


Proposed Wetland Water Surface
Weir Elev. at 1068
Water Surface Elevation
1073.0
1072.0
1071.0
1070.0
1069.0
1068.0
1067.0
1066.0
1065.0
1064.0
1063.0
30Apr1985
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Date

PROJ: $PROJECT$
PEN: $PENTBL$
USER: $$---USER---$$
DATE: $$---DATE---$$
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benesch

PROJECT NO.	SHEET NO.
Date:	Drawn:
Horz. Scale:	Checked:
	Approved:

N

0 150 300

CONTOURS OF CONCEPTUAL GRADING

1075
1074
1073
1072

Ditch Plug Elev. 1073

Ditch Plug Elev. 1072

Ditch Plug Elev. 1071

No Grading

Fill Ditch

No Grading

No Grading

Ditch Plug Elev. 1072

No Grading

Fill west ditch of roadway

1070 1071 1072 1073 1074

Use Existing Road Culvert I.E.1067.00

No Grading

Fill East Ditch of Roadway

Sheet Pile Weir Adjustable Elev. 1068–1070

Fill North Ditch of Roadway Tie into Weir

Use Existing Road Culvert FL = 1068.34

Fill North Ditch of Roadway Tie into Weir

COOPER ROAD

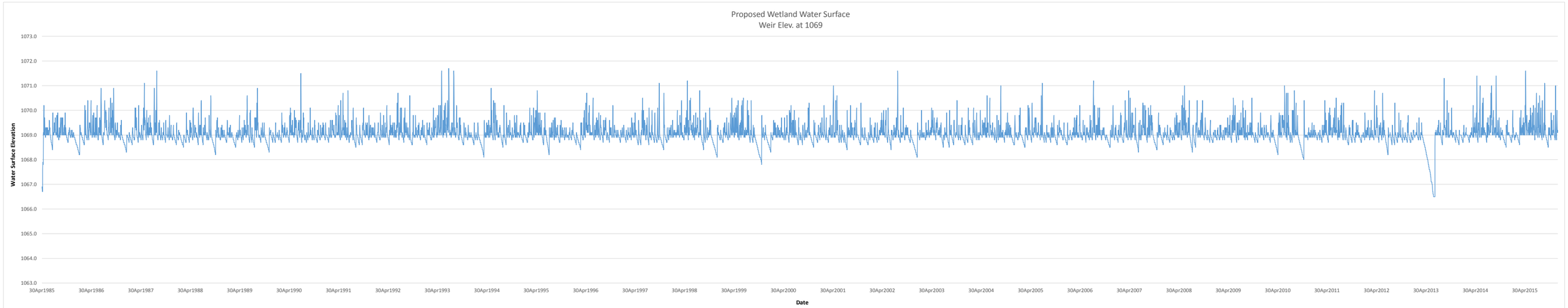
COUNTY ROAD 6

Pool Elevation by Month

- 1068.8 (May, Jun, Aug)
- 1068.7 (Jul, Sep)
- 1068.6 (Apr, Oct)
- 1068.5 (Feb, Mar)
- 1068.4 (Jan, Nov, Dec)

PROPOSED CONDITIONS – WEIR SET AT 1068

WEIR SET AT 1069												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	1066.9	1068.7	1069.2	1068.9	1069.2	1069.3	1069.1	1069.0	1069.0
1986	1068.5	1069.0	1069.0	1069.4	1069.2	1069.2	1069.2	1069.4	1069.4	1069.3	1069.0	1068.9
1987	1068.7	1068.9	1069.3	1069.1	1069.4	1069.2	1069.1	1069.5	1069.1	1069.0	1069.1	1069.0
1988	1068.9	1068.9	1068.8	1069.1	1069.2	1069.1	1069.1	1069.1	1069.2	1068.7	1069.1	1069.0
1989	1069.0	1069.0	1068.8	1069.0	1069.0	1069.3	1069.1	1069.0	1069.3	1069.1	1068.7	1068.9
1990	1069.0	1069.0	1069.1	1069.0	1069.3	1069.2	1069.3	1069.1	1069.0	1069.1	1069.0	1069.0
1991	1069.1	1068.9	1069.2	1069.3	1069.2	1069.3	1069.1	1069.1	1068.9	1069.0	1069.2	1069.1
1992	1069.1	1069.0	1069.1	1069.2	1069.1	1069.1	1069.4	1069.1	1069.2	1069.0	1069.1	1069.1
1993	1069.1	1069.0	1069.1	1069.2	1069.5	1069.5	1069.6	1069.4	1069.2	1069.1	1069.0	1069.0
1994	1068.9	1069.0	1068.7	1068.8	1069.2	1069.4	1069.3	1068.9	1069.1	1069.1	1069.1	1069.1
1995	1069.0	1068.9	1069.2	1069.3	1069.5	1069.0	1068.9	1069.0	1069.2	1069.0	1069.1	1069.0
1996	1069.1	1068.9	1068.8	1069.2	1069.5	1069.2	1069.2	1069.2	1069.2	1069.0	1069.1	1069.0
1997	1069.0	1069.0	1069.0	1069.2	1069.0	1069.2	1069.2	1069.0	1069.1	1069.2	1068.8	1069.0
1998	1069.1	1069.1	1069.2	1069.1	1069.5	1069.4	1069.2	1069.3	1068.8	1069.2	1069.1	1068.4
1999	1069.0	1069.0	1069.1	1069.4	1069.4	1069.3	1069.3	1069.2	1069.1	1068.6	1068.4	1069.0
2000	1068.6	1069.1	1069.1	1069.1	1069.1	1069.3	1069.2	1069.0	1069.0	1069.2	1069.1	1068.9
2001	1069.0	1069.2	1069.0	1069.1	1069.5	1069.0	1069.0	1068.9	1069.2	1069.2	1068.9	1069.0
2002	1068.9	1068.9	1069.0	1069.2	1069.3	1069.0	1069.0	1069.5	1069.0	1069.2	1068.9	1068.7
2003	1068.7	1069.1	1069.0	1069.2	1069.2	1069.3	1068.9	1069.0	1069.1	1069.0	1069.1	1069.0
2004	1069.0	1068.9	1069.2	1069.0	1069.2	1069.2	1069.2	1069.0	1069.2	1069.0	1069.2	1068.8
2005	1069.0	1069.2	1068.8	1069.3	1069.1	1069.2	1069.3	1069.0	1069.0	1069.1	1069.0	1069.0
2006	1068.9	1069.0	1069.1	1069.2	1069.0	1069.0	1069.1	1069.5	1069.3	1069.0	1068.8	1069.0
2007	1069.0	1069.1	1069.1	1069.3	1069.3	1069.0	1068.9	1069.5	1069.1	1069.3	1068.7	1069.1
2008	1069.0	1069.0	1069.0	1069.2	1069.4	1069.5	1069.2	1068.8	1069.2	1069.3	1069.0	1069.0
2009	1068.9	1069.0	1069.0	1069.1	1069.1	1069.5	1069.2	1069.3	1069.1	1069.2	1068.9	1069.1
2010	1069.0	1069.0	1069.1	1068.6	1069.1	1069.5	1069.4	1069.1	1069.3	1068.5	1068.8	1069.0
2011	1069.1	1069.0	1069.0	1069.3	1069.2	1069.3	1069.3	1069.3	1069.0	1068.9	1069.0	1069.1
2012	1068.9	1069.1	1069.0	1069.2	1069.2	1069.2	1068.7	1069.0	1069.0	1069.1	1068.9	1069.0
2013	1068.9	1069.0	1069.1	1068.7	1067.9	1066.9	1068.7	1069.0	1069.3	1069.2	1069.1	1068.8
2014	1068.9	1069.1	1068.9	1069.2	1069.3	1069.5	1069.1	1069.5	1069.3	1069.2	1069.0	1068.9
2015	1068.9	1069.0	1068.9	1069.2	1069.5	1069.3	1069.4	1069.4	1069.4	1068.9	1069.2	1069.3
Average	**1068.9**	**1069.0**	**1069.0**	**1069.1**	**1069.2**	**1069.2**	**1069.1**	**1069.2**	**1069.1**	**1069.1**	**1069.0**	**1069.0**
Depth	**2.0**	**2.1**	**2.1**	**2.2**	**2.3**	**2.3**	**2.2**	**2.3**	**2.2**	**2.2**	**2.1**	**2.1**


Proposed Wetland Water Surface
Weir Elev. at 1069
Water Surface Elevation
1073.0
1072.0
1071.0
1070.0
1069.0
1068.0
1067.0
1066.0
1065.0
1064.0
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30Apr2014
30Apr2015
Date

PROJ: $PROJECT$
PEN: $PENTBL$
USER: $$---USER---$$
DATE: $$---DATE---$$
DGN: $$---DESIGN-FILE-NAME---$$

benesch

PROJECT NO.	SHEET NO.
Date:	Drawn:
Horz. Scale:	Checked:
	Approved:

CONTOURS OF CONCEPTUAL GRADING

1075
1074
1073
1072

Ditch Plug Elev. 1073

Ditch Plug Elev. 1072

Ditch Plug Elev. 1071

Ditch Plug Elev. 1072

No Grading

No Grading

No Grading

No Grading

No Grading

Fill Ditch

Fill west ditch of roadway

1070 1071 1072 1073 1074

Use Existing Road Culvert I.E.1067.00

Fill East Ditch of Roadway

Sheet Pile Weir Adjustable Elev. 1068–1070

Fill North Ditch of Roadway Tie into Weir

Fill North Ditch of Roadway Tie into Weir

Use Existing Road Culvert FL = 1068.34

COOPER ROAD

COUNTY ROAD 6

N

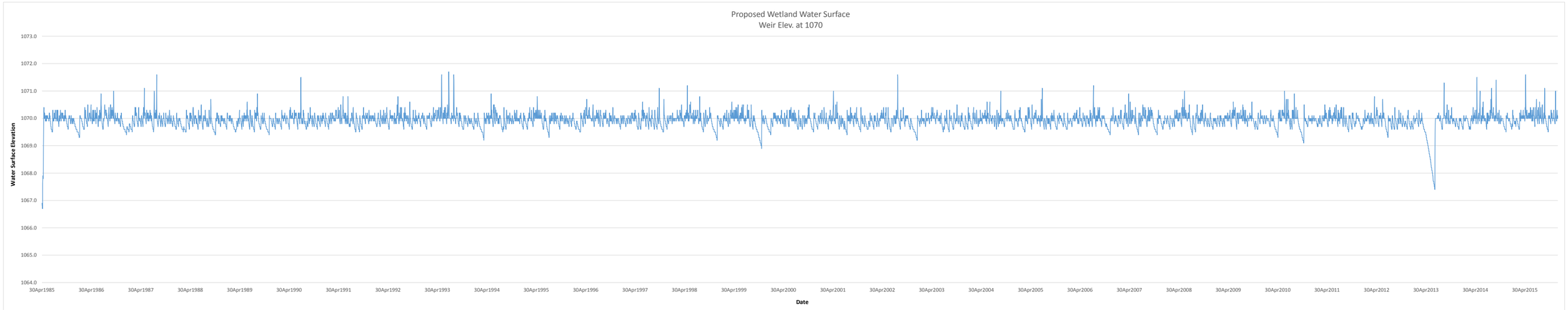
0 150 300

Pool Elevation by Month

- 1069.2 (May, Jun, Aug)
- 1069.1 (Apr, Jul, Sep, Oct)
- 1069.0 (Feb, Mar, Nov, Dec)
- 1068.9 (Jan)

PROPOSED CONDITIONS – WEIR SET AT 1069

WEIR SET AT 1070												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	1066.9	1069.2	1070.0	1069.8	1070.0	1070.1	1070.0	1069.9	1069.9
1986	1069.5	1069.9	1069.9	1070.1	1070.0	1070.0	1070.0	1070.1	1070.1	1070.1	1069.9	1069.8
1987	1069.6	1069.7	1070.0	1069.9	1070.1	1070.0	1069.9	1070.2	1069.9	1069.9	1070.0	1069.9
1988	1069.8	1069.8	1069.6	1069.9	1070.0	1069.9	1070.0	1070.0	1070.0	1069.7	1070.0	1069.9
1989	1069.9	1070.0	1069.7	1069.8	1069.9	1070.1	1069.9	1069.9	1070.0	1069.9	1069.7	1069.8
1990	1069.9	1069.9	1070.0	1069.9	1070.1	1070.0	1070.1	1069.9	1069.8	1069.9	1069.9	1069.9
1991	1070.0	1069.9	1070.0	1070.1	1070.0	1070.1	1069.9	1069.9	1069.8	1069.9	1070.0	1070.0
1992	1070.0	1069.9	1070.0	1070.0	1069.9	1070.0	1070.1	1070.0	1070.0	1069.9	1070.0	1070.0
1993	1070.0	1069.9	1070.0	1070.1	1070.2	1070.2	1070.3	1070.2	1070.1	1069.9	1069.9	1069.9
1994	1069.8	1069.9	1069.6	1069.8	1070.0	1070.1	1070.1	1069.8	1069.9	1070.0	1070.0	1070.0
1995	1069.9	1069.8	1070.0	1070.1	1070.2	1069.9	1069.8	1069.9	1070.0	1069.9	1070.0	1069.9
1996	1070.0	1069.8	1069.7	1070.0	1070.2	1070.0	1070.0	1070.0	1070.0	1069.9	1070.0	1070.0
1997	1069.9	1069.9	1069.9	1070.0	1069.9	1070.0	1070.0	1069.9	1069.9	1070.0	1069.7	1069.9
1998	1070.0	1070.0	1070.1	1070.0	1070.2	1070.1	1070.0	1070.1	1069.8	1070.0	1069.9	1069.5
1999	1069.9	1069.9	1070.0	1070.1	1070.1	1070.1	1070.1	1070.0	1070.0	1069.6	1069.4	1069.9
2000	1069.6	1070.0	1070.0	1070.0	1070.0	1070.0	1070.0	1069.9	1069.9	1070.0	1069.9	1069.9
2001	1069.9	1070.0	1069.9	1070.0	1070.2	1069.9	1069.9	1069.8	1070.0	1070.0	1069.8	1069.9
2002	1069.7	1069.9	1069.9	1070.0	1070.1	1069.8	1069.9	1070.2	1069.9	1070.0	1069.9	1069.6
2003	1069.7	1070.0	1069.9	1070.0	1070.0	1070.1	1069.8	1069.9	1069.9	1069.9	1070.0	1069.9
2004	1069.9	1069.9	1070.0	1069.9	1070.1	1070.0	1070.0	1069.9	1070.0	1069.9	1070.0	1069.8
2005	1069.9	1070.0	1069.8	1070.1	1069.9	1070.0	1070.1	1069.9	1069.9	1070.0	1069.9	1069.9
2006	1069.8	1069.9	1070.0	1070.0	1069.9	1069.9	1069.9	1070.1	1070.1	1070.0	1069.7	1069.8
2007	1070.0	1070.0	1070.0	1070.1	1070.1	1069.9	1069.8	1070.2	1070.0	1070.0	1069.7	1069.9
2008	1069.9	1069.9	1069.9	1070.1	1070.1	1070.2	1070.0	1069.7	1070.0	1070.1	1069.9	1069.9
2009	1069.9	1069.9	1069.9	1070.0	1070.0	1070.1	1070.0	1070.1	1070.0	1070.1	1069.8	1070.0
2010	1070.0	1070.0	1070.0	1069.6	1070.0	1070.2	1070.1	1069.9	1070.1	1069.5	1069.7	1069.9
2011	1070.0	1069.9	1069.9	1070.1	1070.0	1070.1	1070.0	1070.1	1069.9	1069.8	1069.9	1070.0
2012	1069.8	1070.0	1070.0	1070.0	1070.0	1070.0	1069.7	1069.9	1069.8	1070.0	1069.8	1069.9
2013	1069.8	1070.0	1070.0	1069.7	1069.0	1068.0	1069.5	1069.9	1070.1	1070.0	1070.0	1069.8
2014	1069.8	1070.0	1069.8	1070.1	1070.1	1070.2	1069.9	1070.2	1070.1	1070.1	1069.9	1069.9
2015	1069.8	1069.9	1069.8	1070.1	1070.2	1070.1	1070.1	1070.1	1070.1	1069.8	1070.0	1070.1
Average	**1069.9**	**1069.9**	**1069.9**	**1069.9**	**1070.0**	**1070.0**	**1070.0**	**1070.0**	**1070.0**	**1069.9**	**1069.9**	**1069.9**
Depth	**3.0**	**3.0**	**3.0**	**3.0**	**3.1**	**3.1**	**3.1**	**3.1**	**3.1**	**3.0**	**3.0**	**3.0**


Proposed Wetland Water Surface
Weir Elev. at 1070
Water Surface Elevation
1073.0
1072.0
1071.0
1070.0
1069.0
1068.0
1067.0
1066.0
1065.0
1064.0
30Apr1985
30Apr1986
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Date

PROJ: $PROJECT$
PEN: $PENTBL$
USER: $$---USER---$$
DATE: $$---DATE---$$
DGN: $$---DESIGN-FILE-NAME---$$

benesch

PROJECT NO.	SHEET NO.
Date:	Drawn:
Horz. Scale:	Checked:
	Approved:

CONTOURS OF CONCEPTUAL GRADING

1075
1074
1073
1072

Ditch Plug Elev. 1073

Ditch Plug Elev. 1072

Ditch Plug Elev. 1071

Ditch Plug Elev. 1072

No Grading

No Grading

No Grading

No Grading

Fill Ditch

Fill west ditch of roadway

Use Existing Road Culvert I.E.1067.00

Fill East Ditch of Roadway

Sheet Pile Weir Adjustable Elev. 1068–1070

Fill North Ditch of Roadway Tie into Weir

Fill North Ditch of Roadway Tie into Weir

Use Existing Road Culvert FL = 1068.34

1070
1071
1072
1073
1074

COOPER ROAD

COUNTY ROAD 6

N

0 150 300

Pool Elevation by Month

1070.0 (May, Jun, Jul, Aug, Sep)

1069.9 (Jan, Feb, Mar, Apr, Oct, Nov, Dec)

PROPOSED CONDITIONS – WEIR SET AT 1070

APPENDIX H

WETLAND DELINEATION INFORMATION & NEWRAM CONDITION ASSESSMENT

NEWRAM PRE-RESTORATION

Nebraska Wetland Rapid Assessment Method (NeWRAM v1.0)
NDOT Ashland Wetland Bank Site
Pre-Restoration

	Wetland Vegetation Assessment Area	Assessment Area	AA
Standard Circular Assessment Area:	40 meter radius circle Randomly selected point Can be moved up to 40M to ensure that it fits within the wetland No more than 10% can be in upland plant communities		
Wetland Bounday Assessment Area:	Wetlands with an area of <0.5 ha but > 0.1 ha use natural boundaries of the wetlands	<1.23 ac but >0.25 ac	
Polygon Shaped AA:	For wetlands that are larger than 0.5 Ha (1.23 ac) but are not 80m wide. A polygon is used. Mimimum width used in 20m and maximum width is 79.5m. The total area of polygon should be at lease 0.5ha (5000m2)		

	Watershed boundary :
Non-Riverine Wetlands:	Non-riverine wetland watershed boundaries should be defined landscapes. For simplicity use a 1-mile area around the wetland polygon boundary.
Riverine Wetlands:	The watershed is defined by the 8-digit hydrologic unit code HUC-8 within which the wetland point falls.

Wetland Plant Communities of Nebraska			
Plant community+A2:D25	*Cowardin Class*	*HGM Class*	*Location*
Eastern riparian forest	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains in the eastern 1/4 of the state.
Eastern cottonwood-dogwood riparian woodland	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains in the eastern 1/4 of the state.
Cottonwood-peachleaf willow woodland	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains in the eastern 1/4 of the state.
Cottonwood riparian woodland	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains in the eastern 2/3 of the state.
Cottonwood-diamond willow woodland	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains and island along the Missouri, Middle Loup, and Elkhorn Rivers.
Freshwater seep	Palustrine emergent saturated.	Slope Wetland	Occurs throughout the state
Riparian dogwood - false indigobush shrubland	Palustrine scrub-shrub, intermittently flooded	Riverine floodplain	Along rivers and streams in the eastern half of the state, but scattered westward.
Sandbar willow shrubland	Palustrine scrub-shrub, temporarily/seasonally flooded	Riverine Channel	Primairly along rivers and larger streams throughout the state.
Peachleaf wiilow woodland	Palustrine forested, temporarily flooded	Riverine floodplain	A single site in the Pine Ridge in Dawes County, NE.
Prairie Fern	Palustrine Emergent, saturated	Slope wetland	Only occurs in sandstone canyons and rivines int eh Little Blue River drainage in Jefferson County.
Sandhill Fern	Palustrine Emergent , Saturated	Organic Soil Flat	Valleys and dunes in the Sandhills of Cherry, Grant, Boone, Garfield, and Wheeler counties.
Eastern Cordgrass, wet prairie	Palustrine, temporarily to seasonally flooded	Riverine Floodplain	River valleys of the tall grass prairie region of eastern Nebraska.
Eastern sedge wet medow	Palustrine wet meadow	Riverine floodlpain	Eastern part of the state in the floodplain of the Missouri River and its tributaries.
Northern cordgrass wet prairie	Palustrine emergent, temporarily flooded	Riverine floodplain	Extensive in permanent stream and river valleys from the Platte River valley northward.
Sandhill wet meadow	Palustrine emergent, temporarily to seasonally flooded	Mineral soil flat	Occurs throughout the sandhills and drainages of Sandhill rivers.
Western sedge wet meadow	Palustrine emergent, temporarily flooded	Riverine floodplain	Occurs in the panhandle
Western alkaline meadow	Palustrine emergent, temporarily flooded	Floodplain depression	occurs in the North Platte River valley, its smaller tributary valleys, and in closed basins in the western sandhills.
reed marsh	Palustrine emergent, temporarily flooded, seasonally flooded	Lacustrine fringe or Riverine floodplain	Occurs in the northern half of the state from the platte river valley northward.
Playa wetland	Palustrine emergent, temporarily flooded	Playa depression	Occurs throughout the state but is most common in south-central and southwestern Nebraska.
Eastern bulrush deep marsh	Palustrine emergent, semi-permanently flooded	Depressional	Generally found along banks and in the backwaters of rivers of large streams in the eastern half of the state.
Spikerush vernal pool	Palustrine emergent, seasonally flooded to semi-permanently flooded	Playa depression	Can occur virtually statewide but is most abundant in the eastern half of the state.

Cattail shallow mars	Palustrine emergent, seasonally to semi-permanently flooded	Playa depression	Can occur virtually statewide but is most abundant in the eastern half of the state.
Eastern saline marsh	Palustrine emergent, seasonally to semi-permanently flooded	Saline depresion	Restricted to Lancaster and Saunders County, primarily near Salt Creek, Little Salt Creek, and Rock Creek.
Western Alkaline Marsh	Palustrine emergent seasonally to semi-permanetly flooded	Sandhills alkaline marsh	Most abundant in the western sandhills in Garden , Morrill, and Sheridan counties.
Eastern podweed aquatic wetland	Palustrine aquatic bed, permanently and semi-permanently flooded	Floodplain depression	Floodplain, lakes, ponds, and impoundments in the southern half and eastern quarter of the state.
American lotus aquatic wetland	Palustrine aquatic bed, permanently and semi-permanently flooded	lacustrine	Occurs as a semi-natural community in artifical ponds in lancaster and platte counties and elsewhere.
Northern pondweed aquatic wetland	palustrine aquatic bed, permanently and semi-permanetly flooded	Floodplain depression	Occurs in lakes and backwaters from the Platte River Valley north.
Water-lilly aquatic wetland	Palustrine aquatic bed, permanently and semi-permanently flooded	Lacustrine	Confined to lake and ponds in the sandhills
Saline/Alkaline aquatic wetland	Palustrine aquatic bed, permanently and semi-permanently flooded	Saline/ alkaline depression	Natural communities occur in the western sandhills, with semi-natural communtities in Lancaster County
Sandbar/mudflat	Riverine unconsolidated bottom, temporarily to seasonally flooded	Riverine Channel	Occurs within the channel of larger streams and rivers throughout the state.

Procedure for Measuring Watershed Area Variables: V1 - Watershed land cover

Non- Riverine Wetlands	*Non-definable watershed boundary*	For non-riverine wetlands where the landscape is topographically flat and the watershed boundary are difficult to determine, the watershed boundaries are defined by a 1-mile buffer surrounding the edge of the wetland polygon.
Riverine Wetlands	*Riverine wetlands*	For Riverine wetlands (See HGM Class in wetland plant community), the watershed boundary is defined as the 8-digit hydrological unit code (HUC-8) in which the wetland falls.
NDOT Ashland Project=Non-Riverine	See Watershed Land Cover Map	

Land Cover Class	FL and OH LDI Coefficients	NE ri Coefficients
Natural	1.00	10.00
Water	1.00	10.00
Tree Farm	1.58	8.42
Pasture	3.41	6.59
Orchard/Vineyard	3.68	6.32
Natural, Managed	4.54	3.08
Row Crop	6.92	3.00
Mines	8.32	1.68
Roads	8.05	1.95
Developed, Low intensity	7.47	2.53
Developed, Medium intensity	7.55	2.45
Developed, High intensity	9.42	0.58

Area 1-mile offset ≈60 acres

Land Cover Class	Area (Ac.)	Percentage	NE ri Coeff
Natural	203	0.053	10
Water	162	0.042	10
Pasture	18	0.005	6.59
Row Crops	3002	0.785	3
Road	80	0.021	1.95
Developed Low	200	0.052	2.53
Developed Med	159	0.042	2.45
Total Area	3824	1.000	

Weighted Average Score : 3.61

V1= 0.36

The weighted average for watershed land cover is calculated as

$$\frac{\text{SUM}(LCi * ri)}{10.00}$$ V1= Weighted Average/10

LCi The proportion of the watershed of land cover class *i*

r i The associated rank of land cover class *i*

As such, a weighted average score of 10 will result in a V1 score of 1.0. In all cases, the resulting V1 score should be rounded to the nearest 0.01

Modifications to Watershed/Source Area Hydrology - V2

Watershed-level hydrological stressors are human made surface alterations location within the watershed boundaries of a wetland. These alterations degrade and altar the hydrological function of wetlands located within the watershed. Potential surface alterations include dams, diversions, agricultural reuse pits, and ditches. Only surface and subsurface alterations that are known to exists should be considered when determining hydrological stressors.

V2 Condition Index Rating

1.00	No surface alterations, including inputs such as irrigation are present within the watershed boundaries.
0.75	Surface alterations occur within the watershed boundaries, which impact wetland hydrology. Less than 20% of the watershed is impacted.
0.50	Surface alterations occur within the watershed boundaries, which impact wetland hydrology. Greater than 20% but less the 50% of the watershed is impacted.
0.25	Surface alterations occur within the watershed boundaries, which impact wetland hydrology. Greater than 50% but less the 75% of the watershed is impacted.
0.10	Surface alterations occur within the watershed boundaries, which impact wetland hydrology. Greater than 75% but less the 95% of the watershed is impacted.
0.00	More than 95% of the watershed area is impacted by surface alterations, resulting in severely altered wetland hydrology.

V2= 0.00

Buffer Continuity and Width - V3

Vegetated buffers surrounding wetlands act to mitigate potential stressors associated with the surrounding landscape. This variable is composed of two components, the continuity and the average width of the vegetated buffer adjacent to the AA for a wetland site. Continuity is defined as the estimate percentage of the AA, which is bordered by at least 10M of continuous buffer and a minimum width of 5m. Buffer width is considered the total width of a buffer land class until a non-buffer land class interrupts it, or the outer edge of the BA is reached. Estimate the buffer width in 5M increments for the four cardinal, and four ordinal direction surrounding a wetland point. The maximum estimated buffer width is 100m. Average buffer width should be calculated and sum of buffer widths/8 directions calculated, or see below.

Assessment Area=	100 m from edge of wetland polygon
Average buffer width =	Sum of 8 calculated buffer distances (5M increments)/8

See Pre Construction Buffer Continuity & Width Map(Attached).

Buffer Land Classes	Non-Buffer Land Classes
Natural upland, riparian, and wetland	Commercial development
Range and pasture land	Intensive agriculture (row crop, orchards, vineyards)
Natural or wildland parks	Golf courses
railroads with infrequent use	urban recreational use areas
swales and ditches	any road
vegetated levees	lawns
unpaved bike, foot, and horse trails	parking lots
	enclosed animal feeding operations
	residential areas
	sports fields
	urbanized parks

V3 = 0.1

West Wetland

Buffer Width		Continuity	
Direction	**Meters (m)**	**Segment**	**Distance (m)**
N	0	N	0
E	0	E	0
S	0	S	0
W	100	W	6
NE	0	NE	0
NW	100	NW	19
SW	0	SW	0
SE	0	SE	0
Total	200		25
Avg. Buffer Width	**20**	**Continuity %**	**0.6**

Total West Perimeter 4,065

East Wetland

Buffer Width		Continuity	
Direction	**Meters (m)**	**Segment**	**Distance (m)**
N	0	N	0
E	0	E	0
S	0	S	0
W	0	W	0
NE	0	NE	0
NW	0	NW	0
SW	0	SW	0
SE	0	SE	0
Avg.Buffer Width	0	**Continuity %**	0%

Total East Perimeter (2,791

Summary Rating for Buffer Continuity and Average Width

Average Buffer Width (m)	Continuity (%)	100	80-99	60-79	40-59	20-39	5-20	<5
	100	1.00	0.90	0.70	0.50	0.30	0.15	0.00
	75-99	0.80	0.75	0.60	0.40	0.25	0.10	0.00
	50-74	0.60	0.50	0.50	0.30	0.20	0.10	0.00
	25-49	0.40	0.30	0.30	0.20	0.15	0.05	0.00
	10-24	0.20	0.20	0.15	0.10	0.10	0.05	0.00
	5-9	0.10	0.10	0.10	0.05	0.05	0.01	0.00
	<5	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The buffer condition is assessed based on the extent and quality of native vegetation cover, stress to the substrate, and evidence of human visitation or management. Common buffer disturbances and stressors. Buffer condition should only be assessed for the area alread defined as buffer based on V3. Buffer condition shoul dbe assessed on site, bsaed of cover of native vegetation or non-native vegetation.

Indicators of Buffer Area (BA) modifications and Stressors	
Substrate	
Indicator/stressor	Description
Off-road vehicles or heavy machinery use	The presence of substrate disturbance in the form of ruts, compcation, or other disturbance due to the use or parking of off-road vehicles or heavy machinery
Grazing by domesticated or feral animals	The presence of deep prevalent hoof prints, digging, or wallows.
Filling, grading, or other depostion of sediment	Depostion of soil in a wetland in order to fill in or eliminate topography in the BA
Human use and/or Management	
Indicator/stressor	Description
Mowing/haying	Presence of mowing or haying in the BA
Chemical vegetation control	Presence of dead or dying native vegetation due to targeted use of herbicide
Excessive grazing	Presence of vegetation grazed to an average height of <3"
Excessive wildlife herbivory	Presence of vegetation grazed to an average height of <3"
Presence of oil or gas wells	Oil or gas wells located in the BA
Presence of continually maintained utility corridors	Powerline or other utility corridors continually maintained for maintenance access

Severity of BA Modifications/Stressors	
Severity	Description
Not present	Stressor is not present in or adjacent to the wetland or AA
Not severe	Stressor is not present but does not appear to negatively impact the condition of the wetland/AA
Moderately severe	Stressor is present and effects < 10% of the area of the wetland/AA
Severe	Stressor is present and effeects > 10% of the area of the wetland/AA

Severity of Invasive plant species cover	
Severity	Description
Absent	Invasive plant species are absent from the buffer
Trace	Invasive plant species cumulative relative cover <5%
Moderate	Invasive plant species cumulative relative cover is 5-25%
Extensive	Invasive plant species cumulative relative cover is 26-75%
Dominant	Invasive plant species cumulative relative cover is >75%

V4 Condition Index Rating	
1.00	BA is dominated by native vegetation and modifications and stressors are absent
0.75	Trace cover of invasive plant species in the BA and modifications and stressors are absent or invasive plant species are absent and modifications and stressors are not severe.
0.50	Moderate cover of invasive plant species in the BA or moderately severe stressors impact <10% of the total BA or trace cover of invasive species in the buffer and moderately severe and.or severe modfications stressors impact between 10 - 15% of the BA.
0.25	Extensive cover of invasive species in the BA or Moderate cover of invasive plant species in the BA and maderately severe and/or severe modifications or stressors cumulatively impacts between 16 - 25% of the BA.
0.10	BA is dominated by invaisve species or moderately severe and/or severe modifications and stressors cumulatively impact > 25% of the BA or cover of invasive species in the BA is extensive and moderately severe and.or severe modifications and stressors cumulatively impact between 16-25% of the BA.
0.00	Buffer is absent

V4 = 0.1

JUSTIFICATION- Buffer around wetland is <15% of wetland perimeter.

85% = 0.0 condition index rating; 15% = 0.75 condition index rating. Weighted average = (0.75 * 0.15) +

(0.00 * 0.85) = 0.1125 + 0.00 = 0.11

V5 - Vegetative Composition

Vnative= This variable is measured based on the dominant vegetation of each plant community within Wetland AA. The condition index rating is determined based on the comparison of dominant plant species observed in AA to the list of diagnostic and abundant species in Appendix A.

Formula $$SUM(\frac{((\#RSS_j + 0.5(\#NN_j))}{n_j} \text{ X } \%area_j)$$

where,

v5= Sum of the weighted scores for each plant community in the "j" community in wetland AA

#RSS"j" = # of reference standard dominant species in plant community "j" from the plant communities species list

#NN"j"= # of native dominant plant species in the community

n"j"= Total # of dominant plant species in the community

% area"j"= Relative area of plant community "j" in the wetland AA

Vinvasive = Is a score modifier used in calculating the overall V5

Vinvasive = Total % of cover of native species

or

Vinvasive = 1 - Total % of invasive species

V5= ***Vnative*** **X** ***Vinvasive***

Total wetland Area 47 N*=Native on species list, N=native, NN=Nonnative, I=invasive, EXA SPE = Dominant (15% of relative cover)

E Sedge Wet Meadow Community (T-1-2), 27 acres (57%)							**Cattail Community S-6, 20 acres (43%)**					
Species	**Status**	**Cover**	**Rel. Cov.**	**# Species from E. Sedge Wet Meadow(#RSSj)**	**# of Native dominants (#NN$_j$)**	**Total # of Dominants (n$_j$)**	**Species**	**Status**	**Cover**	**Rel. Cov.**	**# Species from Cattail Shallow Marsh(#RSS$_j$)**	**# of Native dominants (#NN$_j$)**
Echinochlc	NN	40	40	0	2	3	TYP LAT	N*	10	12.5	0	0
Phlaris aru	I	30	30				**ECH CRU**	NN	50	62.5		
Persicaria	N	20	20				PAN DIC	N	10	12.5		
TYP ANG	NN	10	10				SCH TAB	N	5	6.25		
Total Cover		100	100				CYP ESC	N	5	6.25		
							Total Cover		80	100		
Vinvasive												
Native	50						Native	37.5				
Vnative	**0.19**							**0**				
Vinvasive	**0.5**							**0.375**				
V5	**0.10**							**0**				

Average V5= 0.05

Stressors to Wetland Hydrology - V6

***Vhydrostress* Condition Index Rating**	
Modification/Stressor	*Description*
Ditch	Human-made channel dug for the purpose of draining an area
Tile Drain	A subsurface modifaction generally used to drain wetlands located in ag fields
Dike/levee/berm	a human made embankment, generally found in river floodplains, built to prevent flooding.
Dam	a human made structure which inhibits the natural flow of water through rivers and streams
Fill	soil added to wetlands in order to fill in and reduce the wetland area.
Human-introduced sedimentation or burial	cultrually accelerated sedimentation indicated by silt accumulation or debris lines on or around vegetation or the presence of sediment fans, deposits, or plumes.
Road/Railroad bed	located in or adjacent to the wetland, and my be result of a bisection fo a wetland or flashy stormwater flows into the wetland.
artificial increase in hydrology	Human-mediated increase in hydrology, culverts, irrigation, pumps and pipes which increase the flow of water into the wetland.
invasive species that altar hydrology	presence of invasive species in wetlands
dredging or excavation	removal of soil from a wetland with the purpose of increasing the volume of water that a wetland can hold or reducing the total wetland.

Severity of hydrologic Modifications/Stressors	
Severity	*Description*
Not present	Stressor is not present in or adjacent to the wetland or AA
Not severe	Stressor is not present but does not appear to negatively impact the condition of the wetland/AA
Moderately severe	Stressor is present and effects < 10% of the area of the wetland/AA
Severe	Stressor is present and effeects > 10% of the area of the wetland/AA

V6 Condition Index Rating	
1.00	No hydrologic modifcation or stressors are present in or adjacent ot the wetland or AA
0.75	Hydrologic modifications or stressors are present in or adjacent to the wetland/AA but do not appear to negatively impact the condition of the wetland/AA or hydrologic modifications or stressors have occurred in the past but the wetland/AA appears to have recovered.
0.50	Multiple moderatley severe modifactions or stressors are present in or adjacent to the wetland/aa and cumulatively impact <10% Wetland/AA
0.25	Multiple moderatley severe modifactions or stressors are present in or adjacent to the wetland/aa and cumulatively impact >10% Wetland/AA or one severe modification or stressor is present in or adjacent to the wetland.
0.10	Many severe modifications or stressors are present in or adjacent to the wetland/AA, resulting in a highly modified hydrologic regime or complete loss of wetland function
0.00	Wetland is no longer present due to conversion to an alternate land use.

V6 **0.1**

Wetland Land use -V7

Vhydrostress Condition Index Rating	
Indicator/Stressor	Description
Plowing or disking	Human-made channel dug for the purpose of draining an area
Intensive grazing	A subsurface modifaction generally used to drain wetlands located in ag fields
off-road vehicle use	a human made embankment, generally found in river floodplains, built to prevent flooding.
construction or farm vehicle use	a human made structure which inhibits the natural flow of water through rivers and streams
urban agricultural conversion	soil added to wetlands in order to fill in and reduce the wetland area.

V7 Condition Index Rating	
1.00	No land use modifcation or stressors are present in or adjacent ot the wetland or AA
0.75	land use indicators or stressors are present in or adjacent to the wetland/AA but do not appear to negatively impact the condition of the wetland/AA or hydrologic modifications or stressors have occurred in the past but the wetland/AA appears to have recovered.
0.50	Multiple moderatley severe modifactions or stressors are present in or adjacent to the wetland/aa and cumulatively impact <10% Wetland/AA
0.25	Multiple moderatley severe modifactions or stressors are present in or adjacent to the wetland/aa and cumulatively impact >10% Wetland/AA or one severe modification or stressor is present in or adjacent to the wetland.
0.10	Many severe modifications or stressors are present in or adjacent to the wetland/AA, resulting in a highly modified hydrologic regime or complete loss of wetland function
0.00	Wetland is no longer present due to conversion to an alternate land use.
V7	**0.1**

Severity of hydrologic Modifications/Stressors	
Severity	Description
Not present	Stressor is not present in or adjacent to the wetland or AA
Not severe	Stressor is not present but does not appear to negatively impact the condition of the wetland/AA
Moderately severe	Stressor is present and effects < 10% of the area of the
Severe	Stressor is present and effeects > 10% of the area of

NeWRAM Condition Score

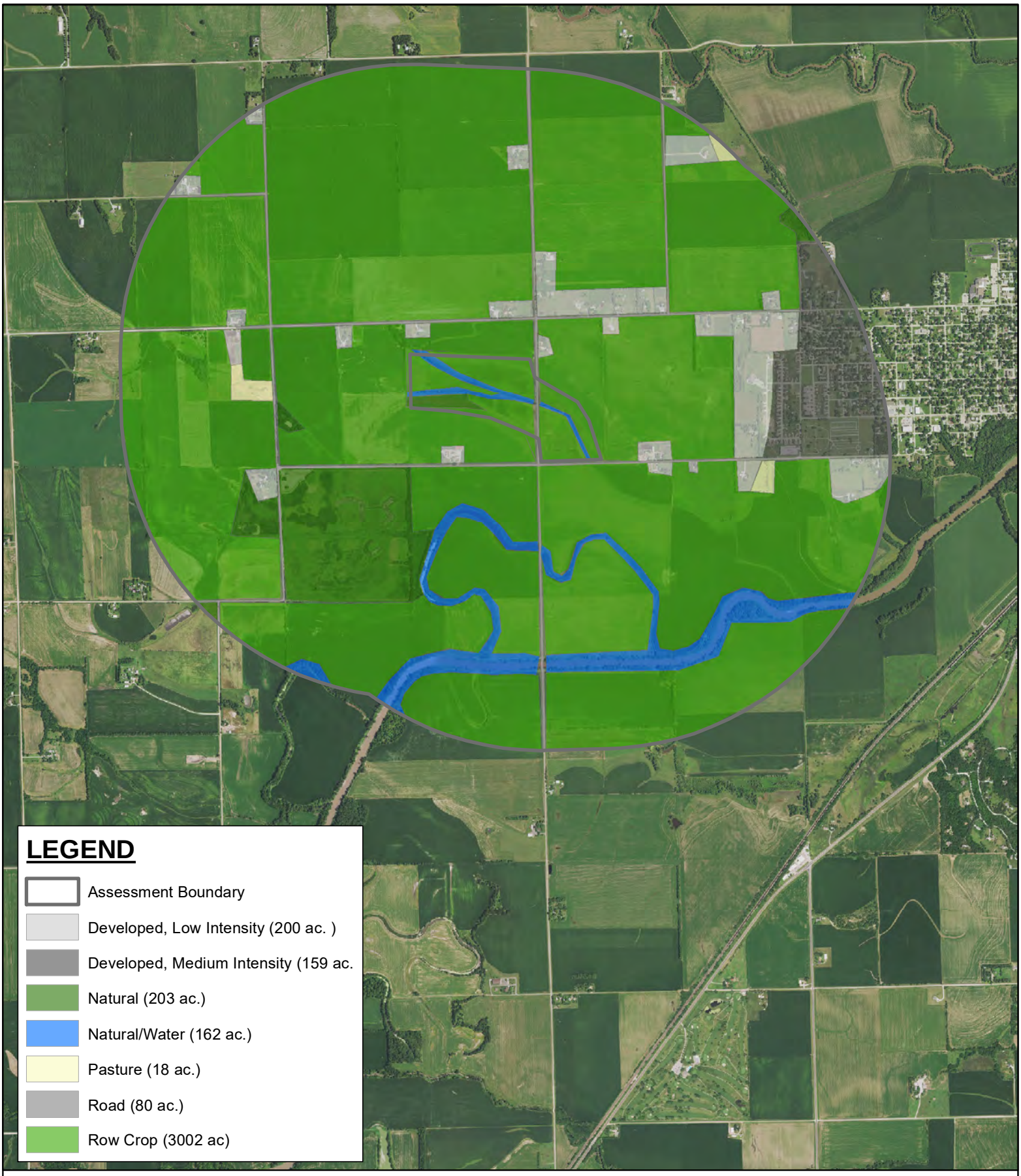
V1	V2	V3	V4	V5	V6	V7
0.36	0	0.1	0.1	0.05	0.1	0.1

NeWRAM Score =V1+(V3xV4)+V5+V6+V7

NeWRAM Condition Score Pre Impact

0.62

Scores range from 0 - 5. 0= Nonwetland Site and 5= Perfect Wetland.



NAIP 2018 Saunders County Aerial Imagery

N

0 1,250 2,500 5,000

Feet

benesch
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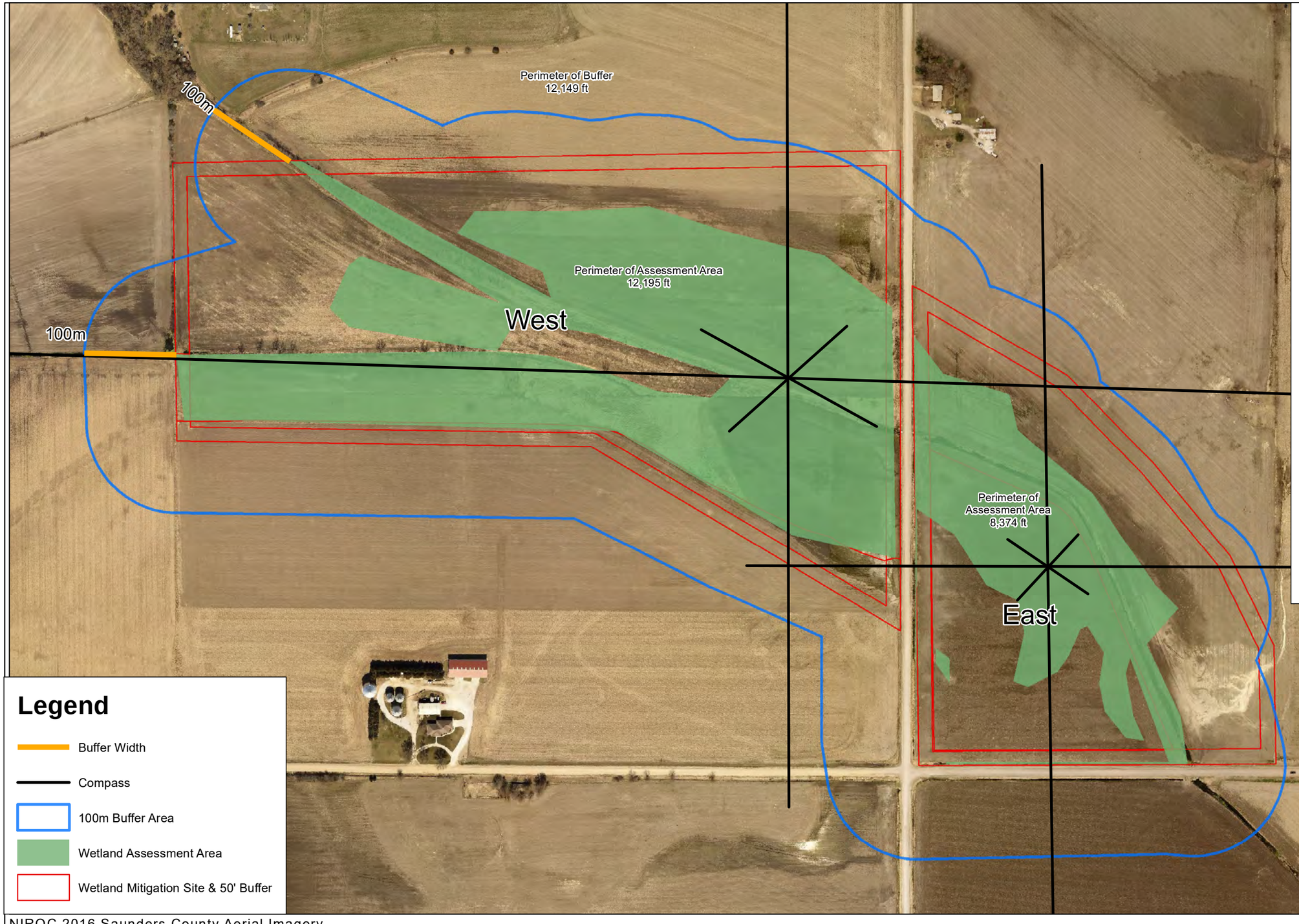
VI WATERSHED LAND COVER MAP PRE

Nebraska Department of Transportation
Project Number: MISC-79-2 (1019)
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

C:\Users\Cjelden\Desktop\New folder\NeWRAM_Assessment 1 mile buffer Pre.mxd



V-3 Buffer Continuity & Width (WEST)

Direction			Buffer Distance (M)	
N	NE		0	0
E	NW		0	100
S	SW		0	0
W	SE		100	0

Average Buffer - 20m
Continuity - 15%
V3 = 0.05

V-3 Buffer Continuity & Width (EAST)

Direction			Buffer Distance (M)	
N	NE		0	0
E	NW		0	0
S	SW		0	0
W	SE		0	0

Average Buffer - 0m
Continuity - 0%
V3 = 0.0

Legend

- Buffer Width
- Compass
- 100m Buffer Area
- Wetland Assessment Area
- Wetland Mitigation Site & 50' Buffer

NIROC 2016 Saunders County Aerial Imagery

N

0 175 350 700 Feet

benesch
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Y:\Omaha\120400S\00120472.00\GIS\Figures\Pre Buffer Map.mxd

PRE CONSTRUCTION BUFFER CONTINUITY & WIDTH - V3

Nebraska Department of Trasportation
Project Number: MISC-79-2 (1019)
CN: 10584B
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

NEWRAM POST-RESTORATION

Nebraska Wetland Rapid Assessment Method (NeWRAM v1.0)
NDOT Ashland Wetland Bank Site
Post-Restoration

Wetland Vegetation Assessment Area

Standard Circular Assessment Area:	40 meter radius circle	
	Randomly selected point Can be moved up to 40M to ensure that it fits within the wetland No more than 10% can be in upland plant communities	
Wetland Boundary Assessment Area:	Wetlands with an area of <0.5 ha but > 0.1 ha	<1.23 ac but >0.25 ac
	use natural boundaries of the wetlands	
Polygon Shaped AA:	For wetlands that are larger than 0.5 Ha (1.23 ac) but are not 80m wide. A polygon is used. Minimum width used in 20m and maximum width is 79.5m. The total area of polygon should be at lease 0.5ha (5000m2)	

Watershed boundary :

Non-Riverine Wetlands:	Non-riverine wetland watershed boundaries should be defined landscapes. For simplicity use a 1-mile area around the wetland polygon boundary.
Riverine Wetlands:	The watershed is defined by the 8-digit hydrologic unit code HUC-8 within which the wetland point falls.

Wetland Plant Communities of Nebraska			
Plant community	*Cowardin Class*	*HGM Class*	*Location*
Eastern riparian forest	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains in the eastern 1/4 of the state.
Eastern cottonwood-dogwood riparian woodland	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains in the eastern 1/4 of the state.
Cottonwood-peachleaf willow woodland	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains in the eastern 1/4 of the state.
Cottonwood riparian woodland	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains in the eastern 2/3 of the state.
Cottonwood-diamond willow woodland	Palustrine forested, temporarily flooded	Riverine floodplain	Primarily river floodplains and island along the Missouri, Middle Loup, and Elkhorn Rivers.
Freshwater seep	Palustrine emergent saturated.	Slope Wetland	Occurs throughout the state
Riparian dogwood - false indigobush shrubland	Palustrine scrub-shrub, intermittently flooded	Riverine floodplain	Along rivers and streams in the eastern half of the state, but scattered westward.
Sandbar willow shrubland	Palustrine scrub-shrub, temporarily/seasonally flooded	Riverine Channel	Primairly along rivers and larger streams throughout the state.
Peachleaf wiilow woodland	Palustrine forested, temporarily flooded	Riverine floodplain	A single site in the Pine Ridge in Dawes County, NE.
Prairie Fern	Palustrine Emergent, saturated	Slope wetland	Only occurs in sandstone canyons and rivines int eh Little Blue River drainage in Jefferson County.
Sandhill Fern	Palustrine Emergent , Saturated	Organic Soil Flat	Valleys and dunes in the Sandhills of Cherry, Grant, Boone, Garfield, and Wheeler counties.
Eastern Cordgrass, wet prairie	Palustrine, temporarily to seasonally flooded	Riverine Floodplain	River valleys of the tall grass prairie region of eastern Nebraska.
Eastern sedge wet medow	Palustrine wet meadow	Riverine floodlpain	Eastern part of the state in the floodplain of the Missouri River and its tributaries.
Northern cordgrass wet prairie	Palustrine emergent, temporarily flooded	Riverine floodplain	Extensive in permanent stream and river valleys from the Platte River valley northward.
Sandhill wet meadow	Palustrine emergent, temporarily to seasonally flooded	Mineral soil flat	Occurs throughout the sandhills and drainages of Sandhill rivers.
Western sedge wet meadow	Palustrine emergent, temporarily flooded	Riverine floodplain	Occurs in the panhandle
Western alkaline meadow	Palustrine emergent, temporarily flooded	Floodplain depression	occurs in the North Platte River valley, its smaller tributary valleys, and in closed basins in the western sandhills.
reed marsh	Palustrine emergent, temporarily flooded, seasonally flooded	Lacustrine fringe or Riverine floodplain	Occurs in the northern half of the state from the platte river valley northward.
Playa wetland	Palustrine emergent, temporarily flooded	Playa depression	Occurs throughout the state but is most common in south-central and southwestern Nebraska.
Eastern bulrush deep marsh	Palustrine emergent, semi-permanently flooded	Depressional	Generally found along banks and in the backwaters of rivers of large streams in the eastern half of the state.
Spikerush vernal pool	Palustrine emergent, seasonally flooded to semi-permanently flooded	Playa depression	Can occur virtually statewide but is most abundant in the eastern half of the state.

Cattail shallow mars	Palustrine emergent, seasonally to semi-permanently flooded	Playa depression	Can occur virtually statewide but is most abundant in the eastern half of the state.
Eastern saline marsh	Palustrine emergent, seasonally to semi-permanently flooded	Saline depresion	Restricted to Lancaster and Saunders County, primarily near Salt Creek, Little Salt Creek, and Rock Creek.
Western Alkaline Marsh	Palustrine emergent seasonally to semi-permanetly flooded	Sandhills alkaline marsh	Most abundant in the western sandhills in Garden , Morrill, and Sheridan counties.
Eastern podweed aquatic wetland	Palustrine aquatic bed, permanently and semi-permanently flooded	Floodplain depression	Floodplain, lakes, ponds, and impoundments in the southern half and eastern quarter of the state.
American lotus aquatic wetland	Palustrine aquatic bed, permanently and semi-permanently flooded	lacustrine	Occurs as a semi-natural community in artifical ponds in lancaster and platte counties and elsewhere.
Northern pondweed aquatic wetland	palustrine aquatic bed, permanently and semi-permanetly flooded	Floodplain depression	Occurs in lakes and backwaters from the Platte River Valley north.
Water-lilly aquatic wetland	Palustrine aquatic bed, permanently and semi-permanently flooded	Lacustrine	Confined to lake and ponds in the sandhills
Saline/Alkaline aquatic wetland	Palustrine aquatic bed, permanently and semi-permanently flooded	Saline/ alkaline depression	Natural communities occur in the western sandhills, with semi-natural communtities in Lancaster County
Sandbar/mudflat	Riverine unconsolidated bottom, temporarily to seasonally flooded	Riverine Channel	Occurs within the channel of larger streams and rivers throughout the state.

Procedure for Measuring watershed Area Variables: V1 - Watershed land cover

Non- Riverine Wetlands	*Non-definable watershed boundary*	For non-riverine wetlands where the landscape is topographically flat and the watershed boundary are difficult to determine, the watershed boundaries are defined by a 1-mile buffer surrounding the edge of the wetland polygon.
Riverine Wetlands	*Riverine wetlands*	For Riverine wetlands (See HGM Class in wetland plant community), the watershed boundary is defined as the 8-digit hydrological unit code (HUC-8) in which the wetland falls.
NDOT Ashland Project=Non-Riverine	See Watershed Land Cover Map	

Land Cover Class	FL and OH LDI Coefficients	NE ri Coefficients
Natural	1.00	10.00
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Tree Farm	1.58	8.42
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Orchard/Vineyard	3.68	6.32
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Area 1-mile offset ≈60 acres

Land Cover Class	Area (Ac.)	Percentage	NE ri Coeff
Natural	203	0.053	10
Water	162	0.042	10
Pasture	18	0.005	6.59
Row Crops	3002	0.785	3
Road	80	0.021	1.95
Developed Low	200	0.052	2.53
Developed Med	159	0.042	2.45
Total Area	3824	1.000	

Weighted Average Score : 3.61336

V1= 0.36

The weighted average for watershed land cover is calculated as follows:

$$\frac{\text{SUM}(LCi * ri)}{10.00}$$

V1= Weighted Average/10

LCi The proportion of the watershed of land cover class *i*

r i The associated rank of land cover class *i*

As such, a weighted average score of 10 will result in a V1 score of 1.0. In all cases, the resulting V1 score should be rounded to the nearest 0.01

Modifications to Watershed/Source Area Hydrology - V2

Watershed-level hydrological stressors are human made surface alterations location within the watershed boundaries of a wetland. These alterations degrade and altar the hydrological function of wetlands located within the watershed. Potential surface alterations include dams, diversions, agricultural reuse pits, and ditches. Only surface and subsurface alterations that are known to exists should be considered when determining hydrological stressors.

V2 Condition Index Rating

1.00	No surface alterations, including inputs such as irrigation are present within the watershed boundaries.
0.75	Surface alterations occur within the watershed boundaries, which impact wetland hydrology. Less than 20% of the watershed is impacted.
0.50	Surface alterations occur within the watershed boundaries, which impact wetland hydrology. Greater than 20% but less the 50% of the watershed is impacted.
0.25	Surface alterations occur within the watershed boundaries, which impact wetland hydrology. Greater than 50% but less the 75% of the watershed is impacted.
0.10	Surface alterations occur within the watershed boundaries, which impact wetland hydrology. Greater than 75% but less the 95% of the watershed is impacted.
0.00	More than 95% of the watershed area is impacted by surface alterations, resulting in severely altered wetland hydrology.

V2= 0.00

Buffer Continuity and Width - V3

Vegetated buffers surrounding wetlands act to mitigate potential stressors associated with the surrounding landscape. This variable is composed of two components, the continuity and the average width of the vegetated buffer adjacent to the AA for a wetland site. Continuity is defined as the estimate percentage of the AA, which is bordered by at least 10M of continuous buffer and a minimum width of 5m. Buffer width is considered the total width of a buffer land class until a non-buffer land class interrupts it, or the outer edge of the BA is reached. Estimate the buffer width in 5M increments for the four cardinal, and four ordinal direction surrounding a wetland point. The maximum estimated buffer width is 100m. Average buffer width should be calculated and sum of buffer widths/8 directions calculated, or see below.

Assessment Area=	100 m from edge of wetland polygon	See Buffer Map.
Average buffer width =	Sum of 8 calculated buffer distances (5M increments)/8	

Buffer Land Classes	Non-Buffer Land Classes
Natural upland, riparian, and wetland habitats	Commercial development
Range and pasture land	Intensive agriculture (row crop, orchards, vineyards)
Natural or wildland parks	Golf courses
railroads with infrequent use	urban recreational use areas
swales and ditches	any road
vegetated levees	lawns
unpaved bike, foot, and horse trails	parking lots
	enclosed animal feeding operations
	residential areas
	sports fields
	urbanized parks

West Buffer Width		Continuity	
Direction	**Buffer distance (m)**	**Segment**	**Distance (m)**
N	60	West wetland perimeter	7102
E	15		
S	35		
W	100		
NE	20		
NW	120		0
SW	25		
SE	20	Buffer perimeter	7102
West Avg. buffer width	50	**Continuity %**	100
West V3 =	**0.6**		

East Buffer Width		Continuity	
Direction	**Buffer distance (m)**	**Segment**	**Distance (m)**
N	30	East wetland perimeter	4821
E	25		
S	15		
W	20		
NE	25		
NW	20		
SW	25		
SE	25	Buffer perimeter	4821
Avg. buffer width	25	**Continuity %**	100
East V3 =	**0.4**		

Average V3=	**0.5**

Summary Rating for Buffer Continuity and Average Width

	Continuity (%)	100	60-79	40-59	20-39	5-20	<5
Average Buffer Width (m)	100	1.00	0.70	0.50	0.30	0.15	0.00
	75-99	0.80	0.60	0.40	0.25	0.10	0.00
	50-74	0.60	0.50	0.30	0.20	0.10	0.00
	25-49	0.40	0.30	0.20	0.15	0.05	0.00
	10-24	0.20	0.15	0.10	0.10	0.05	0.00
	5-9	0.10	0.10	0.05	0.05	0.01	0.00
	<5	0.00	0.00	0.00	0.00	0.00	0.00

V4 - Buffer Condition
The buffer condition is assessed based on the extent and quality of native vegetation cover, stress to the substrate, and evidence of human visitation or management. Common buffer disturbances and stressors. Buffer condition should only be assessed for the area already defined as buffer based on V3. Buffer condition should dbe assessed on site, based of cover of native vegetation or non-native vegetation.

Indicators of Buffer Area (BA) modifications and Stressors	
Substrate	
Indicator/stressor	Description
Off-road vehicles or heavy machinery use	The presence of substrate disturbance in the form of ruts, compaction, or other disturbance due to the use or parking of off-road vehicles or heavy machinery
Grazing by domesticated or feral animals	The presence of deep prevalent hoof prints, digging, or wallows.
Filling, grading, or other deposition of sediment	Deposition of soil in a wetland in order to fill in or eliminate topography in the BA
Human use and/or Management	
Indicator/stressor	Description
Mowing/haying	Presence of mowing or haying in the BA
Chemical vegetation control	Presence of dead or dying native vegetation due to targeted use of herbicide
Excessive grazing	Presence of vegetation grazed to an average height of <3"
Excessive wildlife herbivory	Presence of vegetation grazed to an average height of <3"
Presence of oil or gas wells	Oil or gas wells located in the BA
Presence of continually maintained utility corridors	Powerline or other utility corridors continually maintained for maintenance access

Severity of BA Modifications/Stressors	
Severity	Description
Not present	Stressor is not present in or adjacent to the wetland or AA
Not severe	Stressor is not present but does not appear to negatively impact the condition of the wetland/AA
Moderately severe	Stressor is present and effects < 10% of the area of the wetland/AA
Severe	Stressor is present and effects > 10% of the area of the wetland/AA

Severity of Invasive plant species cover	
Severity	Description
Absent	Invasive plant species are absent from the buffer
Trace	Invasive plant species cumulative relative cover <5%
Moderate	Invasive plant species cumulative relative cover is 5-25%
Extensive	Invasive plant species cumulative relative cover is 26-75%
Dominant	Invasive plant species cumulative relative cover is >75%

V4 Condition Index Rating	
1.00	BA is dominated by native vegetation and modifications and stressors are absent
0.75	Trace cover of invasive plant species in the BA and modifications and stressors are absent or invasive plant species are absent and modifications and stressors are not severe.
0.50	Moderate cover of invasive plant species in the BA or moderately severe stressors impact <10% of the total BA or trace cover of invasive species in the buffer and moderately severe and.or severe modifications stressors impact between 10 - 15% of the BA.
0.25	Extensive cover of invasive species in the BA or Moderate cover of invasive plant species in the BA and moderately severe and/or severe modifications or stressors cumulatively impacts between 16 - 25% of the BA.
0.10	BA is dominated by invasive species or moderately severe and/or severe modifications and stressors cumulatively impact > 25% of the BA or cover of invasive species in the BA is extensive and moderately severe and.or severe modifications and stressors cumulatively impact between 16-25% of the BA.
0.00	Buffer is absent

V4 = 1

JUSTIFICATION- Buffer around wetland is 100% of wetland perimeter.

1.0 condition index rating based on proposed native vegetation with out any stressors.

V5 - Vegetative Composition

Vnative = This variable is measured based on the dominant vegetation of each plant community within Wetland AA. The condition index rating is determined based on the comparison of dominant plant species observed in AA to the list of diagnostic and abundant species in Appendix A.

Formula $$SUM(\frac{((\#RSS_j + 0.5(\#NN_j))}{n_j} \text{ X } \%area_j)$$

where,

v5= Sum of the weighted scores for each plant community in the "j" community in wetland AA

#RSS"j" = # of reference standard dominant species in plant community "j" from the plant community species list

#NN"j"= # of native dominant species in the plant community

n"j"= Total # of dominant plant species in a plant community

% area"j"= Relative area of plant community "j" in the wetland AA

Vinvasive = Is a score modifier used in calculating the overall V5 variable index score. The score modifier can be determined in one of two ways as follows:

Vinvasive = Total % of cover of native species

or

Vinvasive = 1 - Total % of invasive species

V5= ***Vnative* X *Vinvasive***

Total wetland Area = 47 acres N*=Native on species list, N=native, NN=Nonnative, I=invasive, **EXA SPE** = Dominant (15% of relative cover)

E Sedge Wet Meadow Community (T-1-2); 27 acres (57%)							**Cattail Community S-6; 20 acres (43%)**						
Species	**Status**	**Cover**	**Rel. Cov.**	**# Species from E. Sedge Wet Meadow(#RSS$_j$)**	**# of Native Dominants (#NN$_j$)**	**Total # of Dominants (n_j)**	**Species**	**Status**	**Cover**	**Rel. Cov.**	**# Species from Cattail Shallow Marsh(#RSS$_j$)**	**# of Native dominants (#NN$_j$)**	**Total # of Dominants (n_j)**
ECH CRU	NN	30	29	2	3	4	**TYP LAT**	N*	40	38	3	3	4
PHA ARU	I	10	10				**ECH CRU**	NN	15	14			
PER PEN	N	15	14				**SPA EUR**	N	25	24			
SCI	N*	20	19				**SCH HET**	N	20	19			
CAR	N*	25	24				TYP ANG	N	5	5			
Total Cover		105	100				Total Cover		105	100			
Vinvasive							***Vinvasive***						
Total % Cover of Native Species= 71%							Total % Cover of Native Species= 86%						
Vnative	**2.21**							**3.16**					
Vinvasive	**0.29**							**0.14**					
V5	**0.64**							**0.44**					
						Average V5=	**0.54**						

Stressors to Wetland Hydrology - V6

Vhydrostress Condition Index Rating	
Modification/Stressor	*Description*
Ditch	Human-made channel dug for the purpose of draining an area
Tile Drain	A subsurface modification generally used to drain wetlands located in ag fields
Dike/levee/berm	a human made embankment, generally found in river floodplains, built to prevent flooding.
Dam	a human made structure which inhibits the natural flow of water through rivers and streams
Fill	soil added to wetlands in order to fill in and reduce the wetland area.
Human-introduced sedimentation or burial	culturally accelerated sedimentation indicated by silt accumulation or debris lines on or around vegetation or the presence of sediment fans, deposits, or plumes.
Road/Railroad bed	located in or adjacent to the wetland, and may be result of a bisection of a wetland or flashy stormwater flows into the wetland.
artificial increase in hydrology	irrigation, pumps and pipes which increase the flow of water into the wetland.
invasive species that altar hydrology	presence of invasive species in wetlands
dredging or excavation	removal of soil from a wetland with the purpose of increasing the volume of water that a wetland can hold or reducing the total wetland.

Severity of hydrologic Modifications/Stressors	
Severity	*Description*
Not present	Stressor is not present in or adjacent to the wetland or AA
Not severe	Stressor is not present but does not appear to negatively impact the condition of the wetland/AA
Moderately severe	Stressor is present and effects < 10% of the area of the wetland/AA
Severe	Stressor is present and effects > 10% of the area of the wetland/AA

V6 Condition Index Rating	
1.00	No hydrologic modification or stressors are present in or adjacent ot the wetland or AA
0.75	Hydrologic modifications or stressors are present in or adjacent to the wetland/AA but do not appear to negatively impact the condition of the wetland/AA or hydrologic modifications or stressors have occurred in the past but the wetland/AA appears to have recovered.
0.50	Multiple moderately severe modifications or stressors are present in or adjacent to the wetland/aa and cumulatively impact <10% Wetland/AA
0.25	Multiple moderately severe modifications or stressors are present in or adjacent to the wetland/aa and cumulatively impact >10% Wetland/AA or one severe modification or stressor is present in or adjacent to the wetland.
0.10	Many severe modifications or stressors are present in or adjacent to the wetland/AA, resulting in a highly modified hydrologic regime or complete loss of wetland function
0.00	Wetland is no longer present due to conversion to an alternate land use.

V6 **0.5**

Justification- The county road, although with no ditches, still bisects the wetland and contains a cuvlert. Impacts were considered 0.75 as it does not appear to negatively impact the

Wetland Land use -V7

Vhydrostress Condition Index Rating	
Indicator/Stressor	Description
Plowing or disking	Human-made channel dug for the purpose of draining an area
Intensive grazing	A subsurface modification generally used to drain wetlands located in ag fields
off-road vehicle use	a human made embankment, generally found in river floodplains, built to prevent flooding.
construction or farm vehicle use	a human made structure which inhibits the natural flow of water through rivers and streams
urban agricultural conversion	soil added to wetlands in order to fill in and reduce the wetland area.

Severity of hydrologic Modifications/Stressors	
Severity	*Description*
Not present	Stressor is not present in or adjacent to the wetland or AA
Not severe	Stressor is not present but does not appear to negatively impact the condition of the wetland/AA
Moderately severe	Stressor is present and effects < 10% of the area of the wetland/AA
Severe	Stressor is present and effects > 10% of the area of the wetland/AA

V7 Condition Index Rating	
1.00	No land use modification or stressors are present in or adjacent to the wetland or AA
0.75	Land use indicators or stressors are present in or adjacent to the wetland/AA but do not appear to negatively impact the condition of the wetland/AA or hydrologic modifications or stressors have occurred in the past but the wetland/AA appears to have recovered.
0.50	Multiple moderately severe modifications or stressors are present in or adjacent to the wetland/aa and cumulatively impact <10% Wetland/AA
0.25	Multiple moderately severe modifications or stressors are present in or adjacent to the wetland/aa and cumulatively impact >10% Wetland/AA or one severe modification or stressor is present in or adjacent to the wetland.
0.10	Many severe modifications or stressors are present in or adjacent to the wetland/AA, resulting in a highly modified hydrologic regime or complete loss of wetland function
0.00	Wetland is no longer present due to conversion to an alternate land use.

V7 **0.75**

Justification - There are no stressors in the wetland or buffer, however, when considering the area adjacent to the wetland, plowing/disking would occur. The buffer should filter runoff from this area thereby minimizing negative impact.

NeWRAM Condition Score

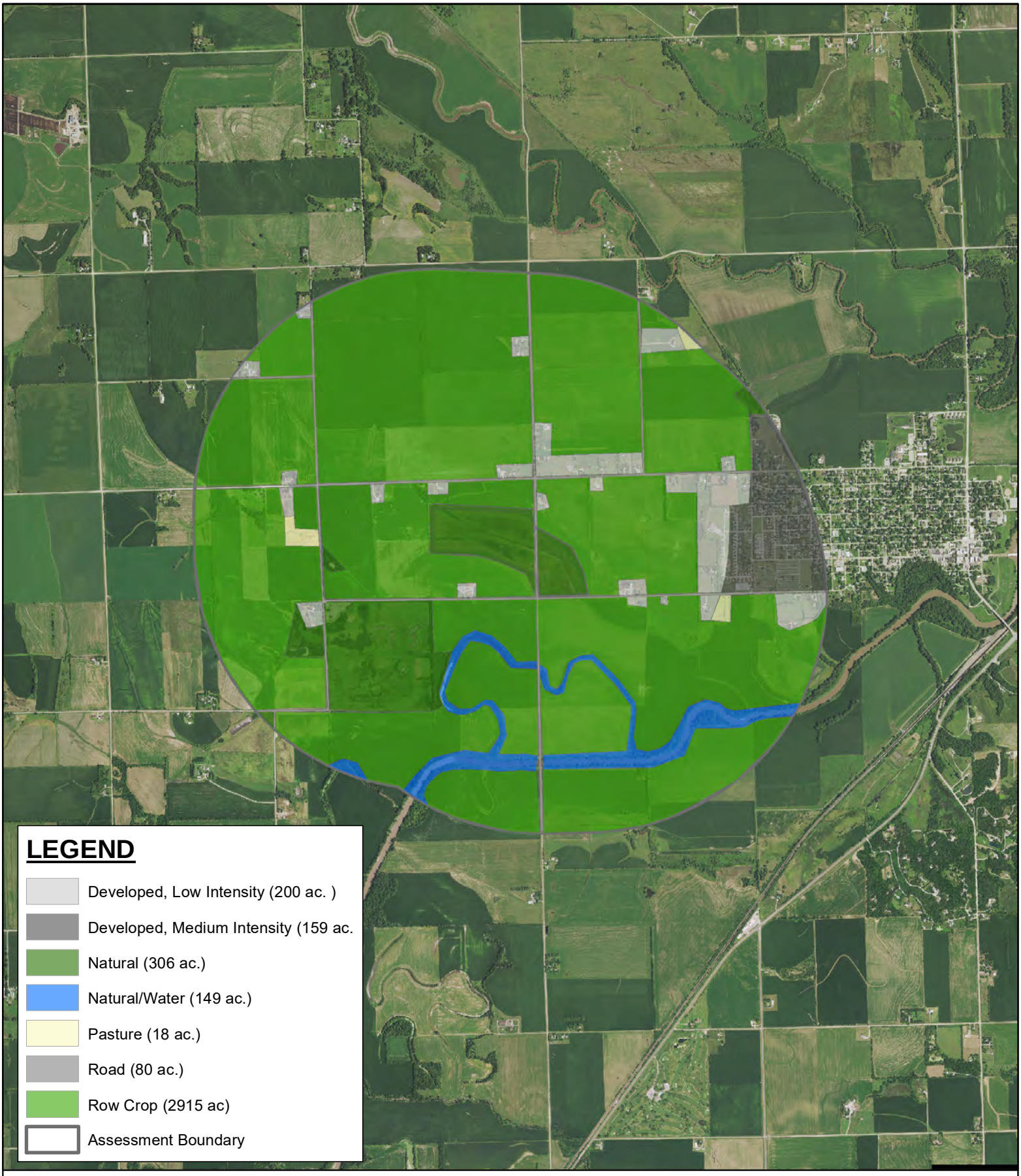
V1	V2	V3	V4	V5	V6	V7
0.36	0	0.5	1	0.54	0.75	0.75

NeWRAM Score Formula= V1+(V3xV4)+V5+V6+V7

NeWRAM Condition Score Post Restoration

2.90

Scores range from 0 - 5. 0= Nonwetland Site and
5= Perfect Wetland



NAIP 2018 Saunders County Aerial Imagery

N

0 1,500 3,000 6,000

Feet

VI WATERSHED LAND COVER MAP POST

Nebraska Department of Transportation
Project Number: MISC-79-2 (1019)
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

benesch
engineers · scientists · planners

C:\Users\Cjelden\Desktop\New folder\NeWRAM_Assessment 1 mile buffer Post.mxd

V-3 Buffer Continuity & Width (WEST)

Direction			Buffer Distance (M)	
N	NE		60	20
E	NW		15	120
S	SW		35	25
W	SE		100	20

Average Buffer - 50m
Continuity - 100%
V3 = 0.60

V-3 Buffer Continuity & Width (EAST)

Direction			Buffer Distance (M)	
N	NE		30	25
E	NW		25	20
S	SW		15	25
W	SE		20	25

Average Buffer - 25m
Continuity - 100%
V3 = 0.40

Legend

- Buffer Width
- Compass
- Wetland Assessment Area
- Upland Vegetation; 50' Buffer
- 100m Buffer Area

NIROC 2016 Saunders County Aerial Imagery

N

0 175 350 700 Feet

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Y:\Omaha\120400S\00120472.00\GIS\Figures\Post Buffer Map.mxd

POST CONSTRUCTION BUFFER CONTINUITY & WIDTH - V3

Nebraska Department of Trasportation
Project Number: MISC-79-2 (1019)
CN: 10584B
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

WETLAND DELINEATION

Farmed Wetland Report

Ashland Mitigation Site
NDOR Project No. 10584B
NDOR Control No. MISC-79-2(1019)
Saunders County, Nebraska

Prepared for:

NDOR
Nebraska
Department of Roads

Report Date: December 2015

Prepared By:

TranSystems
EXPERIENCE | Transportation

2400 Pershing Road, Suite 400
Kansas City, MO 64108
(816) 329-8600
www.TranSystems.com

Table of Contents

Tables

List of Figures

Appendices

1.0 Introduction

1.1 Purpose

This report is intended for the use of the Nebraska Department of Roads (NDOR) for the review of a potential mitigation site, to be used for wetland preservation, creation, and/or enhancement.

1.2 Site Location

The potential mitigation site is located approximately one mile west of the west corporate limits of Ashland, Nebraska, in Saunders County. The site location is to include portions of parcels belonging to four different landowners, generally located between Ashland Road and Cooper Road, on both sides of County Road 6. The site is centered around Latitude 41.040959 Longitude -96.407320, in the northeast ¼ of Section 4, Township 12 north, Range 9 east and the northwest ¼ of Section 3, Township 12 north, Range 9 east. The site is located in the Salt Creek Watershed, Hydrologic Unit Code (HUC) 8 10200203. This is the same HUC 8 as the project requiring mitigation, Control Number (CN) 10584B (Agnew North & South).The general site location is depicted on Figure 1-1, Figure 1-2, and Figure 2, Appendix A.

1.3 Site Description

The potential mitigation site lies in the rolling hills topographic region of Nebraska, generally described as hilly land with moderate to steep slopes and rounded ridge crests. The rolling hills of eastern Nebraska are mostly glacial till that has been eroded and mangled by loess. The site area is located in the topographic floodplain of Salt Creek, and drains to Salt Creek, which in turn flows into the nearby Platte River. The site itself consists of approximately 101 acres of farmed agricultural field, portions of which were historically wetland areas. One unnamed tributary is known to intersect the site location, connecting to Salt Creek. The site is located in the Salt Creek Watershed.

2.0 Desktop Information Review

The methodology set forth in this report was sourced from NDOR correspondence and NRCS protocols from *Hydrology Tools for Wetland Determination, USDA NRCS, 1997*, used in conjunction with supporting remote sensing data. Details on the methodology and data sources used follows.

2.1 NRCS Methodology Overview

The NRCS employs the use of remote sensing and a step-by step process to determine the wetland hydrology associated with a study area. The remote sensing is utilized to determine which years of aerial photography have wetness signatures that can be correlated with the hydrology of natural wetlands, providing independent validation of the wetland hydrology. Wetness signatures generally include areas of darker, more vigorous vegetation growing in ideal hydrologic conditions. Yellowed or stressed vegetation caused by the presence of excessive water, areas with ponded water, and depressions devoid of vegetation are also considered. Three procedures are listed by the NRCS guidance document, two of which were chosen based on the availability of imagery and recommendations provided by NDOR in the form of previously Corps reviewed farmed wetland delineation reports. Procedure 1 uses annual precipitation data tabulated from the NRCS WETS tables, used to classify aerial photographs as wet, dry, or normal. Procedure 2 uses the same WETS tables, but considers only the three months prior to the date an aerial photograph was taken to classify the aerial as wet, dry, or normal.

The initial step for both Procedure 1 and Procedure 2 is to acquire aerial imagery. While there are several imagery sources available, the NRCS recommends the georectified National Agriculture Imagery Program (NAIP) imagery for aerials dated 2003 or after, and the un-georectified Farm Service Agency (FSA) – Aerial Photography Field Office (APFO) imagery for aerials prior to 2003. NAIP and FSA aerial imagery is acquired during the agricultural growing seasons in the continental US, with the goal of making digital orthophotography available to government agencies and the public within a year of acquisition. Additional imagery from Google Earth was reviewed, but was not included in the assessment of farmed wetland area due to being unreliable in the terms of the established methodology. As a

general observation, imagery reviewed in Google Earth matched the patterns present in the aerials used for the NRCS procedures.

Aerial imagery utilized in this assessment was obtained from the USDA NRCS Geospatial Data Gateway (NAIP/FSA imagery) and the Nebraska Department of Natural Resources (DNR) digital imagery database. All imagery utilized in the assessment was georectified prior to use, and analyzed in ArcMap 10.x. Color infrared imagery was utilized as a secondary tool to identify potentially wet areas. Google Earth aerial imagery was supplementally reviewed, but not included for assessment.

2.2 NRCS Procedure 1

The NRCS Procedure 1 utilizes annual precipitation values obtained from the WETS tables to classify each year as wet, dry, or normal. The WETS tables provide annual precipitation for a given location, as well as the upper and lower precipitation values representing the thresholds for classifying a given year as wet or dry. The WETS table date is located in Appendix B

11 aerials were considered for Procedure 1, listed in Table 1, with the aerials considered ranging in year of acquisition from 1993 to 2014. Based on the WETS table data, four years were considered to be wet, three years were considered to be dry, and four years were considered to be normal (Figure 3).

Table 1: Aerial imagery used for desktop farmed wetland review

Source	File Name	Year	Month	Day	Format	Georectified
DNR/NAIP	41096a4se.jpg	1993	April	21	jpeg	Yes
DNR/NAIP	481494.jpg	1999	April	6	jpeg	Yes
DNR/NAIP	ortho_1-1_1n_s_ne155_2003_1.sid	2003	July	15	MrSid	Yes
DNR/NAIP	naip_1-1_2n_s_ne155_2004_1.sid	2004	July	31	MrSid	Yes
DNR/NAIP	naip_1-1_2n_s_ne155_2005_1.sid	2005	August	6	MrSid	Yes
DNR/NAIP	ortho_1-1_1n_s_ne155_2006_2.sid	2006	July	29	MrSid	Yes
DNR/NAIP	naip_1-1_2n_s_ne155_2007_1.sid	2007	July	5	MrSid	Yes
DNR/NAIP	ortho_1-1_1n_s_ne155_2009_1.sid	2009	June	28	MrSid	Yes
DNR/NAIP	ortho_1-1_1n_s_ne155_2010_1.sid	2010	July	27	MrSid	Yes
DNR/NAIP	ortho_1-1_1n_s_ne155_2012_1.sid	2012	June	26	MrSid	Yes
DNR/NAIP	ortho_1-1_1n_s_ne155_2014_1.sid	2014	September	7	MrSid	Yes

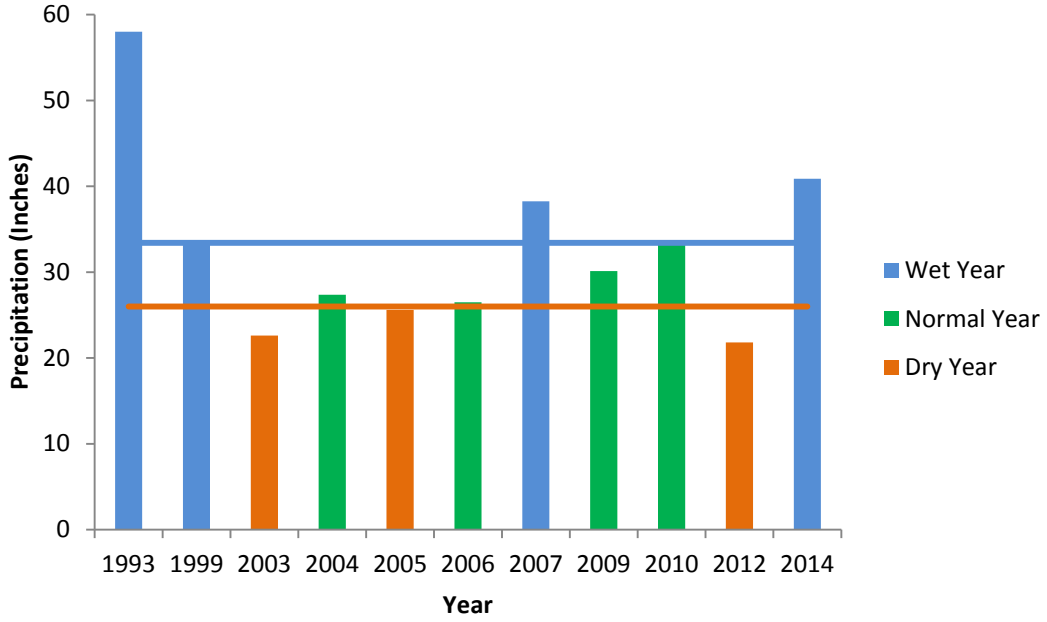


Figure 3: Procedure 1 Annual Precipitation Classifications. The graph shows the annual precipitation (inches) totals for Ashland, NE (WETS Station Ashland 2, NE0375), obtained for the years of available aerials. Annual precipitation totals over the blue line indicate a wet year, while values below the orange line indicate a dry year. Areas between the two lines indicate a normal year.

2.3 NRCS Procedure 2

The NRCS Procedure 2 uses a weighted analysis of precipitation data found in the WETS tables for the months immediately prior to the date of aerial acquisition. Based on this information, each month is classified as wet, dry, or normal. Procedure 2 should provide a more accurate classification of the wetness condition visible in an aerial by taking a more refined view of precipitation conditions leading up to the date of the aerial.

Precipitation data for the 3 months immediately prior to the aerial photographs capture date was used for Procedure 2. Monthly rainfall totals along with wet and dry precipitation threshold values determined by the long-term rainfall records are obtained from the WETS table, and then entered onto a worksheet representing the chosen aerial. The actual rainfall total for a month is then compared to the threshold values. A precipitation average less than that of three years in every 10 equals the dry threshold, while a precipitation average of more than that of three years in every 10 equals the wet threshold. Each of the three months prior to the date of the aerial is classified as wet, dry, or normal based on whether the observed precipitation value falls above the average (wet), below the average (dry), or in between (normal). Each month is assigned a weighted value based on its precipitation classification and proximity in time to the date of the aerial. Months that are wet or are chronologically in close proximity to the date of the aerial receive a higher weighted value than months that are dry or are distant in time from the aerial date. Based on the weighted values, each aerial receives a value indicating whether the photograph represents a wet, dry, or normal precipitation period. Table 2 represents a sample worksheet used to determine the wetness rating for an aerial.

Table 2: Sample worksheet for determining wetness rating for aerial imagery using Procedure 2

Aerial Month - July Aerial Year - 2003									
		Long-term rainfall records							
	Month	3 yrs. in 10 Less than (inches)	Normal (inches)	3 yrs. in 10 more than (inches)	Montly Total Precipitation (inches)	Conditions (Wet, Normal, Dry)	Condition Value[1]	Month Weight Value	Condition Value x Month Weight Value
1st Month Prior	June	2.43	3.74	4.49	3.42	Normal	2	3	6
2nd Month Prior	May	2.89	4.77	5.78	3.56	Normal	2	2	4
3rd Month Prior	April	1.82	2.97	3.6	2.59	Normal	2	1	2
								Σ[2]	12

Note: 1: Condition Value: 1 = Dry, 2 = Normal, 3 = Wet
2: If Sum is: 6-9, prior period has been drier than normal
10-14, pior period has been normal
15-18, prior period has been wetter than normal

The wetness ratings obtained from following procedure 2 were used to identify wet signatures on aerial photography. Procedure 2 represents a finer resolution analysis to classify each aerial photograph as wet, dry, or normal, and is most likely to represent the visual condition present at the time of aerial capture. Under Procedure 2, two years of aerial imagery were classified as wet, two years were classified as dry, and seven years were classified as normal. Table 3 lists the hydrology classification for each aerial photograph.

Table 3: Aerial Photography Precipitation Classification determined by NRCS Procedure 2

Aerial Photography Date	Hydrology Classification
1993	Wet
1999	Normal
2003	Normal
2004	Normal
2005	Normal
2006	Dry
2007	Normal
2009	Dry
2010	Wet
2012	Normal
2014	Normal

2.4 Identification of Wetness Signatures

Once hydrology classification was determined for each aerial image, the aerials were reviewed for wetness signatures within the potential mitigation site area. Initially, the areas displaying wetness signatures were outlined in ArcMap 10.X for the wet years 1993 and 2010. Aerial imagery for the wet years was used for the first phase of wet signature identification, as any area located in a dry portion of the aerial during a wet year was considered unlikely to

support wetland hydrology under normal conditions, and could therefore be ruled out of further analysis. Figure 4 in Appendix A illustrates the wet year wetness signatures.

The aerials from normal precipitation years were then reviewed for wetness signatures under normal conditions. All wetness signatures present in normal year imagery was initially outlined. All identified wetness signatures were then reviewed to determine if they were present in at least 50 percent of normal year aerials. If a wetness signature was present in at least 50 percent of the normal year aerials, the average size of the boundary was outlined and considered for field review. The average wetness sized boundary from normal years is illustrated in Figure 5 in Appendix A.

2.5 Supplemental Desktop Review of Information to Determine Farmed Wetland Area

Color Infrared (CIR) imagery was reviewed as a supplemental tool to determine potential wetlands inside the potential mitigation site area. CIR Is based on the premise that different materials, including land cover types, absorb a particular portion of the electromagnetic spectrum, transmit other portions, and reflect the remaining portion, which can be recorded (Paine and Kiser, 2003 and Aronoff, 2005). CIR was used to confirm wetness signatures previously identified on aerial imagery using the NRCS methods and to identify other potential wet areas to be investigated in the field.

CIR imagery was obtained from the NRCS Geospatial Data Gateway for the year 2009. Dark locations, which often indicate wet conditions within fields, were outlined. These outlines were then compared to the wet indicator outline results from the NRCS procedures. CIR information is located on Figure 6 in Appendix A.

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) was used to determine if there were wetlands in the potential mitigation area. NWI mapping indicated two wetlands to be present. Based on aerial imagery, one wetland area appears to have formerly been a farm pond, now filled. The other NWI wetland present is a freshwater emergent wetland centered over an area of creek channel.

The U.S. Geological Survey (USGS) 7.5 minute quadrangle topographic map for Ashland West and the USGS National Hydrography Dataset (NHD) were reviewed for the presence of known water resources to be present in the area. Both resources showed one intermittent unnamed tributary to Salt Creek flowing from the northwest corner of the study area to the southeast. Salt Creek, in turn, flows into the Platte River. A review of aerial information indicated an additional water resource likely to be present in the form of an irrigation ditch. NWI and NHD information is located on Figure 7 in Appendix A.

3.0 Field Delineation Procedures

3.1 Field Methodology

On October 22nd, 2015, TranSystems personnel performed a field investigation of waters of the U.S. within the NDOR specified potential mitigation site area. The area of investigation included sections of four parcels owned by four different owners. Field verification of potential farmed wetlands on site was carried out utilizing typical delineation procedures in conjunction with those set forth by the NRCS for farmed wetlands. The methods utilized included those in accordance with guidance provided by the U.S. Army Corps of Engineers *Wetlands Delineation Manual* (1987) and *Midwest Regional Supplement*, with the method for identifying wetlands in an agricultural setting from the NRCS's *Hydrology Tools for Wetland Determination (1997)*. As the area to be investigated involved a majority of farmed agricultural land compared to a typical NDOR road project, field methodology leaned more heavily on the NCRC's procedures compared to those provided by the USACE.

While on site, soil samples were examined for the farmed wetland areas outlined during the desktop examination of the site aerials. Soils were excavated to either a depth of 40 inches or to a shallower depth if hydric soil indicators were present. Due to the problematic nature of the soil conditions created by agricultural activity, soils were

considered to be hydric regardless of depth requirements if hydric features were present (e.g. redoximorphic features, depleted matrices, etc.). If hydric soils were present, the location was considered to be a wetland. Colonizing weedy vegetation and hydrology patterns were also noted for each location. Geospatial information was collected in the field using sub-meter accuracy Global Positioning Systems (GPS) equipment, and then digitized onto aerial photographs for assessment of wetland areas. Site conditions were also photographed in the field. Data sheets are provided in Appendix D.

3.2 Site Conditions

Conditions during the October 22nd, 2015 visit were found to be generally cool, breezy, and overcast. Trace amounts of rainfall fell the morning before the site visit. Based on the same methodology used for determining wetness according to NRCS procedure 2, the site location was under wet conditions. Any crops that may have been present during this year's agricultural season had been previously cleared by the time of site visit. Generally, the majority of the study area was found to contain colonizing weeds. Active fields of corn were present around the edges of the study area. Due to an uncharacteristically warm fall, the growing season was still underway; however, plants had generally begun to die off for the cool season.

4.0 Results and Discussion

4.1 Water Resources

The potential mitigation site is located in the topographic floodplain of Salt Creek and is partially within the 100 year floodplain. The project site area is bisected by an unnamed tributary to Salt Creek running roughly diagonally across the study area from the northwest to the southeast. An additional irrigation ditch/swale was found to flow from the east to the west across the property to the east of County Road A, connecting to the unnamed tributary.

Farmed wetlands were observed across the site, and have been categorized as eight separate wetland areas, although they form a large wetland complex. The wetlands present were identified as palustrine emergent wetlands, either temporarily or seasonally flooded (PEMA/C). Wetlands present were designated as Nebraska Wetland Subclass Floodplain Depression. The area was of agricultural use, but appears to have been left dormant and unplanted this growing season. Dominant vegetation observed onsite included fall panicgrass (*Panicum dichotomiflorum*), reed canarygrass (*Phalaris arundinacea*), black willow (*Salix nigra*), smartweed (*Persicaria pensylvancia*), and roughfruit amaranth (*Amaranthus tuberculatus*). Additional wetlands were observed in roadway ditches adjoining the site located in the County right of way (ROW). Assessment of the County ROW was beyond the scope of the site investigation. Wetland information is listed in Table 4. A visual display of the delineated wetlands is located in Figure 8 in Appendix A.

Table 4: Delineated Farmed Wetlands

Sample ID	Figure	Wetland Classification[1] (Cowardin|Nebraska Subclass)	Area (acres)
S1, S7	8-1	PEMA/C | Floodplain Depression	12.7296
S2	8-1	PEMA/C | Floodplain Depression	0.8369
S4	8-1	PEMA/C | Floodplain Depression	2.1135
S6	8-1	PEMA/C | Floodplain Depression	14.7081
S8	8-2	PEMA/C | Floodplain Depression	3.8990
S9	8-2	PEMA/C | Floodplain Depression	1.0479
S10	8-2	PEMA/C | Floodplain Depression	0.5948
S12, S13	8-2	PEMA/C | Floodplain Depression	2.8182

Notes: 1: PEMA = Palustrine Emergent Temporarily Flooded; PEMC = Palustrine Emergent Seasonally Flooded; PSSA = Palustrine Scrub-Shrub Temporarily Flooded; PFOA = Palustrine Forested Temporarily Flooded

4.1 Conclusion

Generally, wetland signatures identified by the NRCS methodology were verified in the field by the presence of hydric soils. Two areas initially identified as potential wetland locations were ruled out by a lack of hydric soil indicators. Soil samples in wet areas were found to have clear redoximorphic concentrations, and generally met hydric soil indicators without the need to advance soil samples to a greater depth than the NRCS methodology requires.

The area being considered as a potential mitigation site contains a total of approximately 39 acres of wetland, in a connected complex. Wetland flow is connected across County Road A through a culvert. All wetlands on site were considered to be Nebraska Subclass Floodplain Depression. Wetland areas corresponding to the USGS mapped unnamed tributary were predominantly vegetated, did not contain a clear and consistent ordinary high water mark, and exhibited standing, rather than flowing, water.

As a mitigation site, the Ashland location is expected to provide a suitable opportunity for wetland creation. Accounting for a 50 foot buffer within the boundaries of the anticipated parcel purchases and from the roadway, the site would yield approximately 48 acres of upland area with wetland creation potential. The presence of farmed wetlands on site, in conjunction with the floodplain setting of Salt Creek and the associated tributary, indicates a strong likelihood of success in linking hydrology to new wetland landscape. The described upland area is depicted in Figure 9 in Appendix A.

All wetlands identified at the site are presumed to be jurisdictional at this time based on proximity to the unnamed tributary to Salt Creek, and the site's proximity to Salt Creek itself and the Platte River.

5.0 References

Aronoff, Stanly. 2005. Remote Sensing for GIS Managers. ERI Press. Redlands, California.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-I, US Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Environmental Laboratory. August 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region. Technical Report ERDC/EL TR-10-16. U.S. Army Corps of Engineers Research and Development Center, Vicksburg, Mississippi.

Cowardin et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States, FWS/OBS 79/31. Biological Services Program, Fish and Wilslife Service, US Department of the Interior.

Google Inc. (2013). Google Earth (Version 7.1.2.2041) [Software].

Nebraska Department of Natural Resources/USGS. 2004. Nebraksa Digital Orthophoto Quadrangles – 1993. Lincoln, Nebraska.

Nebraska Department of Natural Resources/USGS. 2004. Nebraksa Digital Orthophoto Quadrangles – 1999. Lincoln, Nebraska.

Paine, D.P. and Kiser, J.D. 2003. Aerial Photography and Image Interpretation. John Wiley & Sons.

U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS). 1984 (4th edition). Part 650 Engineering Field Handbook: Chapter 19 – Hydrology tools for Wetland Determination. 1997.

USDA/FSA - Aerial Photography Field Office. June 18, 2004. USDA-FSA-APFO MrSID Mosaic - 2003

USDA/FSA - Aerial Photography Field Office. September 9, 2004. USDA-FSA-APFO MrSID Mosaic - 2004

USDA/FSA - Aerial Photography Field Office. September 8, 2005. USDA-FSA-APFO MrSID Mosaic - 2005

USDA/FSA - Aerial Photography Field Office. May 10, 2007. USDA-FSA-APFO MrSID Mosaic – 2006

USDA/FSA - Aerial Photography Field Office. October 10, 2007. USDA-FSA-APFO MrSID Mosaic – 2007

USDA/FSA - Aerial Photography Field Office. September 16, 2009. Ortho_1-1_1n_ne155_2009

USDA/FSA - Aerial Photography Field Office. February 19, 2010. USDA-FSA-APFO MrSID Mosaic

USDA/FSA - Aerial Photography Field Office. September 12, 2010. Ortho_1-1_1n_ne155_2010_1

USDA/FSA - Aerial Photography Field Office. July 31, 2012. USDA-FSA-APFO MrSID Mosaic – 2012

USDA/FSA - Aerial Photography Field Office. October 25, 2014. USDA-FSA-APFO MrSID Mosaic – 2014

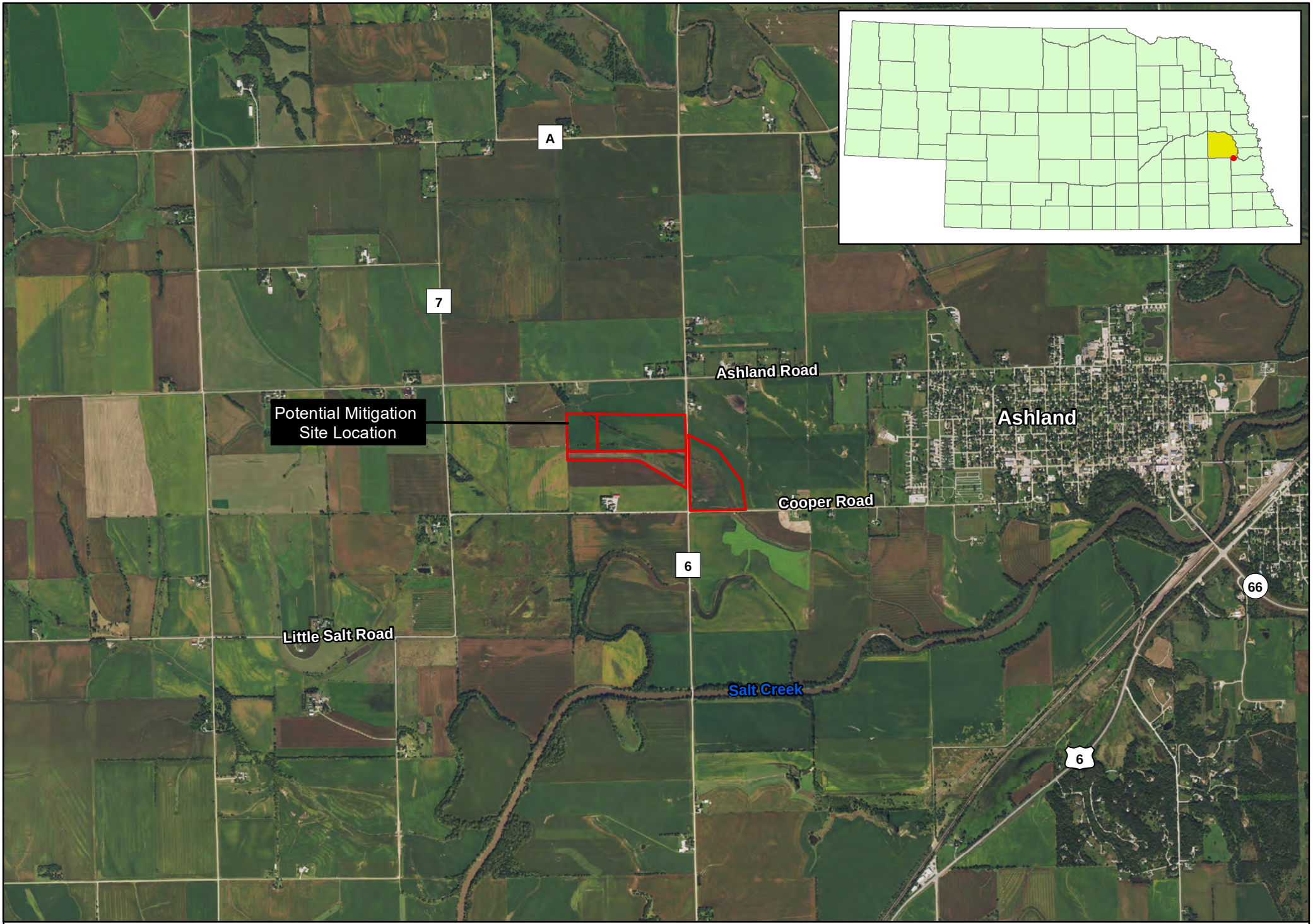
USFWS. February 4, 2011. National Wetland Inventory. Division of Habitat and Resource Conservation.

USGS. April 21, 2010. National Hydrography Dataset Flowline. Reston, Virginia.

APPENDICES

APPENDIX A

Figures



TranSystems
EXPERIENCE | Transportation

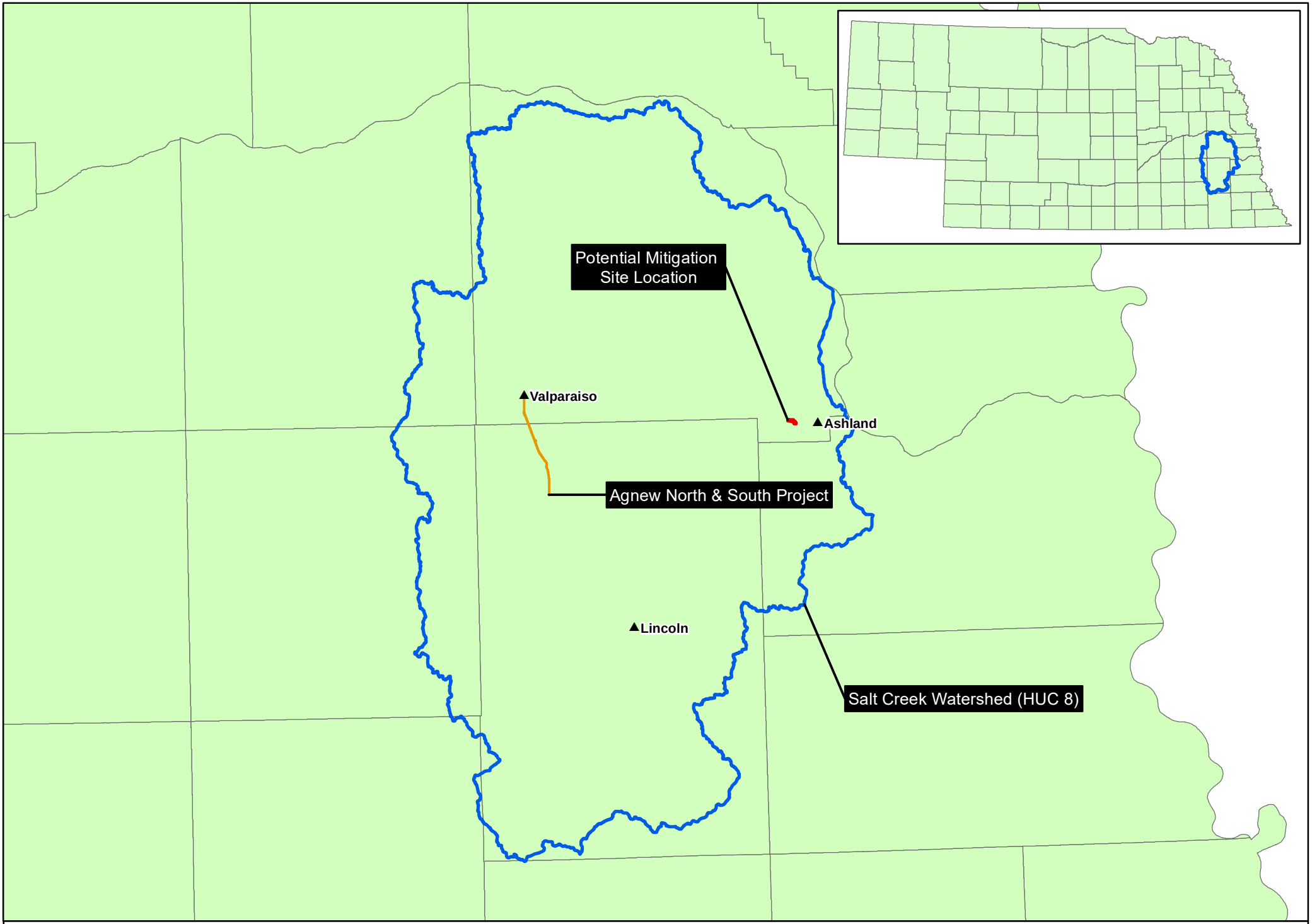
Ashland Mitigation Site

N

0 0.25 0.5 1 Miles

2014 NAIP Imagery
Saunders County, NE
Area Map - Local

1-1



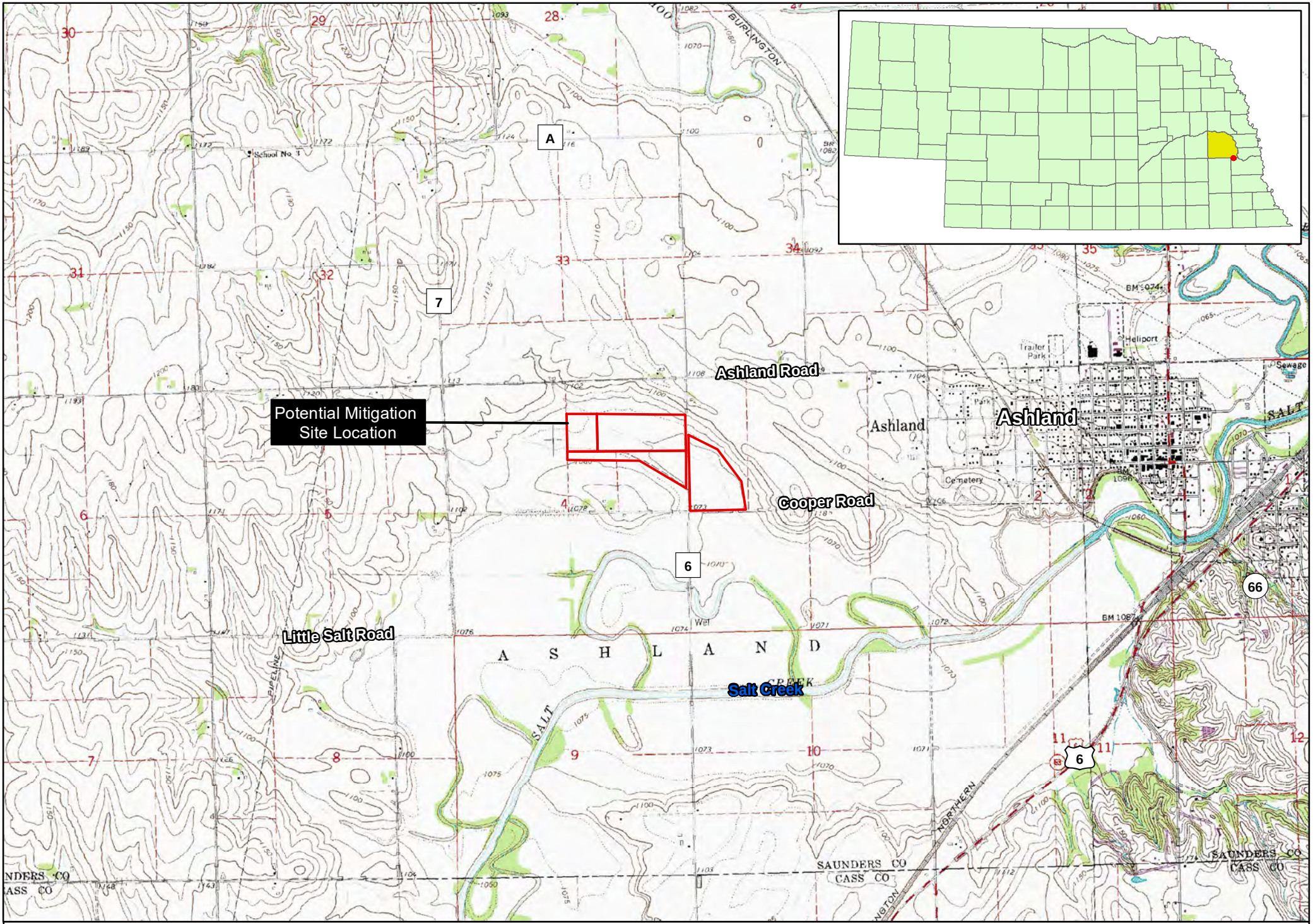
TranSystems
EXPERIENCE | Transportation

Ashland Mitigation Site

N

0 5 10 20 Miles

2014 NAIP Imagery
Saunders County, NE
Area Map - Extended



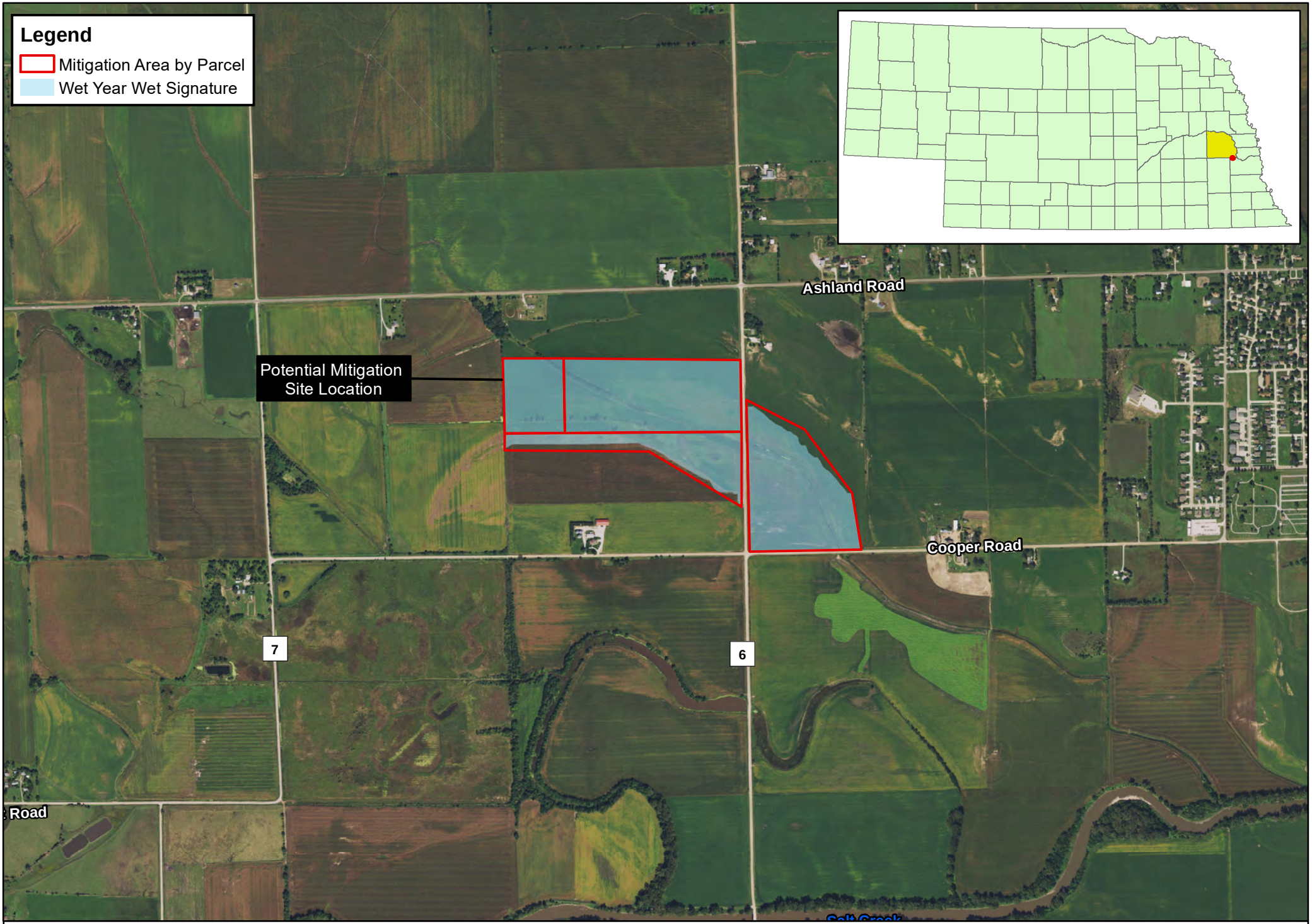
TranSystems
EXPERIENCE | Transportation

Ashland Mitigation Site

N

0 0.25 0.5 1 Miles

USGS 7.5 Min Quadrangle
Saunders County, NE
USGS Topographic Map

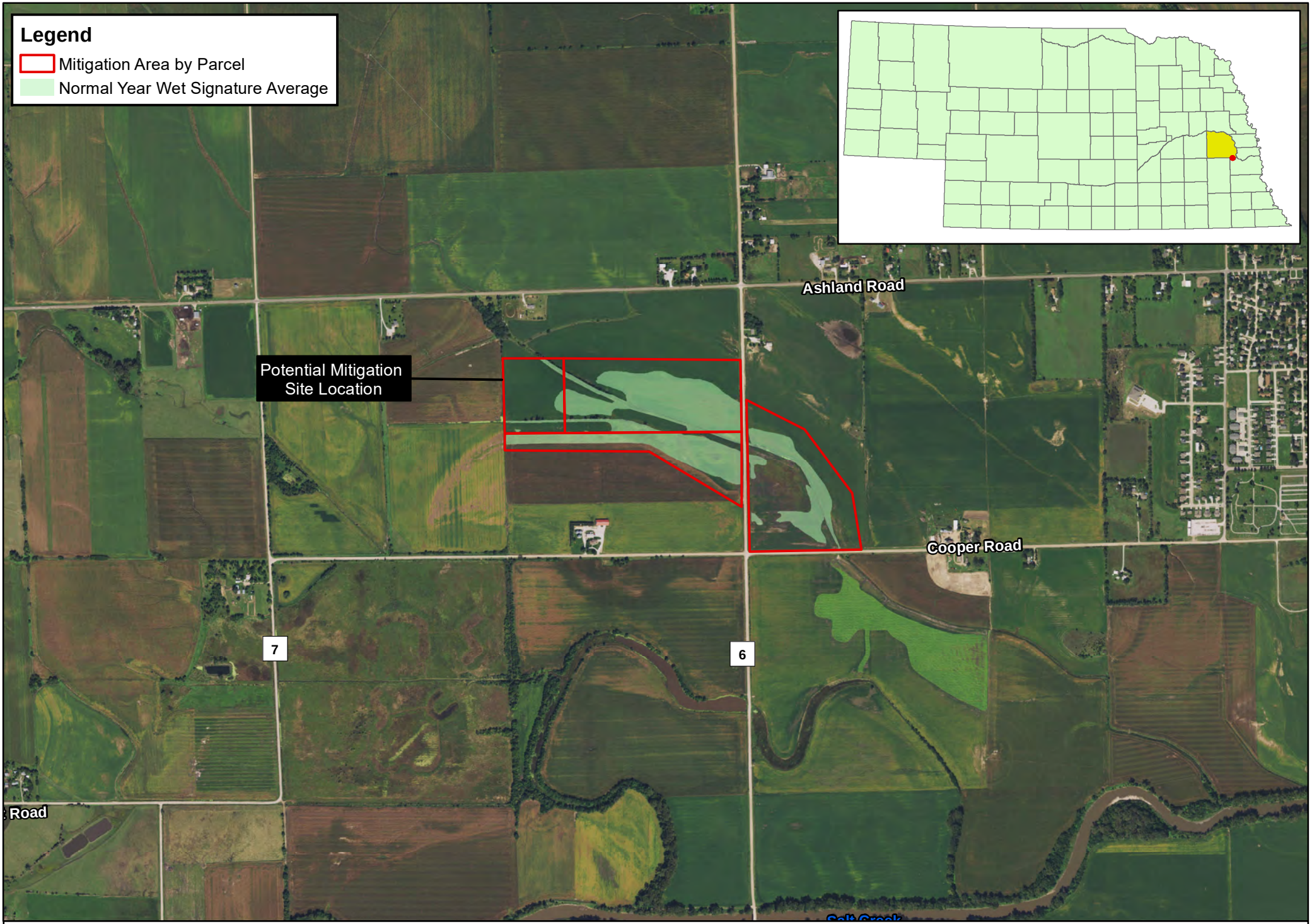


Ashland Mitigation Site

TranSystems
EXPERIENCE | Transportation

0 0.125 0.25 0.5 Miles

2014 NAIP Imagery
Saunders County, NE
NRCS Wet Year Wet Signature

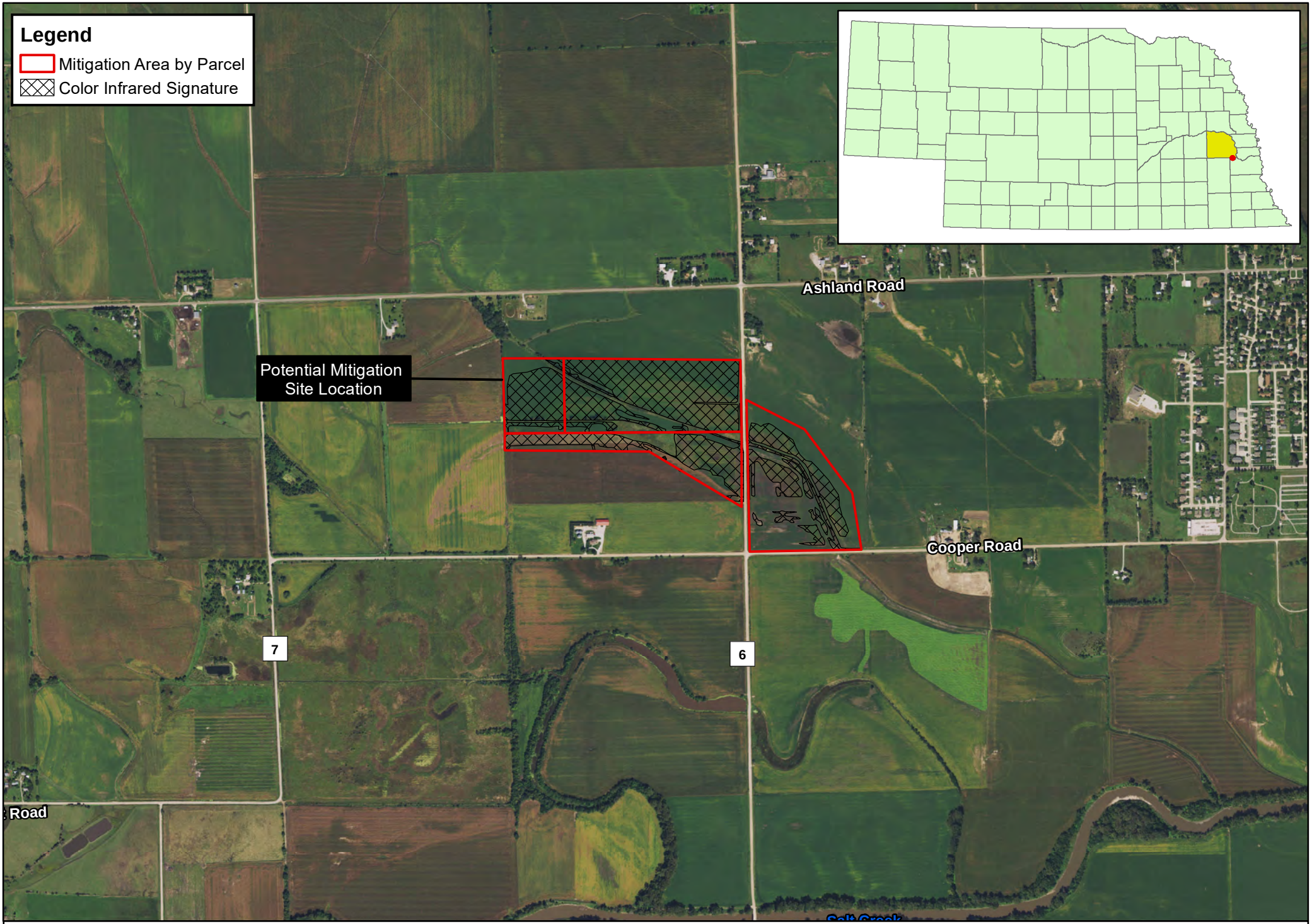


Ashland Mitigation Site

TranSystems
EXPERIENCE | Transportation

0 0.125 0.25 0.5 Miles

2014 NAIP Imagery
Saunders County
NRCS Normal Year Wet Signature

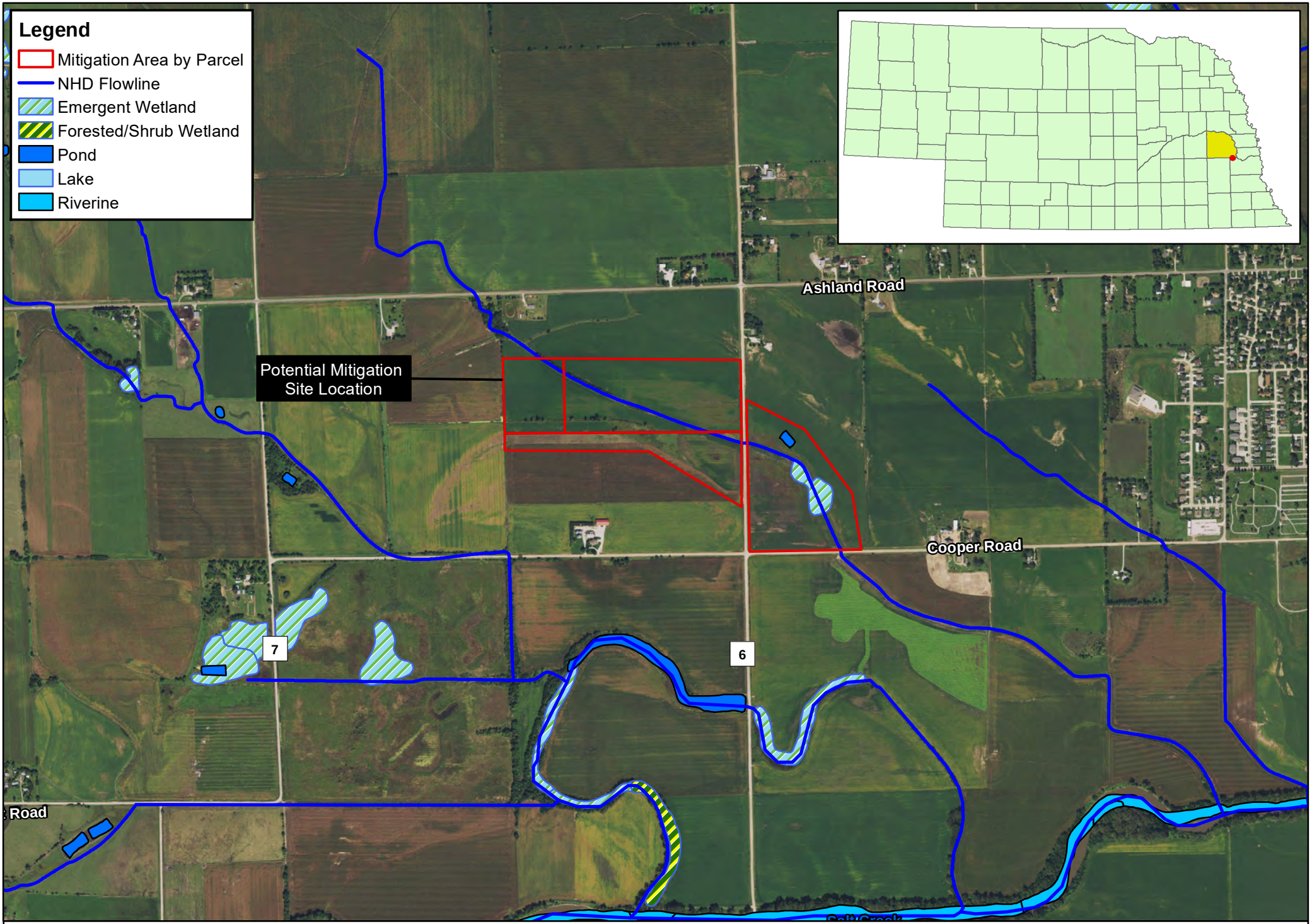


TranSystems
EXPERIENCE | Transportation

Ashland Mitigation Site

0 0.125 0.25 0.5 Miles

2014 NAIP Imagery
Saunders County
Color Infrared Signatures

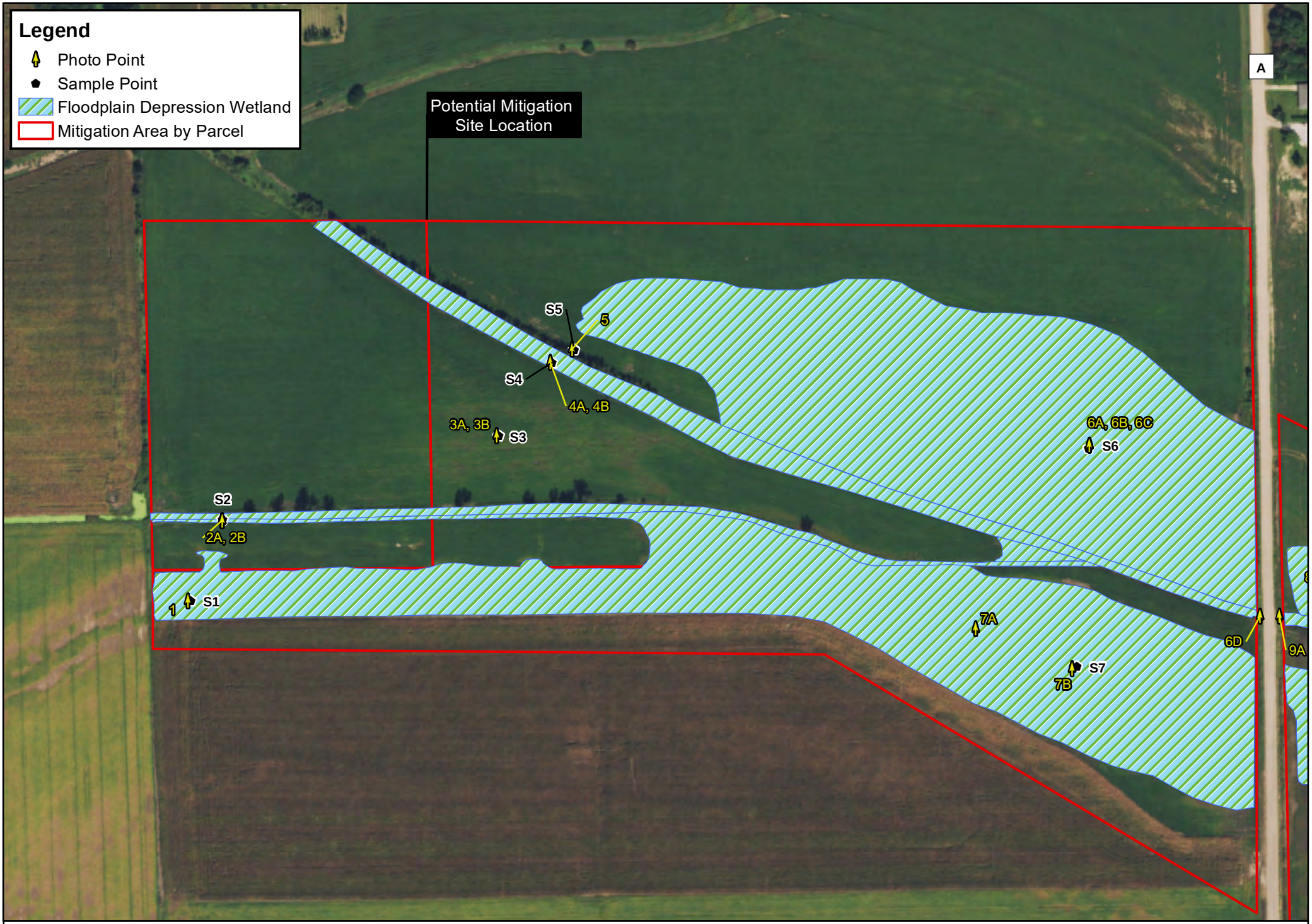


TranSystems
EXPERIENCE | Transportation

Ashland Mitigation Site

Miles
0 0.125 0.25 0.5

2014 NAIP Imagery
Saunders County
NWI Map



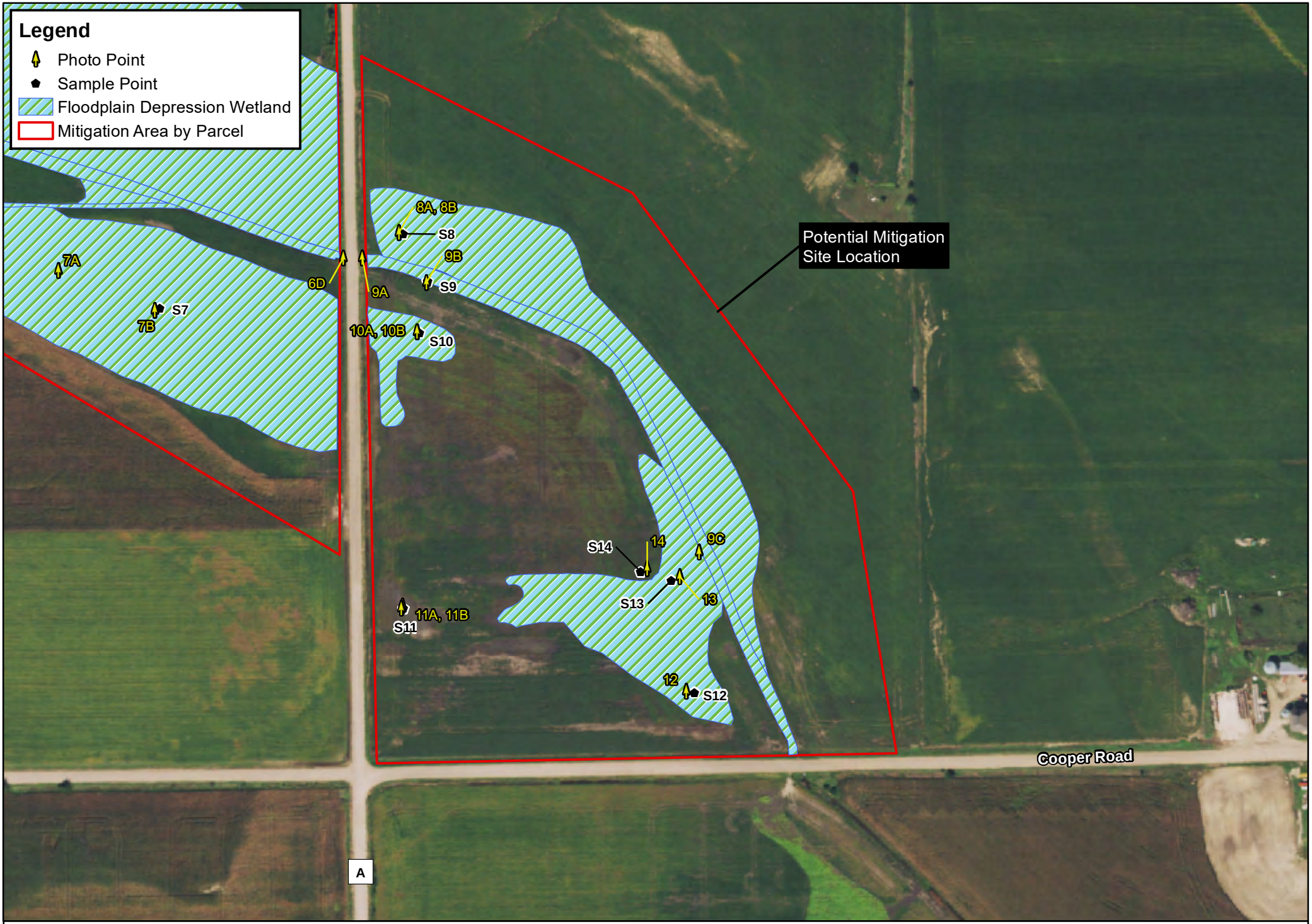
TranSystems
EXPERIENCE | Transportation

Ashland Mitigation Site

N

0 150 300 600 Feet

2014 NAIP Imagery
Saunders County
Farmed Wetland Delineation Map
West

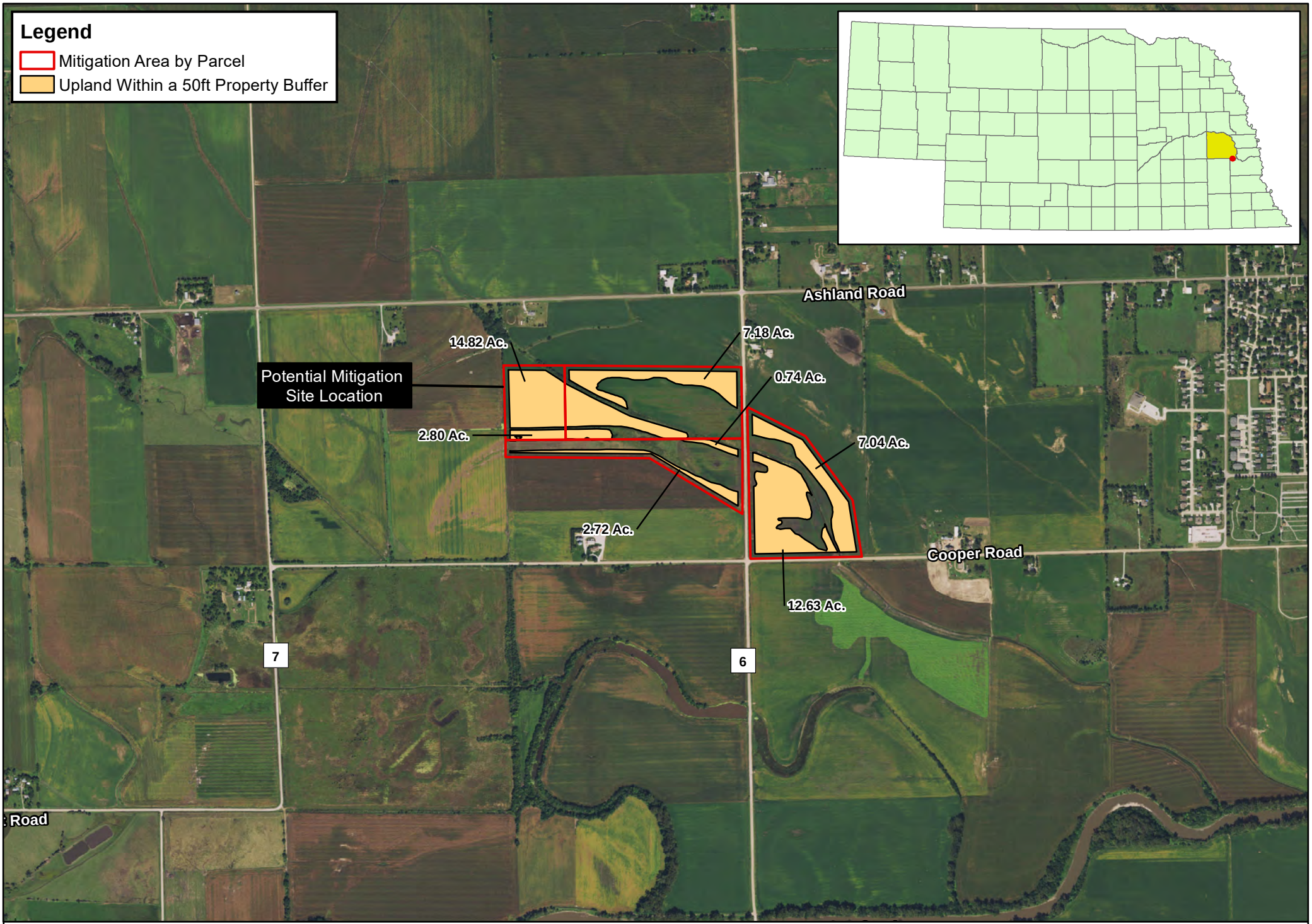


TranSystems
EXPERIENCE | Transportation

Ashland Mitigation Site

0 150 300 600 Feet

2014 NAIP Imagery
Saunders County
Farmed Wetland Delineation Map
East



TranSystems
EXPERIENCE | Transportation

Ashland Mitigation Site

N

0 0.125 0.25 0.5 Miles

2014 NAIP Imagery
Saunders County, NE
Upland Area Acreage Map

APPENDIX B

WETS Table

USDA Field Office Climate Data

WETS Station : ASHLAND 2, NE0375 Creation Date: 10/19/2015
Latitude: 4102 Longitude: 09623 Elevation: 01070
State FIPS/County(FIPS): 31155 County Name: Saunders
Start yr. - 1971 End yr. - 2000

	Temperature (Degrees F.)			Precipitation (Inches)				
					30% chance will have		avg # of days w/.1 or more	avg total snow fall
Month	avg daily max	avg daily min	avg	avg	less than	more than		
January	32.4	10.3	21.4	0.74	0.32	0.91	2	5.8
February	38.4	15.7	27.1	0.70	0.37	0.86	2	5.4
March	50.4	26.2	38.3	2.02	0.89	2.49	5	3.8
April	63.6	37.8	50.7	2.97	1.82	3.60	6	1.0
May	74.4	49.1	61.8	4.77	2.89	5.78	8	0.0
June	84.9	59.5	72.2	3.74	2.43	4.49	6	0.0
July	89.3	64.5	76.9	3.63	1.84	4.43	6	0.0
August	86.9	62.1	74.5	4.02	1.97	4.92	5	0.0
September	79.0	51.9	65.5	2.58	1.41	3.15	5	0.0
October	66.5	39.4	53.0	2.26	1.09	2.79	4	0.5
November	48.8	26.8	37.8	1.76	1.03	2.19	4	2.6
December	35.8	15.7	25.8	0.93	0.48	1.14	3	5.1
Annual	-----	-----	-----	------	25.99	33.41	--	----
Average	62.5	38.3	50.4	------	------	------	--	----
Average	-----	-----	-----	30.12	------	------	56	24.2

GROWING SEASON DATES

	Temperature		
Probability	24 F or higher	28 F or higher	32 F or higher
	Beginning and Ending Dates Growing Season Length		
50 percent *	4/ 1 to 10/30 211 days	4/12 to 10/19 190 days	4/25 to 10/ 6 164 days
70 percent *	3/27 to 11/ 4 221 days	4/ 8 to 10/23 198 days	4/21 to 10/10 172 days

---

* Percent chance of the growing season occurring between the Beginning and Ending dates.

total 1893-2015 prcp

Station : NE0375, ASHLAND 2
------- Unit = inches

yr	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	annl
93	0.05	M0.31	0.85	M0.95	4.71	7.27	3.92	6.43	2.35	0.05	M0.71	M0.65	28.25
94	0.26	0.72	0.62	2.01	0.92	5.03	M0.61	0.12	0.52	2.52	0.25	M0.72	14.30
95	M0.14	M0.38	0.48	2.31	2.62		2.00	6.36	0.97	0.00	0.82	0.26	16.34
96	M0.21	M0.30	M0.98	M2.97	10.57	1.80	5.56	2.85	5.45	3.28	1.88	0.35	36.20
97	0.32	0.43	1.23	7.29	2.12	2.31	1.66	1.44	M3.70	3.39	0.25	M1.13	25.27
98	0.31	M0.60	1.51	M2.26	M5.16	2.21	1.18	2.95	2.90	1.53	0.44	0.16	21.21
99	0.03	M9.28	0.45	M1.00	4.34	10.65	3.54	M2.94	0.58	2.47	0.96	1.74	37.98
0	0.10	0.62	0.44	M3.37	2.27	3.15	6.52	6.07	2.76	4.27	M0.00	0.68	30.25
1	0.13	0.42	M1.56	M1.62	M2.89	3.20	5.63	1.12	5.29	2.16	0.71	0.28	25.01
2	1.31	0.02	0.40	0.94	3.22	8.72	13.86	5.41	2.70	2.67	1.49	1.79	42.53
3	0.00	1.16	0.50	3.88	M10.57	2.30	5.92	5.77	2.84	M1.85	0.50	0.00	35.29
4	0.50	0.05	0.74	4.46	5.96	2.74	3.40	3.71	2.36	1.44	0.27	0.30	25.93
5	0.95	0.70	0.56	5.04	3.77	2.54	2.73	5.54	5.62	1.75	2.52	0.14	31.86
6	0.48	1.05	2.00	3.74	1.90	5.93	4.68	3.09	5.74	2.05	0.40	1.94	33.00
7	0.50	1.46	0.39	1.35	5.13	6.96	7.11	2.73	3.03	1.42	0.79	0.21	31.08
8	0.35	2.00	0.69	1.13	5.20	11.86	6.80	3.59	0.31	2.61	0.63	0.16	35.33
9	0.67	0.86	0.35	1.54	3.76	M4.99	3.33	0.96	5.09	0.98	7.66	2.53	32.72
10	0.87	0.23	0.09	0.11	2.74	1.42	0.67	5.55	2.69	0.88	0.02	0.39	15.66
11	0.21	2.30	0.44	2.04	4.68	0.54	1.90	1.76	1.84	0.93	0.16	2.18	18.98
12	0.17	1.14	2.07	1.46	0.40	3.65	2.00	3.43	5.31	3.04	0.68	0.09	23.44
13	0.72	0.96	1.93	2.62	8.06	2.31	3.45	0.25	3.67	0.71	1.65	3.06	29.39
14	0.30	0.54	2.21	2.64	4.35	7.72	2.02	1.00	3.72	2.58	0.05	0.88	28.01
15	1.72	2.45	1.68	1.15	5.08	4.30	7.41	4.01	3.11	1.06	1.49	0.68	34.14
16	1.26	0.40	0.64	1.13	3.25	3.15	1.66	4.45	0.76	0.98	0.86	0.37	18.91
17	0.59	0.04	1.42	4.31	3.81	7.53	0.71	3.26	0.92	0.41	0.13	0.76	23.89
18	0.62	0.86	0.23	0.66	3.39	1.94	3.83	1.06	1.09	4.49	2.61	0.77	21.55
19	0.11	1.90	1.05	2.24	2.00	6.49	1.47	3.15	5.40	1.78	2.94	0.72	29.25
20	0.24	0.71	0.59	3.00	3.11	3.21	3.64	2.74	0.78	3.56	1.43	1.00	24.01
21	0.33	0.42	0.64	2.09	4.40	3.43	3.43	2.88	4.21	1.04	0.14	0.06	23.07
22	0.80	0.32	1.38	1.81	2.25	2.44	4.48	1.73	1.95	1.23	2.81	0.08	21.28
23	0.56	0.02	1.22	2.83	3.96	5.04	2.93	4.07	4.67	0.53	0.01	0.50	26.34
24	0.38	0.96	1.20	0.33	1.84	5.48	5.78	1.17	2.18	0.79	0.31	1.36	21.78
25	0.67	0.83	0.57	1.73	1.15	4.61	1.85	5.69	2.62	1.71	0.04	0.78	22.25
26	0.82	0.60	0.85	0.46	2.31	2.74	M2.05	5.17	M8.34	1.20	2.11	1.09	27.74
27	0.10	1.05	1.18	5.15	1.41	2.05	2.50	2.63	4.06	0.52	0.00	0.43	21.08
28	0.05	0.81	0.48	1.25	2.09	5.46	4.51	4.76	M3.29	2.44	3.56	0.08	28.78
29	0.80	1.66	0.17	3.00	2.33	M2.84	3.87	1.70	1.80	4.01	1.44	0.12	23.74
30	M0.84	0.35	0.47	2.51	2.57	3.32	1.96	5.50	1.32	0.47	1.78	0.23	21.32
31	0.20	0.05	0.75	1.72	5.13	5.62	2.89	2.80	4.85	2.37	4.67	2.04	33.09
32	M2.93	0.64	0.59	1.11	3.06	6.26	1.67	7.29	2.14	1.61	0.05	0.52	27.87
33	0.10	0.19	1.52	1.28	1.26	1.32	4.12	2.05	6.63	0.14	0.88	1.50	20.99
34	0.98	0.43	M0.62	0.00	0.38	2.34	0.47	1.46	2.43	1.71	2.84	0.77	14.43
35	0.08			1.64	4.69	5.57	3.44	2.03	3.56	2.70	1.88	0.40	25.99
36	2.87	0.89	0.10	0.90	1.69	M1.11	0.05	1.74	5.48	0.23	0.15	0.73	15.94
37	M0.79	0.09	1.95	M1.84	3.93	3.51	4.46	4.73	1.17	2.21	0.35	0.09	25.12

38	M0.18	0.77	1.32	2.94	5.20	3.86	4.52	4.65	3.58	1.84	1.13	0.15	30.14
39	0.28	1.07	0.60	1.08	1.71	4.61	M4.95	2.08	0.61	2.61	0.00	2.12	21.72
40	0.94	1.12	1.16	1.95	0.78	5.43	0.93	5.21	1.27	1.99	1.67	M1.25	23.70
41	1.11	0.78	0.40	4.13	2.18	5.01	1.22	2.11		1.25	1.28	M2.49	21.96
42	0.27	M0.88	2.72	0.39	3.56	3.20	1.94	2.60	4.81	0.95	0.18	1.08	22.58
43	M0.02	0.63	M0.89	1.69	3.66	6.37	5.36	2.61	1.83	1.25	M0.55	0.00	24.86
44	0.75	M1.08	1.63	9.76	4.58	5.45		M6.73		1.39	1.97	M1.25	34.59
45	0.52	2.52	1.83	4.73	6.55	6.56	6.18	1.63					30.52
46	M0.16	0.03	2.77	0.78	4.97	9.76				3.81	2.13	0.06	24.47
47	M0.45	0.12	1.00	6.35	3.31	11.71	2.00	0.91	1.30	1.61	1.04	1.46	31.26
48	0.38	1.88	1.93	2.07	2.08	2.58	9.41	5.85	3.82	1.77	2.16	0.83	34.76
49	2.94	0.89	1.13	0.96	4.70	7.13	2.65	2.56	3.51	1.68	0.03	0.21	28.39
50	0.73	1.46	0.56	1.18	3.54	1.00	5.20	4.06	0.60	2.64	0.50	0.13	21.60
51	0.58	2.03	3.21	5.19	4.90	7.92	3.56	7.24	2.06	1.97	0.28	0.95	39.89
52	0.48	0.83	2.83	3.75	3.48	5.08	M1.65	6.48	0.81	0.00	3.95	1.16	30.50
53	0.63	1.08	2.14	3.63	M2.12	3.43	3.05	1.92	0.70	0.32	2.12	1.30	22.44
54	0.11	2.38	0.80	2.24	4.84		0.45	9.18	1.47	3.04	M0.00	M0.00	24.51
55	1.20	0.62	0.62	2.28	1.02	4.72	0.63	1.02	4.69	0.51	0.11	0.19	17.61
56			0.12	1.22	1.12	4.36	2.93	3.10	2.93	1.32	1.36	0.11	18.57
57	0.31	0.15	3.02	1.85	3.24	6.21	3.86	5.71	M1.26	3.56	2.27	0.52	31.96
58	0.96	1.51	1.05	2.96	1.60	0.99	11.20	5.29	6.06	0.10	0.83	0.00	32.55
59	0.45	0.58	3.79	2.68	M10.70	2.10	5.64	5.24	3.06	2.31	0.34	M0.60	37.49
60	M1.57	1.30	M0.85	M2.58	3.93	5.73	4.23	6.55	4.15	0.86	0.27	0.24	32.26
61	0.23	0.55	M2.89	2.00	3.11	1.57	2.88	4.41	5.04	2.50	1.71	0.71	27.60
62	0.38	1.51	0.97	0.85	4.72	3.18	7.60	3.93	2.95	2.53	0.74	0.53	29.89
63	0.65	0.28	2.20	1.71	2.71	M6.73	2.14	3.18	5.19	0.39	0.28	0.38	25.84
64	0.20	0.30	1.29	5.54	4.16	10.38	5.01	3.85	4.37	0.36	1.06	0.65	37.17
65	0.29	2.05	2.95	3.61	9.18	8.11	6.02	2.49	11.63	0.50	1.07	1.08	48.98
66	0.65	0.49	0.70	1.08	2.66		4.96	3.46	2.04	0.59	0.24	0.53	17.40
67	0.42	0.13	1.36	2.19	2.62	13.29	1.72	1.32	3.34	3.23		0.77	30.39
68			0.31	3.10	3.89	2.34	3.63	5.51	5.33	4.01	0.79	1.44	30.35
69	0.71	0.94	0.84	4.74	4.60	3.57	2.78	2.26	1.30	2.00	M0.22	1.46	25.42
70	0.13	0.10	0.68	2.39	2.39	2.66	2.56	2.85	5.59	3.42	1.14	0.17	24.08
71	0.64	2.57	0.46	0.46	9.79	2.56	1.22	2.75	0.75	4.61	2.91	0.96	29.68
72	0.03	0.23	0.91	5.45	7.68	2.01	2.25	3.51	2.70	3.41	3.59	1.40	33.17
73	1.86	0.65	5.66	2.74	5.76	1.68	5.24	0.28	7.78	3.62	2.10	1.75	39.12
74	0.55	0.28	0.80	2.52	3.83	1.34	0.27	5.42	0.75	2.24	1.25	0.54	19.79
75	1.18	1.01	1.62	2.60	2.68	4.34	1.05	5.36	1.53	0.08	3.40	0.52	25.37
76	0.40	1.36	2.46	4.08	3.71	1.02	2.32	0.96	3.09	0.71	0.00	0.07	20.18
77	0.51	0.22	2.18	2.34	5.77	2.13	1.84	10.41	1.80	3.16	1.72	0.24	32.32
78	0.29	0.94	1.15	7.25	4.43	2.18	6.62	2.10	4.17	1.18	1.41	0.30	32.02
79	1.31	0.37	3.53	2.68	1.93	3.54	3.14	2.33	1.01	4.63	1.27	0.37	26.11
80		0.42	1.46	1.78	0.97	5.70	2.07	8.13	0.39	2.11	0.07	0.81	23.91
81	0.00	0.45	0.96	1.99	3.56	2.13	2.63	8.59	1.35	2.38	2.77	1.39	28.20
82	0.79	0.23	2.34	1.83	9.68	3.11	3.30	7.60	3.61	3.64	1.96	1.90	39.99
83	0.94	0.69	3.96	1.42	3.73	8.22	0.28	2.89	2.79	1.78	2.56	0.93	30.19
84	0.47	0.78	2.74	5.43	4.87	M6.62	1.69	1.01	1.22	4.34	1.12	4.03	34.32
85	0.29	0.68	1.60	2.63	6.08	1.89	4.37	3.28	3.98	1.91	0.57	0.36	27.64
86	0.00	0.76	2.75	6.17	3.11	3.54	4.95	6.96	7.13	5.64	0.83	1.09	42.93
87	M0.03	0.19	5.05	1.86	7.96	3.15	2.08	11.86	1.45	0.75	1.88	0.72	36.98
88	0.49	0.19	0.02	2.08	3.43	2.06	3.04	1.60	4.03	0.00	1.82	M0.73	19.49
89	0.98	0.85	0.16	1.07	0.56	5.08	2.78	2.47	5.11	M1.47	0.00	0.41	20.94
90	0.58	0.24	M2.54	0.52	4.79	3.41	7.10	1.98	0.61	1.65	1.28	1.17	25.87
91	1.35	0.25	2.65	3.98	3.78	4.84	3.20	2.61	1.13	1.61	3.01	1.70	30.11
92	1.52	0.81	2.68	2.98	1.81	1.62	7.66	2.58	2.93	2.39	2.17	1.20	30.35
93	1.66	0.94	2.36	2.93	12.42	6.54	M15.81	8.81	3.21	1.82	1.01	0.50	58.01
94	0.58	0.79	0.00	1.23	2.10	8.66	4.68	1.07	2.90	1.63	1.90	1.41	26.95

95	1.16	0.52	2.90	4.27	7.70	1.73	1.16	1.08	2.80	1.13	1.00	0.35	25.80
96	1.21	0.05	0.99	3.65	7.85	3.56	2.97	3.08	2.70	1.04	2.48	0.53	30.11
97	0.48	0.85	0.55	2.91	1.67	3.84	3.82	1.90	2.43	5.32	2.54	0.55	26.86
98	0.89	1.09	3.40	2.83	7.91	6.76	2.78	4.83	0.75	2.71	2.38	0.30	36.63
99	0.55	1.25	1.40	6.08	7.40	3.72	4.91	4.16	2.45	0.00	0.90	0.70	33.52
0	0.10	1.39	1.33	1.36	2.24	5.09	3.61	1.12	0.88	2.53	2.83	1.25	23.73
1	1.32	2.58	0.88	1.72	10.07	1.25	0.60	1.62	2.88	2.85	1.86	0.50	28.13
2	0.61	0.68	1.20	2.44	4.60	1.43	0.78	M9.06	1.14	3.66	0.33	0.00	25.93
3	0.51	1.45	0.83	2.59	3.56	3.42	0.98	1.46	2.57	1.47	2.68	1.09	22.61
4	1.70	0.94	3.74	1.20	3.45	3.35	3.72	1.55	4.30	0.43	M2.71	0.28	27.37
5	1.28	2.65	0.65	4.46	2.21	3.51	6.15	0.55	0.35	1.79	1.14	0.86	25.60
6	1.05	0.17	1.92	3.93	1.26	0.88	1.77	8.41	4.14	0.68	0.02	2.25	26.48
7	1.08	1.73	3.27	5.06	5.24	2.23	1.51	8.37	2.66	4.96	0.08	2.05	38.24
8	M0.35	0.69	1.05	M3.18	6.30	8.62	4.36	0.68	3.92	4.97	1.08	0.80	36.00
9	0.35	0.68	0.53	1.98	1.95	8.78	2.46	5.56	1.60	3.83	0.04	2.36	30.12
10	0.94	0.76	1.65		3.21	8.94	6.83	2.45	6.00		2.09	0.32	33.19
11	1.08	0.35	0.60	4.10	4.02	4.69	4.33	6.23	0.83	0.84	1.33	M1.22	29.62
12	0.12	2.19	1.04	4.07	4.15	4.17	0.24	0.50	1.65	M1.84	0.26	1.57	21.80
13	0.36	0.64	1.87	M0.02			M1.25	1.15	5.66	3.40	1.44	0.18	15.97
14	0.16	0.71	0.13	3.46	6.46	9.07	0.97	9.34	M3.22	5.69	0.43	1.24	40.88
15	0.14	1.45	0.83	3.30	9.94	4.82	6.44	7.36	7.41	M0.00			41.69

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APPENDIX C

NDOR Water Conveyance Structure Log

NDOR WCS/Resource Log

Project: Ashland Mitigation Site

CN# PN#

County: Saunders Counties

Structure Types CV=Culvert, BR=Bridge, FL=Flume, OTH=Other,N=None

E=Ephemeral, I=Intermittent, P=Perennial, N=None

Sample ID	Out Point	Lt/Rt/Both	Structure Type	Upland	Channel	Wetland	Photo#	Figure#	Flow Regime	Bed and Bank	OHWM	Channel Width	Comments-
S1		N/A	N			X	1	8-1					Farmed wetland area.
S2		N/A	N			X	2A,2B	8-1					Farmed wetland area abutting an vegetated irrigation swale.
S3		N/A	N	X			3A,3B	8-1					Potential farmed wetland area ruled as upland.
S4		N/A	N			X	4A,4B	8-1					Farmed wetland area abutting a vegated channel.
S5	X	N/A	N	X			5	8-1					Upland area between wetlands at S4 and S6.
S6		N/A	N			X	6A,6B,6C,6D	8-1					Farmed wetland area.
S7		N/A	N			X	7A,7B	8-1					Farmed wetland area.
S8		N/A	N			X	8A,8B	8-2					Farmed wetland area.
S9		N/A	N			X	9A,9B,9C	8-2					Farmed wetland area abutting a vegated channel.
S10		N/A	N			X	10A,10B	8-2					Farmed wetland area.
S11		N/A	N	X			11A,11B	8-2					Potential farmed wetland area ruled as upland.
S12		N/A	N			X	12	8-2					Farmed wetland area.
S13		N/A	N			X	13	8-2					Farmed wetland area.
S14	X	N/A	N	X			14	8-2					Upland area between wetlands at S9, S10, S12, and S13.

APPENDIX D

Wetland Data Sheets

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S1

Investigator(s): KR Kropp Section, Township, Range: Section 4, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.040722 Long: -96.415560 Datum: UTM 14 Nad 83

Soil Map Unit Name: Yutan silty clay loam, terrace, 2 to 6 percent slopes, eroded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland areas that have been converted for row crop agriculture were evaluated using aerial imagery. This area was identified using NRCS protocols. The presence of hydric soils indicates that given time and cessation of disturbance activities, the area could return to a functioning wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. *Elymus trachycaulus*	95	Y	FACU
2. *Helianthus annuus*	1	N	FACU
3.			
4.			
5.			
	96 = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 0.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	0
FACW species _____	x 2 =	0
FAC species _____	x 3 =	0
FACU species 96	x 4 =	384
UPL species _____	x 5 =	0
Column Totals: 96 (A)		384 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes _____ No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. As this is the case, the FACU vegetation at this location has not been considered indicative of non-wetland conditions. Photo 1.

SOIL

Sampling Point: S1

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	90					Clay loam	
	10YR 4/2	10					Clay loam	
8-16	10YR 3/2	95	7.5YR 4/6	5	C	M	Loamy clay	
16-30	10YR 5/4	100					Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

Hydric soil indicators are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology has been established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S2

Investigator(s): KR Kropp Section, Township, Range: Section 4, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.041236 Long: -96.415271 Datum: UTM 14 Nad 83

Soil Map Unit Name: Muscotah silty clay loam, occaisionally flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

This point represents a PEMA/C wetland located in an irrigation ditch/swale and surrounded by agricultural fields. Standing water and hydrophytic vegetation were present. No OHWM was apparent.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Typha latifolia*	20	Y	OBL
2. *Persicaria pensylvanica*	10	Y	FACW
3. *Erigeron canadensis*	2	N	FACU
4. *Elymus virginicus*	10	Y	FACW
5. *Morus rubra*	1	N	FACU
6. *Helianthus annuus*	5	N	FACU
7. *Ambrosia trifida*	5	N	FAC
8.			
9.			
10.			
	53 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	20	x 2 =	40
FAC species	5	x 3 =	15
FACU species	8	x 4 =	32
UPL species		x 5 =	0
Column Totals:	53 (A)		107 (B)

Prevalence Index = B/A = 2.02

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

The vicinity has been disturbed by row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Photo 2A, 2B.

SOIL

Sampling Point: S2

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 2/1	100					Loam	
6-16	10YR 2/1	90	5YR 4/6	10	C	M	Loam	
16-20	10YR 2/1	100					Loam	
20-25	10YR 2/1	100					Loamy Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

Hydric soil indicators are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Point taken adjacent a ditch containing surface water. Hydrology has additionally been established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S3

Investigator(s): KR Kropp Section, Township, Range: Section 4, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.041722 Long: -96.412909 Datum: UTM 14 Nad 83

Soil Map Unit Name: Obert silty clay loam, frequently flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland areas that have been converted for row crop agriculture were evaluated using aerial imagery. This area was identified using NRCS protocols. Soil criteria was found to be lacking for this location, and the area was subsequently ruled out of consideration as a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Panicum dichotomiflorum*	95	Y	FACW
2. *Persicaria maculosa*	2	N	FACW
3. *Helianthus annuus*	1	N	FACU
4. *Schoenoplectus tabernaemontani*	1	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	99 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	97	x 2 =	194
FAC species		x 3 =	0
FACU species	1	x 4 =	4
UPL species		x 5 =	0
Column Totals:	99 (A)		199 (B)

Prevalence Index = B/A = 2.01

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Photo 3A, 3B.

SOIL

Sampling Point: S3

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					Clay loam	
8-40	10YR 2/1	100					Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X

Remarks:

No hydric soil indicators found.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 15

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology indicators present. Hydrology has been additionally established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S4

Investigator(s): KR Kropp Section, Township, Range: Section 4, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.042182 Long: -96.412438 Datum: UTM 14 Nad 83

Soil Map Unit Name: Nodaway silt loam, occasionally flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

This point represents a PEMA/C wetland located on an unnamed tributary to Salt Creek. The area is vegetated with some standing water. No OHWM was apparent.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	15	Y	OBL
2.			
3.			
4.			
5.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. *Salix nigra*	10	Y	OBL
2. *Morus rubra*	3	N	FACU
3. *Prunus americana*	1	N	UPL
4.			
5.			
	14	= Total Cover	
Herb Stratum (Plot size: _____)			
1. *Typha latifolia*	5	N	OBL
2. *Phalaris arundinacea*	40	Y	FACW
3. *Solidago missouriensis**	10	N	NI
4. *Persicaria pensylvanica*	5	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	60	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	45	x 2 =	90
FAC species		x 3 =	0
FACU species	13	x 4 =	52
UPL species	1	x 5 =	5
Column Totals:	89 (A)		177 (B)

Prevalence Index = B/A = 1.99

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

*Vegetation lacking an indicator has been conservatively estimated to be FACU.

The vicinity has been disturbed by row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Photo 4A, 4B.

SOIL

Sampling Point: S4

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	90	7.5YR 4/6	10	C	M	Loam	
8-20	10YR 3/1	100					Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 8

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology indicators present. Hydrology has been additionally established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S5

Investigator(s): KR Kropp Section, Township, Range: Section 4, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.042260 Long: -96.412246 Datum: UTM 14 Nad 83

Soil Map Unit Name: Nodaway silt loam, occaisionally flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

This point represents a general outpoint for the farmed wetlands in the vicinity.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Setaria pumila*	20	Y	FAC
2. *Salix nigra*	10	N	OBL
3. *Panicum dichotomiflorum*	20	Y	FACW
4. *Erigeron canadensis*	5	N	FACU
5. *Amaranthus tuberculatus*	10	N	OBL
6. *Glycyrrhiza lepidota*	5	N	FACU
7. *Taraxacum officinale*	2	N	FACU
8.			
9.			
10.			
	72 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	20	x 2 =	40
FAC species	20	x 3 =	60
FACU species	12	x 4 =	48
UPL species		x 5 =	0
Column Totals:	72 (A)		168 (B)

Prevalence Index = B/A = 2.33

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Photo 5.

SOIL

Sampling Point: S5

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 3/2	100					Silt loam	
10-20	10YR 3/1	90	7.5YR 4/6	10	C	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

The technical definition for hydric soil indicators was not met due to depth requirements. However, the soil was considered to be a hydric problematic soil due to the highly disturbed nature of agricultural soils combined with the presence of of redoximorphic features

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

One secondary and no primary hydrology indicators were present.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S6

Investigator(s): KR Kropp Section, Township, Range: Section 4, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.041529 Long: -96.407907 Datum: UTM 14 Nad 83

Soil Map Unit Name: Obert silty clay loam, frequently flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland areas that have been converted for row crop agriculture were evaluated using aerial imagery. This area was identified using NRCS protocols. The presence of hydric soils indicates that given time and cessation of disturbance activities, the area could return to a functioning wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Typha latifolia*	10	N	OBL
2. *Echinochloa muricata*	50	Y	OBL
3. *Panicum dichotomiflorum*	10	N	FAC
4. *Schoenoplectus tabernaemontani*	5	N	OBL
5. *Cyperus esculentus*	5	N	FACW
6.			
7.			
8.			
9.			
10.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65	x 1 =	65
FACW species	5	x 2 =	10
FAC species	10	x 3 =	30
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	80 (A)		105 (B)

Prevalence Index = B/A = 1.31

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Pthoto 6A, 6B, 6C, 6D.

SOIL

Sampling Point: S6

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					Clay loam	
4-8	10YR 3/1	95	7.5YR 4/6	5	M	C	Loamy clay	
8-16	10YR 3/1	90	5YR 4/6	10	M	C	Loamy clay	
16-30	10YR 3/1	90	10YR 4/1	10	M	D	Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

Hydric soil indicators are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology indicators present. Hydrology has been additionally established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S7

Investigator(s): KR Kropp Section, Township, Range: Section 4, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.040131 Long: -96.408061 Datum: UTM 14 Nad 83

Soil Map Unit Name: Fluvaquents, silty, frequently flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland areas that have been converted for row crop agriculture were evaluated using aerial imagery. This area was identified using NRCS protocols. The presence of hydric soils indicates that given time and cessation of disturbance activities, the area could return to a functioning wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	0
FACW species _____	x 2 =	0
FAC species _____	x 3 =	0
FACU species _____	x 4 =	0
UPL species _____	x 5 =	0
Column Totals: 0 (A)		0 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes _____ No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. The earth was bare at this location, and appeared to have been cleared recently. Photo 7A, 7B.

SOIL

Sampling Point: S7

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 3/1	100					Clay loam	
4-10	10YR 3/1	95	5YR 4/6	5	C	M	Loamy clay	
10-40	10YR 3/1	100					Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

Hydric soil indicators are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 30

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology has been established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S8

Investigator(s): KR Kropp Section, Township, Range: Section 3, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.040560 Long: -96.405979 Datum: UTM 14 Nad 83

Soil Map Unit Name: Obert sitly clay loam, frequently flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland areas that have been converted for row crop agriculture were evaluated using aerial imagery. This area was identified using NRCS protocols. The presence of hydric soils indicates that given time and cessation of disturbance activities, the area could return to a functioning wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Amaranthus tuberculatus*	5	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	5 (A)		5 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Photo 8A, 8B.

SOIL

Sampling Point: S8

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 3/1	100					Clay loam	
4-20	10YR 3/1	95	7.5YR 4/6	5	C	M	loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

Hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☑ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology has been established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S9

Investigator(s): KR Kropp Section, Township, Range: Section 3, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): Concave

Slope (%): _____ Lat: 41.040251 Long: -96.405782 Datum: UTM 14 Nad 83

Soil Map Unit Name: Obert sitly clay loam, frequently flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

This point represents a creek channel with standing water and hydrophytic vegetation present. The are was considered to be a PEMA/C wetland area in a farmed wetland setting.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Typha latifolia*	40	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	40 (A)		40 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

The vicinity has been disturbed by row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Photo 9A, 9B, 9C.

SOIL

Sampling Point: S9

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

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

Soils were not sampled at this location due to the presence of obligate vegetation and inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☑ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 6

Water Table Present? Yes X No _____ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): Surface

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology indicators present inside a vegetated stream channel. Hydrology has been additionally established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S10

Investigator(s): KR Kropp Section, Township, Range: Section 3, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.039924 Long: -96.405865 Datum: UTM 14 Nad 83

Soil Map Unit Name: Obert sitly clay loam, frequently flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland areas that have been converted for row crop agriculture were evaluated using aerial imagery. This area was identified using NRCS protocols. The presence of hydric soils indicates that given time and cessation of disturbance activities, the area could return to a functioning wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	0
FACW species _____	x 2 =	0
FAC species _____	x 3 =	0
FACU species _____	x 4 =	0
UPL species _____	x 5 =	0
Column Totals: 0 (A)		0 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes _____ No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Bare earth was present in the sample location, with Amaranthus surrounding the area. Photo 10A, 10B.

SOIL

Sampling Point: S10

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 3/1	100					Clay loam	
5-15	10YR 3/1	95	5YR 6/4	5	C	M	Loamy clay	
15-25	10YR 3/1	100					Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

Hydric soil indicators are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☑ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology has been established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S11

Investigator(s): KR Kropp Section, Township, Range: Section 3, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.038155 Long: -96.406072 Datum: UTM 14 Nad 83

Soil Map Unit Name: Obert sitly clay loam, frequently flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland areas that have been converted for row crop agriculture were evaluated using aerial imagery. This area was identified using NRCS protocols. Soil criteria was found to be lacking for this location, and the area was subsequently ruled out of consideration as a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Amaranthus tuberculatus*	10	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	10 (A)		10 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Photo 11A

SOIL

Sampling Point: S11

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
0-35	10YR 3/1	100					Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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: Hard packed earth

Depth (inches): 35

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators found. A restrictive soil layer was encountered at 35 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology has been established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S12

Investigator(s): KR Kropp Section, Township, Range: Section 3, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.037559 Long: -96.403625 Datum: UTM 14 Nad 83

Soil Map Unit Name: Obert sitly clay loam, frequently flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland areas that have been converted for row crop agriculture were evaluated using aerial imagery. This area was identified using NRCS protocols. The presence of hydric soils indicates that given time and cessation of disturbance activities, the area could return to a functioning wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Amaranthus tuberculatus*	5	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	5 (A)		5 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. The area was mostly bare earth at this location. Photo 12.

SOIL

Sampling Point: S12

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 3/1	100					Clay loam	
2-10	10YR 3/1	95	5YR 4/6	5	C	M	Loamy clay	
10-25	10YR 3/1	100					Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

Hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☑ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology has been established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S13

Investigator(s): KR Kropp Section, Township, Range: Section 3, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.038284 Long: -96.403791 Datum: UTM 14 Nad 83

Soil Map Unit Name: Obert sitly clay loam, frequently flooded NWI classification: PEMA

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetland areas that have been converted for row crop agriculture were evaluated using aerial imagery. This area was identified using NRCS protocols. The presence of hydric soils indicates that given time and cessation of disturbance activities, the area could return to a functioning wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Amaranthus tuberculatus*	20	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

Field has been converted to row crop agriculture, and so the vegetation present may not be representative of normal circumstances. Photo 13.

SOIL

Sampling Point: S13

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 3/1	90	5YR 5/6	10	C	M	Clay loam	
10-20	10YR 3/1	100					Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X No _____

Remarks:

Hydric soil indicators are present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☑ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:

Hydrology has been established based on NRCS protocols for evaluating wetlands within agricultural fields.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Ashland Mitigation Site City/County: Saunders Sampling Date: 10/22/2015

Applicant/Owner: Nebraska Department of Roads State: NE Sampling Point: S14

Investigator(s): KR Kropp Section, Township, Range: Section 3, Township 12 North, Range 9 East

Landform (hillslope, terrace, etc.): Agricultural Field Local relief (concave, convex, none): None

Slope (%): _____ Lat: 41.038344 Long: -96.404050 Datum: UTM 14 Nad 83

Soil Map Unit Name: Obert sitly clay loam, frequently flooded NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

This point represents a general outpoint for farmed wetland areas in the vicinity.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Amaranthus tuberculatus*	30	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	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: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	30 (A)		30 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - 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.

Hydrophytic Vegetation Present? Yes X No _____

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

Photo 14.

SOIL

Sampling Point: S14

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 3/1	100					Clay loam	
12-40	10YR 3/1	100					Loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ 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 X

Remarks:

No soil hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

No hydrology indicators present.

APPENDIX E

Photolog

Photo 1: View of the farmed wetland area associated with S1 and S7, at the west side of the project area. Facing east.

Photo 2A: View of the wetland ditch/swale area associated with S2. Facing northwest.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 2B: View of the wetland ditch/swale area associated with S2. Facing northeast.

Photo 3A: View of the area associated S3 removed from consideration as a wetland based on a lack of hydric soil criteria. Facing east.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 3B: View of the area associated S3 removed from consideration as a wetland based on a lack of hydric soil criteria. Facing west.

Photo 4A: View of the wetland area associated with S4, along the swale corresponding to the unnamed tributary to Salt Creek. Facing east.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 4B: View of the wetland area associated with S4, along the swale corresponding to the unnamed tributary to Salt Creek. Facing north.

Photo 5: View of the upland area associated with S5. Facing southeast.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 6A: View of the farmed wetland area associated with S6. Facing east.

Photo 6B: View of the farmed wetland area associated with S6. Facing norht.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 6C: View of the farmed wetland area associated with S6. Facing south.

Photo 6D: View of the farmed wetland area associated with S6. Some standing water is visible next to a culvert in this area. Facing northwest.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 7A: View of the farmed wetland area associated with S1 and S7, from the eastern side of the wetland. Facing northeast.

Photo 7B: View of the farmed wetland area associated with S1 and S7, from the eastern side of the wetland. Facing east.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 8A: View of the farmed wetland associated with S8. Facing southeast.

Photo 8B: View of the farmed wetland associated with S8. Facing south.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 9A: View of the wetland area associated with S9, along the swale corresponding to the unnamed tributary to Salt Creek. Facing east.

Photo 9B: View of the wetland area associated with S9, along the swale corresponding to the unnamed tributary to Salt Creek. Facing northeast.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 9C: View of the wetland area associated with S9, along the swale corresponding to the unnamed tributary to Salt Creek. Facing north.

Photo 10A: View of the farmed wetland area associated with S10. Facing east.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 10B: View of the farmed wetland area associated with S10. Facing north.

Photo 11A: View of the area associated S11 removed from consideration as a wetland based on a lack of hydric soil criteria. Facing south.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 11B: View of the area associated S11 removed from consideration as a wetland based on a lack of hydric soil criteria. Facing east.

Photo 12: View of the farmed wetland area associated with S12 and S13, in the vicinity of S12. Facing southeast.

Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

Photo 13: View of the farmed wetland area associated with S12 and S13, in the vicinity of S13. Facing southwest.

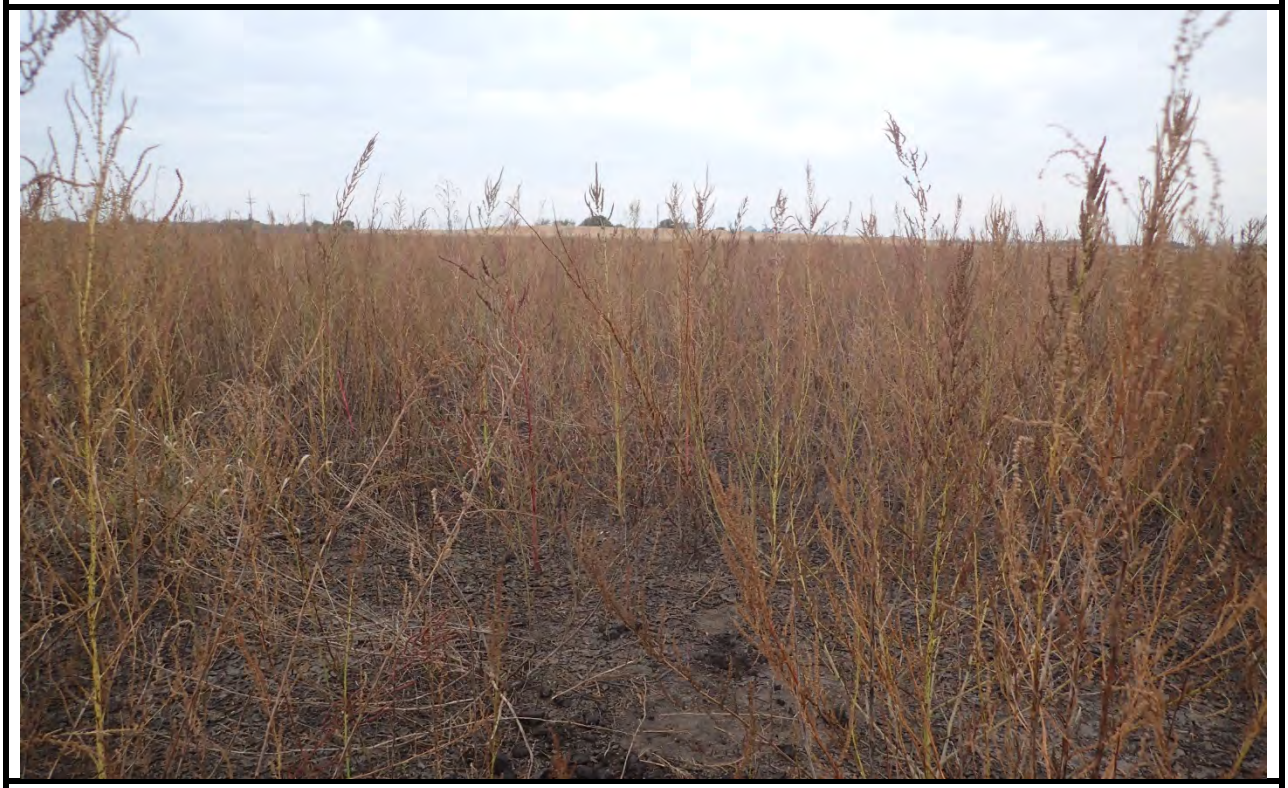


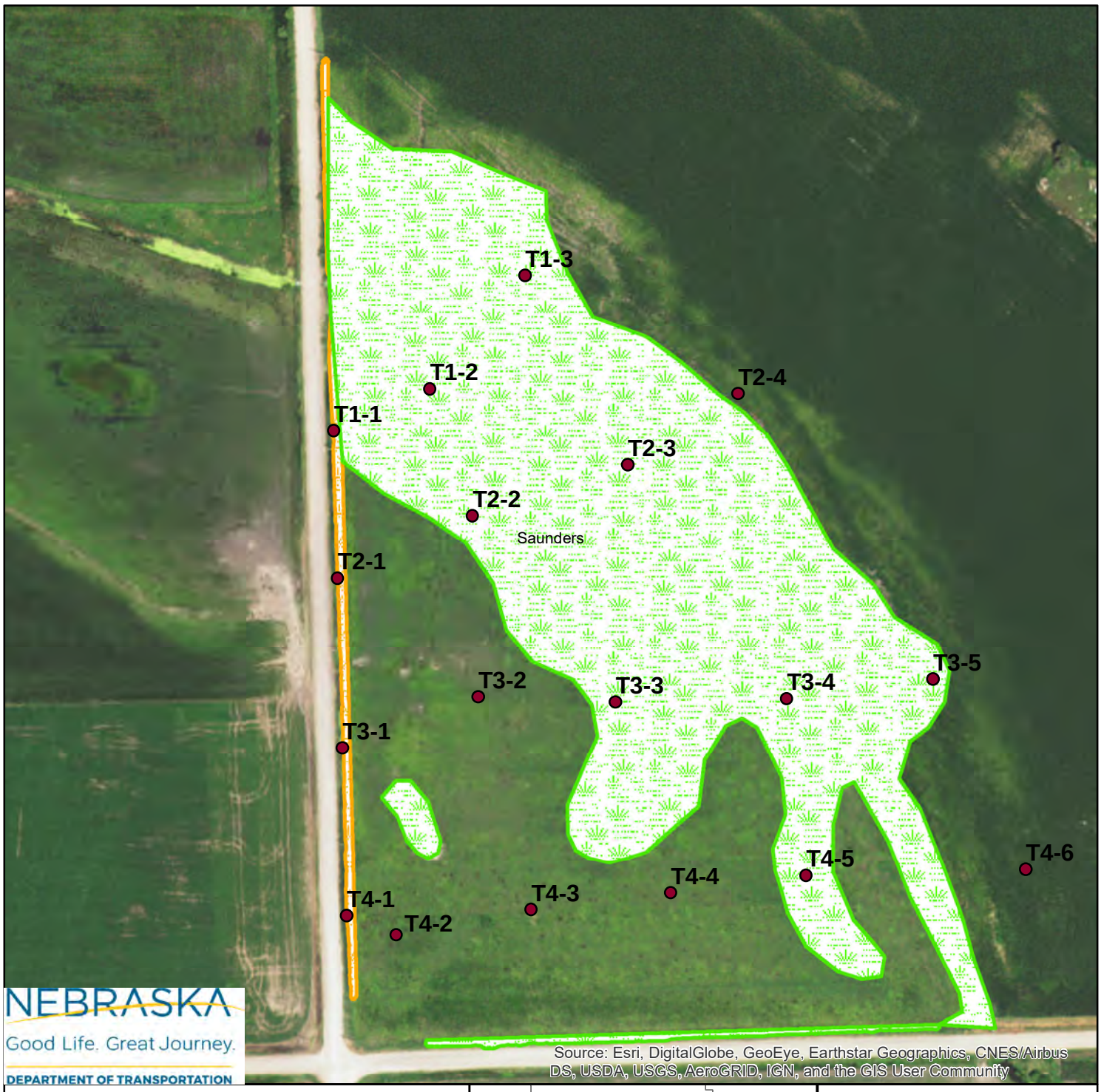
Photo 14: View of the upland area associated with S14. Facing west.

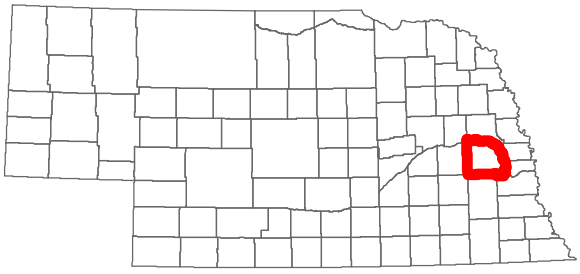
Ashland Mitigation Site Saunders County, Nebraska		Photo Documentation	
TranSystems	Photographer: KR Kropp	Date of Photograph: 22 October, 2015	Date: 1 December, 2015

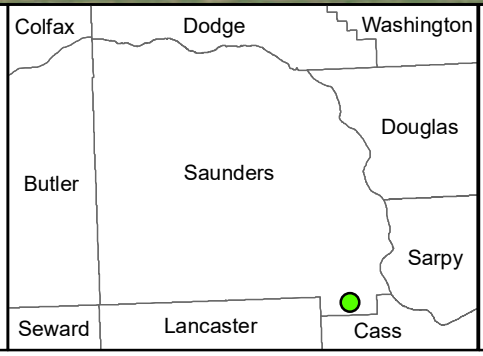
NDOT Revision to Delineation 2017

Ashland Mitigation Site

Control No. 10584b







Transect Points

Wetland

PEMA/PEMC

PEMF

0 0.0275 0.055 Miles

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T1-1**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Ditch** Local Relief *(concave, convex, none)*: **Concave**

Slope (%): **0-2%** Lat: **41.039804** Long: **-96.406347** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, frequently flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes X No ____ Is the Sampled Area within a Wetland? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Remarks: Wetland data point taken within a roadside ditch.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Typha angustifolia*	100	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

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

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Cat-tails dominate the roadside ditch.

SOIL

Sampling Point: T1-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- X 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** X **No** ___

Remarks: No soil pit was taken due to OBL dominant vegetation and 6" standing water.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth *(inches)*	6"
Water Table Present?	Yes	___	No	___	Depth *(inches)*	___
Saturation Present? *(includes capillary fringe)*	Yes	___	No	___	Depth *(inches)*	___

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Surface water was present throughout the roadside ditch.

PHOTO	Sampling Point	T1-1

Description: Wetland roadside ditch dominated by cattails	Direction: Northeast

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T1-2**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.039962** Long: **-96.4058** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes X No ____ Is the Sampled Area within a Wetland? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Remarks: Data point along transect 1 which displayed wetland conditions.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Echinochloa crus-galli*	40	Y	FACW
2. *Phalaris arundinacea*	30	Y	FACW
3. *Persicaria pensylvanica*	20	Y	FACW
4. *Typha angustifolia*	10	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		190 (B)

Prevalence Index = B/A = 1.90

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was present.

SOIL

Sampling Point: T1-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-10	2.5Y 2.5/1	95	10YR 4/6	5	C	M	Clay 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X **No** ___

Remarks: Hydric soil was present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth *(inches)*	
Water Table Present?	Yes	X	No	___	Depth *(inches)*	2
Saturation Present? *(includes capillary fringe)*	Yes	X	No	___	Depth *(inches)*	0

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Wetland hydroloy indicators were present.

PHOTO	Sampling Point	T1-2

Description:Transect 1 plot 2	Direction: Northwest

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T1-3**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.040435** Long: **-96.40524** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes X No ____ Is the Sampled Area within a Wetland? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Remarks: Data point taken along transect 1 displaying wetland conditions.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Amaranthus tuberculatus*	20	Y	OBL
2. *Setaria pumila*	5	N	FAC
3. *Rumex altissimus*	2	N	FACW
4. *Glycine max*	2	N	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	29 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	2	x 2 =	4
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	2	x 5 =	10
Column Totals:	29	(A)	49 (B)

Prevalence Index = B/A = 1.69

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* 71% was bare ground, field had been attempted to be planted with soy beans at this data point location.

SOIL

Sampling Point: T1-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-12	2.5Y 3/1	95	10YR 4/6	5	C	M	Clay 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X **No** ___

Remarks: Hydric soils were present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth *(inches)*	___
Water Table Present?	Yes	X	No	___	Depth *(inches)*	6
Saturation Present? *(includes capillary fringe)*	Yes	X	No	___	Depth *(inches)*	0

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Wetland Hydrology indicators were present.

PHOTO	Sampling Point	T1-3

Description: Transect 1 plot 3	Direction: East

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T2-1**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Ditch** Local Relief *(concave, convex, none)*: **Concave**

Slope (%): **0-2%** Lat: **41.039171** Long: **-96.406358** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, frequently flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes X No ____ Is the Sampled Area within a Wetland? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Remarks: Wetland data point taken in roadside ditch.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Typha angustifolia*	95	Y	OBL
2. *Phalaris arundinacea*	5	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	95	x 1 =	95
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		105 (B)

Prevalence Index = B/A = 1.05

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland dtich was dominanted by cat-tails.

SOIL

Sampling Point: T2-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- X 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** X **No** ___

Remarks: Soil pit was not taken due to OBL dominant vegetation and 6" of standing water present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth *(inches)*	6"
Water Table Present?	Yes	___	No	___	Depth *(inches)*	___
Saturation Present? *(includes capillary fringe)*	Yes	___	No	___	Depth *(inches)*	___

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Surface water present throughout the ditch.

PHOTO	Sampling Point	T2-1

Description: Wetland roadside dtich.	Direction: East

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T2-2**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.039412** Long: **-96.405594** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes X No ____ Is the Sampled Area within a Wetland? Yes X No ____

Wetland Hydrology Present? Yes ____ No X

Remarks: Data point taken along transect 3, two of three wetland indicators were present, with one secondary hydrology indicator present. Point considered wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Echinochloa crus-galli*	30	Y	FACW
2. *Hordeum jubatum*	30	Y	FAC
3. *Persicaria pensylvanica*	30	Y	FACW
4. *Rumex altissimus*	10	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100	(A)	230 (B)

Prevalence Index = B/A = 2.30

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was present.

SOIL

Sampling Point: T2-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-6	2.5Y 2.5/1	98	10YR 4/6	2	C	M	Silty Clay Loam	
6-24	2.5Y 2.5/1	100					Clay loam	
24-40	2.5Y 2.5/1	70					Clay	
	10YR 3/1	30						

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X **No** ___

Remarks: Hydric soil was present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators *(minimum of one is 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth *(inches)*	___
Water Table Present?	Yes	X	No	___	Depth *(inches)*	34
Saturation Present? *(includes capillary fringe)*	Yes	X	No	___	Depth *(inches)*	32

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks: The top 4-6 inches of the soils profile was very saturated, the remaining soil to 32 inches was not saturated. This saturation may have been from recent rains, or a slightly restrictive layer of soil. It was not marked as a hydrology indicator.

PHOTO	Sampling Point	T2-2

Description:Transect 2 plot 2	Direction:North

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T2-3**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.039602** Long: **-96.404695** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes X No ____ Is the Sampled Area within a Wetland? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Remarks: Datapoint taken along transect 2 showing wetland conditions.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Eleocharis palustris*	50	Y	OBL
2. *Typha angustifolia*	30	Y	OBL
3. *Persicaria pensylvanica*	30	Y	FACW
4. *Echinochloa crus-galli*	20	N	FACW
5. *Panicum virgatum*	10	N	FAC
6. *Cyperus esculentus*	1	N	FACW
7.			
8.			
9.			
10.			
	141	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	51	x 2 =	102
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	141	(A)	212 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is $\leq$3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was present.

SOIL

Sampling Point: T2-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-10	2.5Y 2.5/1	95	10YR 4/6	5	C	M	Clay 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X **No** ___

Remarks: Hydric soils were present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth *(inches)*	___
Water Table Present?	Yes	X	No	___	Depth *(inches)*	6
Saturation Present? *(includes capillary fringe)*	Yes	X	No	___	Depth *(inches)*	0

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Wetland hydrology indicators were present.

PHOTO	Sampling Point	T2-3

Description: Transect 2 plot 3	Direction: Northeast

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T2-4**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.039893** Long: **-96.40406** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X

Hydric Soil Present? Yes ____ No X Is the Sampled Area within a Wetland? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Remarks: Data point along transect 2 showing upland characteristics. Data point taken in harvested and about to be harvested soybean field.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Glycine max*	85	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (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	0	x 4 =	0
UPL species	85	x 5 =	425
Column Totals:	85	(A)	425 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

____ 2. Dominance Test is >50%

____ 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: *(Include photo numbers here or on a separate sheet.)* 15% bareground. Dataplot in recent and about to be harvested soy bean field.

SOIL

Sampling Point: T2-4

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

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/1	100					Silty Clay Loam	
18-24	2.5Y 2.5/1	50					Clay loam	
	10YR 3/2	50						
24-40	2.5Y 2.5/1	100					Clay	

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X

Remarks: Hydric soil indicators were not observed to this depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators *(minimum of one is 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth *(inches)*	
Water Table Present?	Yes ___	No X	Depth *(inches)*	
Saturation Present? *(includes capillary fringe)*	Yes ___	No X	Depth *(inches)*	

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks: Wetland hydrology indicators were not present.

PHOTO	Sampling Point	T2-4

Description: Transect 2 plot 4	Direction: Northwest

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T3-1**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Ditch** Local Relief *(concave, convex, none)*: **Concave**

Slope (%): **0-2%** Lat: **41.038453** Long: **-96.406374** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, frequently flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes X No ____ Is the Sampled Area within a Wetland? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Remarks: Wetland data point taken in roadside ditch.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Typha angustifolia*	65	Y	OBL
2. *Echinochloa crus-galli*	30	Y	FACW
3. *Phalaris arundinacea*	5	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	65	x 1 =	65
FACW species	35	x 2 =	70
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		135 (B)

Prevalence Index = B/A = 1.35

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Center of ditch was dominanted by cat-tails, as you moved out of the ditch, barnyard grass also became dominant.

SOIL

Sampling Point: T3-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- X 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 X **No** ___

Remarks: Soil pit was not taken due to dominant OBL/FACW vegetation and 4 inches of standing water.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth *(inches)*	4
Water Table Present?	Yes	___	No	___	Depth *(inches)*	___
Saturation Present? *(includes capillary fringe)*	Yes	___	No	___	Depth *(inches)*	___

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Surface water was present throughout the ditch.

PHOTO	Sampling Point	T3-1

Description: Wettland roadside ditch.	Direction: Northeast

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T3-2**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.038643** Long: **-96.405593** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes ____ No X Is the Sampled Area within a Wetland? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Remarks: Data point taken along transect 3. Determined to be upland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Panicum virgatum*	65	Y	FAC
2. *Rumex altissimus*	10	N	FACW
3. *Echinochloa crus-galli*	10	N	FACW
4. *Persicaria pensylvanica*	5	N	FACW
5. *Erigeron annuus*	5	N	FACU
6. *Bidens bipinnata*	4	N	FAC
7. *Cyperus esculentus*	3	N	FACW
8. *Hordeum jubatum*	2	N	FAC
9. *Typha angustifolia*	1	N	OBL
10.			
	105	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	28	x 2 =	56
FAC species	71	x 3 =	213
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	105	(A)	290 (B)

Prevalence Index = B/A = 2.76

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was present however, due to lack of hydric soils and wetland hydrology, the site is not a wetland.

SOIL

Sampling Point: T3-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-24	2.5Y 2.5/1	100					Clay loam	
24-30	10YR 3/1	50					Clay loam	
	10YR 4/2	50						
30-40	10YR 3/1	100					Clay 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X

Remarks: Hydric soil was not present to this depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators *(minimum of one is 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth *(inches)*	
Water Table Present?	Yes	X	No	___	Depth *(inches)*	38
Saturation Present? *(includes capillary fringe)*	Yes	X	No	___	Depth *(inches)*	34

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks: Only FAC Neutral test was present in wetland hydrology.

PHOTO	Sampling Point	T3-2

Description: Transect 3 plot 2	Direction: East

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T3-3**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.038597** Long: **-96.404826** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ___

Hydric Soil Present? Yes X No ___ Is the Sampled Area within a Wetland? Yes X No ___

Wetland Hydrology Present? Yes ___ No X

Remarks: Two of three wetland indicators were present, hydrology had one secondary indicator present. However, there is potential for geomorphic position to be present as well. This data plot is considered wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Panicum virgatum*	40	Y	FAC
2. *Echinochloa crus-galli*	40	Y	FACW
3. *Rumex altissimus*	15	N	FACW
4. *Persicaria pensylvanica*	5	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100	(A)	240 (B)

Prevalence Index = B/A = 2.40

Hydrophytic Vegetation Indicators:

___ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

___ 4. 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.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation is present.

SOIL

Sampling Point: T3-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-5	2.5Y 2.5/1	98	10YR 4/6	2	C	M	Clay Loam	Saturated
5-20	2.5Y 3/1	100					Clay Loam	
20-40	2.5Y 3/1	98	10YR 4/6	2	C	M	Clay 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X **No** ___

Remarks: Hydric soil was present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators *(minimum of one is 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	___	No	___	Depth *(inches)*	___
Water Table Present?	Yes	X	No	___	Depth *(inches)*	24
Saturation Present? *(includes capillary fringe)*	Yes	X	No	___	Depth *(inches)*	20

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks: The top 4-6 inches of the soils profile was very saturated, the remaining soil to 20 inches was not saturated. This saturation may have been from recent rains, or a slightly restrictive layer of soil. It was not marked as a hydrology indicator.

PHOTO	Sampling Point	T3-3

Description: Transect 3 plot 3	Direction: East

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T3-4**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.038574** Long: **-96.403849** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ___

Hydric Soil Present? Yes X No ___ Is the Sampled Area within a Wetland? Yes X No ___

Wetland Hydrology Present? Yes ___ No X

Remarks: Data point taken along transect 3, two of three wetland indicators were present. Data point considered wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Panicum virgatum*	60	Y	FAC
2. *Rumex altissimus*	10	N	FACW
3. *Setaria pumila*	10	N	FAC
4. *Echinochloa crus-galli*	10	N	FACW
5. *Persicaria pensylvanica*	5	N	FACW
6. *Bidens bipinnata*	5	N	FAC
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	75	x 3 =	225
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100	(A)	275 (B)

Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:

___ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

___ 4. 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.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was present at the data point.

SOIL

Sampling Point: T3-4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-17	2.5Y 2.5/1	100					Clay loam	
17-23	10YR 4/1	95	10YR 4/6	5	C	M	Clay	
23-40	10YR 2/1	99	10YR 4/6	1	C	M	Clay	

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X **No** ___

Remarks: Hydric soil was present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators *(minimum of one is 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth *(inches)*	___
Water Table Present?	Yes ___	No X	Depth *(inches)*	___
Saturation Present? *(includes capillary fringe)*	Yes ___	No X	Depth *(inches)*	___

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks: Upper 2-4 inches of the soil was very saturated. Layers underneath were not.

PHOTO	Sampling Point	T3-4

Description: Transect 3 plot 4	Direction:East

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T3-5**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.038637** Long: **-96.403032** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **Yes**

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

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation X, 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 X

Hydric Soil Present? Yes X No ___ Is the Sampled Area within a Wetland? Yes X No ___

Wetland Hydrology Present? Yes X No ___

Remarks: Data point taken in soybean field that had been partially harvested. Two of three indicators present, vegetation most likely artificially not present, so this point was counted as wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Glycine max*	85	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	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% (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	0	x 4 =	0
UPL species	85	x 5 =	425
Column Totals:	85	(A)	425 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1. Rapid Test for Hydrophytic Vegetation

___ 2. Dominance Test is >50%

___ 3. Prevalence Index is ≤3.0[1]

___ 4. 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.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was not present due to the data point be taken in a recently harvested soybean field.

SOIL

Sampling Point: T3-5

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-12	10YR 2/1	96	10YR 4/6	4	C	M	Clay 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X **No** ___

Remarks: Hydric soil was present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth *(inches)*	___
Water Table Present?	Yes ___	No X	Depth *(inches)*	___
Saturation Present? *(includes capillary fringe)*	Yes ___	No X	Depth *(inches)*	___

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Wetland hydrology was present.

PHOTO	Sampling Point	T3-5

Description: Transect 3 plot 5	Direction: Northwest

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T4-1**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Ditch** Local Relief *(concave, convex, none)*: **Concave**

Slope (%): **0-2%** Lat: **41.03773** Long: **-96.406385** Datum: **NAD 83**

Soil Map Unit Name: **Kenridge silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes X No ____ Is the Sampled Area within a Wetland? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Remarks: Wetland date point taken in roadside ditch.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5')			
1. *Typha angustifolia*	100	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

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

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Roadside ditch was dominated by cattails.

SOIL

Sampling Point: T4-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ Very Shallow Dark Surface (TF12)
- X 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** X **No** ___

Remarks: Soil pit was not taken due to dominance of OBL vegetation and the presence of standing water.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth *(inches)*	4
Water Table Present?	Yes	___	No	___	Depth *(inches)*	___
Saturation Present? *(includes capillary fringe)*	Yes	___	No	___	Depth *(inches)*	___

Wetland Hydrology Present? **Yes** X **No** ___

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

Remarks: Surface water present throughout the ditch.

PHOTO	Sampling Point	T4-1

Description: Wetland roadside ditch dominated by cattails	Direction:Northeast

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T4-2**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.037643** Long: **-96.406121** Datum: **NAD 83**

Soil Map Unit Name: **Kenridge silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X

Hydric Soil Present? Yes ____ No X Is the Sampled Area within a Wetland? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Remarks: Data point taken along transect 4. Determined to be upland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Setaria faberi*	40	Y	FACU
2. *Setaria pumila*	25	Y	FAC
3. *Erigeron annuus*	15	N	FACU
4. *Echinochloa crus-galli*	10	N	FACW
5. *Rumex altissimus*	5	N	FACW
6. *Solidago rugosa*	5	N	FAC
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	30	x 3 =	90
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	100	(A)	340 (B)

Prevalence Index = B/A = 3.40

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

____ 2. Dominance Test is >50%

____ 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was not present at this sample point.

SOIL

Sampling Point: T4-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-14	2.5Y 2.5/1	100					Clay Loam	
14-26	10YR 3/1	98	10YR 5/6	2	C	M	Clay Loam	
26-38	10YR 4/2	50	10YR 5/6	2	C	M	Silty Clay Loam	
	10YR 3/1	48						
38-40	10YR 3/1	70	10YR 5/6	2	C	M	Silty Clay Loam	
	10YR 4/2	28						

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X

Remarks: The soil does not meet a hydric soil indicator to this depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators *(minimum of one is 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth *(inches)*	
Water Table Present?	Yes	X	No	___	Depth *(inches)*	38
Saturation Present? *(includes capillary fringe)*	Yes	X	No	___	Depth *(inches)*	32

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks: No wetland hydrology indicators were present.

PHOTO	Sampling Point	T4-2

Description: Transect 4 plot 2	Direction: Southeast

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T4-3**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.037716** Long: **-96.405347** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X

Hydric Soil Present? Yes ____ No X Is the Sampled Area within a Wetland? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Remarks: Data point taken along transect 4. Determined to be upland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Setaria faberi*	25	Y	FACU
2. *Erigeron annuus*	25	Y	FACU
3. *Hordeum jubatum*	20	Y	FAC
4. *Rumex altissimus*	10	N	FACW
5. *Echinochloa crus-galli*	10	N	FACW
6. *Panicum virgatum*	5	N	FAC
7. *Medicago sativa*	5	N	FACU
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	25	x 3 =	75
FACU species	55	x 4 =	220
UPL species	0	x 5 =	0
Column Totals:	100	(A)	335 (B)

Prevalence Index = B/A = 3.35

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

____ 2. Dominance Test is >50%

____ 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was not present at transect point.

SOIL

Sampling Point: T4-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2	10YR 2/1	100					Clay loam	
2-20	2.5Y 2.5/1	100					Clay Loam	
20-40	10YR 3/1	80	10YR 6/6	1	C	M	Clay Loam	
	10YR 4/2	19						

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X

Remarks: Hydric soils were not present to this depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators *(minimum of one is 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth *(inches)*		**Wetland Hydrology Present?**
Water Table Present?	Yes ___	No X	Depth *(inches)*		
Saturation Present? *(includes capillary fringe)*	Yes ___	No X	Depth *(inches)*		**Yes** ___ **No** X

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

Remarks: Wetland hydrology indicators were not present.

PHOTO	Sampling Point	T4-3

Description: Transect 4 plot 3	Direction: Northeast

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T4-4**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.037773** Long: **-96.40455** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes ____ No X Is the Sampled Area within a Wetland? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Remarks: Data point taken along transect 4. Determined to be upland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Echinochloa crus-galli*	25	Y	FACW
2. *Setaria pumila*	25	Y	FAC
3. *Erigeron annuus*	15	N	FACU
4. *Panicum virgatum*	15	N	FAC
5. *Medicago sativa*	10	N	FACU
6. *Cyperus esculentus*	5	N	FACW
7. *Rumex altissimus*	5	N	FACW
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	40	x 3 =	120
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	100	(A)	290 (B)

Prevalence Index = B/A = 2.90

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was marginally present at this data plot.

SOIL

Sampling Point: T4-4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-19	2.5Y 2.5/1	100					Clay Loam	
19-30	10YR 2/1	99	10YR 6/6	1	C	M	Clay Loam	
30-40	10YR 2/1	97	10YR 6/6	3	C	M	Clay 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X

Remarks: Hydric soil indicators were not present to this depth. Thick dark surface could still possibly occur deeper.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators *(minimum of one is 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth *(inches)*	
Water Table Present?	Yes	X	No	___	Depth *(inches)*	30
Saturation Present? *(includes capillary fringe)*	Yes	X	No	___	Depth *(inches)*	28

Wetland Hydrology Present?

Yes ___ **No** X

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

Remarks: FAC-Neutral test is present, otherwise no further wetland indicators were observed.

PHOTO	Sampling Point	T4-4

Description: Transect 4 plot 4	Direction: North

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T4-5**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.037824** Long: **-96.403786** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X No ____

Hydric Soil Present? Yes X No ____ Is the Sampled Area within a Wetland? Yes X No ____

Wetland Hydrology Present? Yes ____ No X

Remarks: Data point taken along transect 4 with two of three wetland indicators present. One secondary hydrology indicator was present, possible geomorphic position present as well. Data plot considered wetland.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Panicum virgatum*	70	Y	FAC
2. *Rumex altissimus*	10	N	FACW
3. *Echinochloa crus-galli*	10	N	FACW
4. *Setaria pumila*	5	N	FAC
5. *Persicaria pensylvanica*	5	N	FACW
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	75	x 3 =	225
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100	(A)	275 (B)

Prevalence Index = B/A = 2.75

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

X 2. Dominance Test is >50%

X 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation is marginally present.

SOIL

Sampling Point: T4-5

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
0-4	2.5Y 2.5/1	98	10YR 5/6	2	C	M	Clay Loam	
4-20	2.5Y 2.5/1	100					Clay Loam	
20-36	10YR 2/1	70	10YR 5/6	1	C	M	Clay Loam	
	10YR 4/2	29						
36-40	10YR 2/1	98	10YR 5/6	2	C	M	Clay 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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X **No** ___

Remarks: Hydric soil is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators *(minimum of one is 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	___	No	X	Depth *(inches)*	
Water Table Present?	Yes	X	No	___	Depth *(inches)*	36
Saturation Present? *(includes capillary fringe)*	Yes	X	No	___	Depth *(inches)*	34

Wetland Hydrology Present? **Yes** ___ **No** X

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

Remarks: The top 4-6 inches of the soils profile was very saturated, the remaining soil to 34 inches was not saturated. This saturation may have been from recent rains, or a slightly restrictive layer of soil. It was not marked as a hydrology indicator.

PHOTO	Sampling Point	T4-5

Description: Transect 4 plot 5	Direction:Northeast

Remarks:

Wetland Determination Data Form - Midwest Region

Project/Site: **Ashland Mitigation Site** City/County: **Saunders** Sampling Date: **10/25/2017**

Applicant/Owner: **NDOT** State: **NE** Sampling Point: **T4-6**

Investigator(s): Kimberly Baker, Brett Harbison, Jeff Hartman Section, Township, Range: **S 03, T 12, R 09**

Landform *(hillslope, terrace, etc.)*: **Flat** Local Relief *(concave, convex, none)*: **None**

Slope (%): **0-2%** Lat: **41.037817** Long: **-96.402548** Datum: **NAD 83**

Soil Map Unit Name: **Obert silty clay loam, occasionally flooded** NWI Classification: **None**

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 X

Hydric Soil Present? Yes ____ No X Is the Sampled Area within a Wetland? Yes ____ No X

Wetland Hydrology Present? Yes X No ____

Remarks: Data point taken along transect 4 showing upland characteristics.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Glycine max*	50	Y	UPL
2. *Amaranthus tuberculatus*	5	N	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	55	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	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% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	55	(A)	255 (B)

Prevalence Index = B/A = 4.64

Hydrophytic Vegetation Indicators:

____ 1. Rapid Test for Hydrophytic Vegetation

____ 2. Dominance Test is >50%

____ 3. Prevalence Index is ≤3.0[1]

____ 4. 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.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: *(Include photo numbers here or on a separate sheet.)* Wetland vegetation was not present at the data point. However, data was collected in a recently harvested/about to be harvest soybean field.

SOIL

Sampling Point: T4-6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-6	10YR5/3	100					Sandy loam	
6-16	2.5Y 2.5/1	100					Clay loam	
16-40	2.5Y 2.5/1	70	10YR 5/6	5	C	M	Clay loam	
	10YR 5/3	25						

[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)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Dark Surface (S7)
- ___ Iron-Manganese Masses (F12)
- ___ 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** X

Remarks: Hydric soils were not present in the sample plot. Top layer was different texture then all other plots and was mixed into deeper layers.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X 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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other *(Explain in Remarks)*

Secondary Indicators *(minimum of two required)*

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth *(inches)*	
Water Table Present?	Yes ___	No X	Depth *(inches)*	
Saturation Present? *(includes capillary fringe)*	Yes ___	No X	Depth *(inches)*	

Wetland Hydrology Present? **Yes** X **No** ___

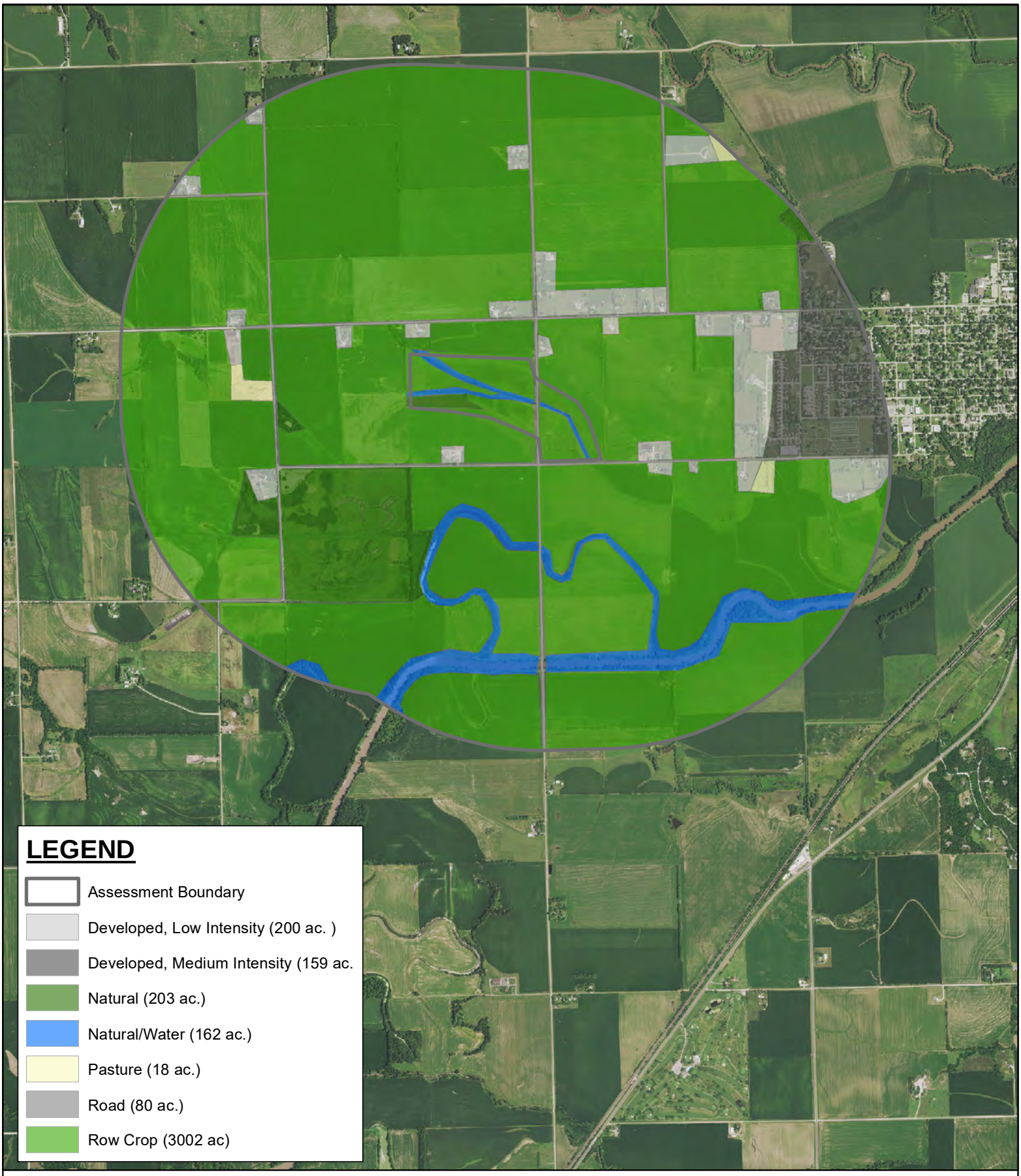
Describe Recorded Data *(stream gauge, monitoring well, aerial photos, previous inspections)*, if available.

Remarks: Wetland hydrology was present due to a thin algal crust.

PHOTO	Sampling Point	T4-6

Description: Transect 4 plot 6	Direction: Northeast

Remarks:



NAIP 2018 Saunders County Aerial Imagery

N

0 1,250 2,500 5,000

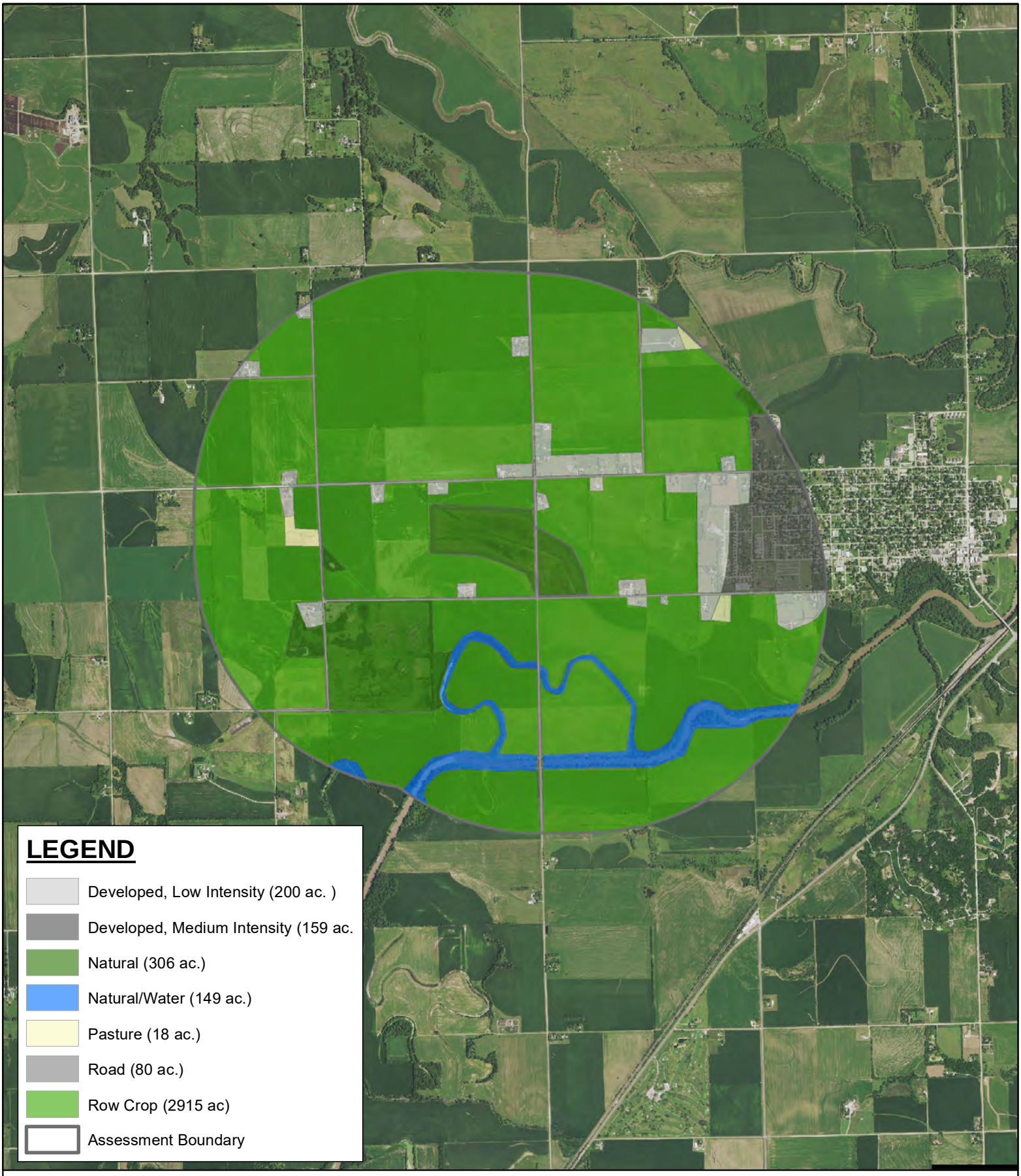
Feet

benesch
engineers · scientists · planners

VI WATERSHED LAND COVER MAP PRE

Nebraska Department of Transportation
Project Number: MISC-79-2 (1019)
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

C:\Users\Cjelden\Desktop\New folder\NeWRAM_Assessment 1 mile buffer Pre.mxd



NAIP 2018 Saunders County Aerial Imagery

N

0 1,500 3,000 6,000

Feet

VI WATERSHED LAND COVER MAP POST

Nebraska Department of Transportation
Project Number: MISC-79-2 (1019)
Ashland Wetland Mitigation Bank
Saunders County, NE
T. 13N, R. 9E, S. 3 & 4

benesch
engineers · scientists · planners

C:\Users\Cjelden\Desktop\New folder\NeWRAM_Assessment 1 mile buffer Post.mxd

APPENDIX I

SECTION 106 AND ENDANGERED SPECIES ACT COORDINATION

Section 106

NDOR PQS Project Review Memo
Section 106 - Tier II Project

Control Number 10584A Project Number STPD-BR-79-2(108) Review Date 11/19/15

Project Name Agnew North and South Project Location Lancaster & Saunders Counties

Date of Project Description Reviewed 11/06/15

Project Results in no historic properties affected ☐ No ☑ Yes ☑ Tier II Project

THPO/Tribal Consultation? ☐ No ☑ Yes

THPO/Tribes(s): Ponca Tribe of Nebraska

Date Correspondence Sent: 12/21/15

THPO/Tribal response date: 01/25/16

to date, no response has been received from the Ponca Tribe of Nebraska-SLS 12/07/16

THPO/Tribal comment:

CLG Consultation? ☑ No ☐ Yes

CLG:

Date Correspondence Sent:

CLG response date:

CLG comment:

Other Consulting Parties Identified:

n/a

APE considered is consistent with 36 CFR 800.16(d): ☑ Yes

Archeological Resources	**Above Ground Resources**
Are NRHP listed or eligible properties present within the APE? ☑ **No** ☐ **Yes**	**Are NRHP listed or eligible properties present within the APE?** ☐ **No** ☑ **Yes**
Please list:	**Please list:**
	LC01-002 - Agnew Grain Elevator

Is Temporary Easement Required from ANY Historic Property Listed Above? ☑ **No** ☐ **Yes**

Is Permanent Easement Required from ANY Historic Property Listed Above? ☑ **No** ☐ **Yes**

Is Right of Way Required from ANY Historic Property Listed Above? ☑ **No** ☐ **Yes**

If Yes, describe:

Construction Commitments: ☑ No ☐ Yes

If Yes, detail here:

Project would result in no historic properties affected: ☐ No ☑ Yes

Tier II Project Evaluation Complete

Stacy Stupka-Burda

Digitally signed by Stacy Stupka-Burda
DN: cn=Stacy Stupka-Burda, o=NDOR, ou=Planning & Project Development, email=stacy.stupka-burda@nebraska.gov, c=US
Date: 2016.01.25 09:18:50 -06'00'

01/25/16

NDOR PQS Review

Date

Archeological APE

From ROW to ROW along the entire length of the project (2004-2005) as well as nine additional tracts where new ROW would be acquired (2014) and eleven tracts were surveyed along the proposed detour route due to construction activities necessary to accommodate stream crossing modifications and possible road widening (2014). The proposed off-site wetland mitigation site was completely surveyed in 2015.

Above Ground Resources APE

100 feet beyond existing right of way and APE also includes any structures 100 feet from construction areas along the detour route and the proposed mitigation site near Ashland.

The property that was considered NRHP eligible, LC00-288, has been demolished. Therefore, it is no longer eligible. This property would not be eligible as an archeological resource as it lacks significance and integrity - SSB

U.S. Department of Transportation
Federal Highway Administration

NEBRASKA DIVISION

100 Centennial Mall North
Room 220
Lincoln, NE 68508
(402)742-8460

December 21, 2015

Mr. Randy Teboe
Tribal Historic Preservation Officer
Ponca Tribe of Nebraska
PO Box 288
Niobrara, NE 68760

Dear Mr. Teboe:

Project No. STPD-BR-79-2(108), CN 10584A
Agnew North and South
Lancaster and Saunders Counties
Cultural Resources Evaluation
HP# 0510-027-01

Please review this document on historic resources for the subject project as required under Section 106 of the National Historic Preservation Act of 1966 as amended and implementing regulations at 36 CFR Part 800. 36 CFR Part 800.2 (c) (2), specifically addresses consultation between Tribes and federal agencies.

An evaluation of the potential for cultural resources, both archeology and standing structures, is included below [and in enclosures].

Previous Section 106 Consultation
On October 19, 2005, NESHPO concurred with a Nebraska Department of Roads (NDOR) determination that archeological sites 25LC31 and 25LC191 located on the referenced project were not eligible for the National Register of Historic Places (NRHP) and also concurred with an effects determination of "no historic properties affected" under HP# 0510-027-01 (Enclosure 1). Since 2005, a formal project description has been developed and a detour route and a wetland mitigation tract that require consideration of cultural resources have been identified. Accordingly, the Federal Highway Administration (FHWA) is re-initiating Section 106 consultation.

Project Description
This 3R (Resurfacing, Restoration and Rehabilitation) project would resurface 8.48 miles of N-79 located in Lancaster and Saunders Counties, starting just north of the junction of N-79 and the Raymond Spur, S-55J, at mile marker (MM) 5.09, and extending north to MM 13.57, just north of the junction of N-79 and N-66. Construction to accommodate transitioning the pavement may begin and/or end approximately 200 feet ahead of or beyond the actual project limits. Construction at the beginning of the project would be at MM 4.94 to install lights next to the existing turn lane.

Segments of this project would be built to meet New & Reconstruction minimum design standards due to structure replacements. Pavement replacement would be included at proposed structures to adjust roadway profile to new structures. The existing roadway on this segment of N-79 consists of two 12-foot-wide asphalt lanes and 3-foot-wide turf shoulders.
The 3R improvements on this project consist of milling and resurfacing the roadway, widening and surfacing the shoulders with asphalt in the rural segment, concrete box culvert replacement, bridge replacement, earth shoulder construction, and removing and replacing guardrail with surfacing placed underneath. Existing culverts within the Fixed Obstacle Clear Zone (FOC) would be extended or replaced and existing headwalls within the FOC would be removed and replaced with flared end sections. Existing culverts in poor condition would be removed and replaced utilizing full depth asphaltic pavement on prepared grade.

Areas of pavement replacement would include full depth asphaltic pavement on prepared subgrade, surfaced shoulders, and would include a profile adjustment to match pavement tie-ins and bridge and culvert constraints.

Scope details include:

- Grading beyond the hinge point would be required for the following work:
    - Culverts
    - Guardrail
    - Mailbox turnouts
    - Earth shoulder construction
    - Bridges
    - Drives and intersections
    - Railroad crossing
    - Shoulder widening and surfacing
    - Roadway grading for culvert extensions and structure replacement
- Grading beyond the hinge point would be required for the following work:
    - Correction of superelevation
    - Offset right turn lanes
    - Passing lane
- The scope of work at culvert sites on this project has been determined. There are 30 culverts, all of which would be impacted by the project. As-built plans indicate that all culverts are within FOC and impacts are anticipated. The following work would be required:
    - Culvert cleanout.
    - Culvert ends require extension beyond the FOC.
    - Existing culvert headwalls within the FOC would be removed and replaced with flared end sections.
    - Remove and replace existing corrugated metal pipe culverts in poor condition with reinforced concrete pipe culverts.
    - Boring and jacking at least one replacement culvert would be necessary to maintain local traffic at all times.
- Guardrail
    - Remove and replace all existing guardrail with grading beyond the hinge point.
    - Surfacing would be placed under the guardrail.

- The right turn lane near MM 9.23 Rt. would be resurfaced with project.
- Right turn lane at 13.44 Lt. would be reconstructed as an offset right turn lane.
- The passing lane near MM 13.29 Rt. would be converted to a through lane with channelized left turn lane.
- The existing box culverts at MM 6.04 (Structure Number S079 00604) and MM 6.90 (Structure Number S079 00690) would be replaced with twin concrete box culverts. Structure Number S079 00690 reconstruction would include sloped apron inlets and a paved apron outlets. The roadway would be reconstructed adjacent to the culvert replacement work for this structure.
- The existing box culvert at MM 8.13 (Structure Number S079 00813) would be replaced with a concrete box culvert. The existing guardrail would be removed. The roadway would be reconstructed adjacent to the culvert replacement work for this structure.
- The bridge over Wagon Tongue Creek at MM 9.48 (Structure Number S079 00948) would be replaced and approach slabs and pavement would be added to the new structure. This work includes a low flow stream crossing which consists of culvert pipes for access during construction. The existing guardrail would be removed, replaced and surfaced underneath. The roadway would be reconstructed adjacent to the bridge replacement work for this structure.
- The bridge over North Oak Creek at MM 12.52 (Structure Number S079 01252) would be replaced and approach slabs and pavement would be added to the new structure. This work includes a low flow stream crossing which consists of culvert pipes for access during construction. The existing guardrail would be removed, replaced and surfaced underneath. The roadway would be reconstructed adjacent to the bridge replacement work for this structure. A temporary roadway would be constructed to maintain traffic on-site during MM 12.52 bridge construction.
- The existing asphalt would be milled and resurfaced with asphalt.
- Asphalt patching operations would be performed prior to resurfacing.
- Existing surfaced driveways and intersections would be resurfaced.
- Rock or gravel would be placed behind driveways and intersections to match the new asphalt.
- Mailbox turnouts would be constructed.
- Surfacing would be placed under the guardrail.
- The existing earth shoulders would be widened from 3-foot to 8-foot-wide, with 6-foot surfaced with asphalt.
- Project surveying and staking would be required.
- Areas disturbed during construction would be stabilized utilizing methods of erosion control as shown in the Storm Water Pollution Prevention Plan (SWPPP).
- Rumble strips would be constructed on the resurfaced shoulders.
- An existing at-grade railroad crossing would need to be widened to accommodate the shoulder widening proposed with this project.
- Permanent pavement markings would be applied to all new surfacing.
- Existing street lights and railroad signals would be impacted by the shoulder widening and would be reconstructed.
- Surveying would be required.
- Additional property rights would be required to build this project.

- Access to adjacent properties would be maintained during construction but may be limited at times due to phasing requirements.
- N-79 would be closed to through traffic between West Raymond Road and County Road A. A detour would be provided. From County Road A to Valparaiso, traffic would be maintained on N-79.
- No maintenance or upgrades are expected for the designated detour route to make it acceptable for state highway traffic.
- The railroad crossing at DOT 805387K (MM 7.59) would be widened and new signals installed.
- The railroad crossing (DOT No. 815376X) on County Road 28 would be closed. County Road 28 would be realigned to meet up with County Road A, west of N-79.
- New field drives would be built.
- New lights would be installed at intersections with new or existing turn lanes and at some intersections.
- A permittee-responsible mitigation site would be acquired and developed under CN 10584b.

The location of the project, the detour route, and the wetland mitigation tract is depicted in Enclosure 2 and the formal Project Description is Enclosure 3.

Area of Potential Effects (APE)

The APE for archeological properties and standing structures was chosen to adequately identify any historic properties that may be potentially altered given the scale and scope of this undertaking. 3R (Resurfacing, Restoration, and Rehabilitation) projects such as this one focus primarily on the preservation and extension of the service life of existing transportation facilities and on safety enhancements. Anticipated 3R project activities can include: resurfacing pavement, structural and joint repair, minor lane or shoulder widening, bridge repair, removal or protection of roadside obstacles, culvert repair and extension, installation of ADA compliant curb ramps, and minor alterations to vertical grades that do not require substantial ground disturbance. Project activities occur within existing rights-of-way (ROW) or within minimal new ROW.

To accommodate any potential minor changes in the above generalized project description that might occur during continued project development, the APE for direct construction effects includes an area generally 50 feet beyond present ROW adjacent to stream crossings (bridges and culverts) and 20 feet beyond present ROW along the remainder of the project. The vertical depth of the APE normally involves soils and deposits at or near the surface but can reach depths of 15 feet in the immediate area of bridges and culverts at stream crossings. Several project areas required expanded ROW for stream channel modification and improvement of immediately adjacent drives and secondary roads. These areas are also entirely included in the APE. The proposed detour route would require reconstruction of several corners and stream crossings to accommodate increased traffic and those areas are also included in the APE. The entire 60-acre wetland mitigation tract is also part of the APE. Furthermore, the APE for standing structures and farmsteads includes an area 100 feet beyond existing right-of-way, detour construction areas, and the wetland mitigation site, to account for any potential visual effects.

See Enclosure 4 for location of the APE within the project proper and along the detour route and the wetland mitigation tract. Definition of a broader APE for secondary or cumulative impacts is not required in this instance.

Archeological Evaluation

An archeological evaluation was conducted intermittently between 2004 and 2015 by Highway Archeology Program staff John Ludwickson, Rob Bozell, Nolan Johnson, Nic Fogerty, and Shaun Lynch. A review of the Nebraska Cultural Resources Geographic Information System (NCRGIS) archeological resources database and historic maps indicated that one archeological site was known in the APE (25LC31) but had not been evaluated for NRHP eligibility.

An archeological reconnaissance was completed of the entire project APE. As a result of the reconnaissance, nearly the entire project was subjected to an intensive pedestrian survey. Several areas requiring construction activity along the detour route and the entire wetland mitigation tract were also surveyed intensively for archeological properties. The remainder of the APE is limited to 3R activities in previously disturbed fill or on topographic settings with no potential to impact intact archeological deposits. The investigations resulted in the re-location of site 25LC31 and identification of three new sites (25LC191, 25LC246, and 25SD210), All four properties were evaluated for NRHP eligibility and all were found to lack the physical integrity and the significance required for eligibility (see Enclosure 5).

There are no archeological historic properties in the APE.

Standing Structures

Megan Hilger, NSHS Preservation Associate, investigated the project using the NESHPO inventory and site files, *Historic Building Survey of Lancaster (2008) and Saunders Counties* (2003), the Lancaster and Saunders counties Tax Assessor records, historic maps, the *National Register Evaluation of Nebraska Bridges 1947 to 1965 (including the reassessment of select pre-1947 bridges),* the *Nebraska Historic Bridge Inventory of 1991*, and the November 2012 *ACHP Comment Issued for Streamlining Section 106 Review for Actions Affecting Post-1945 Concrete and Steel Bridges.*

Hilger also performed a vehicular reconnaissance on May 19, 2015 of the APE and conducted an inspection of all properties identified as meeting the NESHPO Historic Resources Survey Manual criteria for survey were evaluated and incorporated into this investigation. These criteria include, but are not limited to, properties that are:

- 50 years old or older, and
- In the original location, and
- Possess the potential for integrity, historic association, and historic architectural qualities

The properties that met the above criteria were evaluated using the guidelines set forth in the 1991 National Park Service Bulletin 15: *How to Apply the National Register Criteria for Evaluation.* All surveyed properties were evaluated to determine eligibility to the NRHP.

Within the APE of this undertaking, four properties (all along the N-79 corridor) were identified for survey and evaluation. Three of these properties are recommended not eligible for the NRHP

due to a lack of integrity and/or a lack of historic or architectural association. In addition, the bridges over Wagon Tongue Creek (S07900948) and North Oak Creek (S07901252) to be replaced are not identified as NRHP-listed or eligible bridges because they do not possess the necessary engineering/design significance to be considered eligible. There were no properties along the detour route or adjacent to the wetland mitigation tract that met the NESHPO minimum survey requirements.

Property LC01-002 (Agnew Grain Elevator) retains integrity and significance and is eligible for the NRHP under Criterion A (commerce). The property is in the APE but would not be affected.

Hilger's documentation and maps are in Enclosures 6 and 7. Construction plans showing the project in relation to historic property LC01-002 is Enclosure 8.

Recommended Effect

This undertaking has been reviewed under the programmatic agreement entitled *Programmatic Agreement Among the Federal Highway Administration, the Nebraska State Historic Preservation Officer, the Advisory Council on Historic Preservation and the Nebraska Department of Roads to Satisfy the Requirements of Section 106 for the Federal Aid Highway Program in the State of Nebraska* (July 2015) and meets the requirements to be considered a Tier II Project. Tier II projects result in a project effect recommendation of no historic properties affected.

The FHWA is providing this documentation for your review and comment and requests that the Ponca Tribe of Nebraska notify FHWA of any objections within 30 days of receipt of this letter.

Sincerely yours,

Scott H. Stapp

Scott H. Stapp
Environmental Protection Specialist

Enclosures

ENCLOSURE 1

NEBRASKA STATE HISTORICAL SOCIETY
1500 R STREET, P.O.BOX 82554, LINCOLN, NE 68501-2554
(402) 471-3270 Fax: (402) 471-3100 1-800-833-6747 www.nebraskahistory.org

19 October 2005

Leonard J. Sand
Planning & Project Development
Department of Roads
P.O. Box 94759
Lincoln, NE 68509-4759

Re: STPD-BR-79-2(108) CN-10584A
Agnew N & S
Lancaster & Saunders Cos.
H.P. #0510-027-01

Dear Mr. Sand:

The cultural resources survey report (Ludwickson 2005) on the above referenced project has been reviewed by this office. We concur that archaeological sites 25LC31 and 25LC191 are not eligible for the National Register of Historic Places. Since no other archaeological, architectural, or historic context property resources were found it is our opinion that no historic properties will be affected by the proposed project.

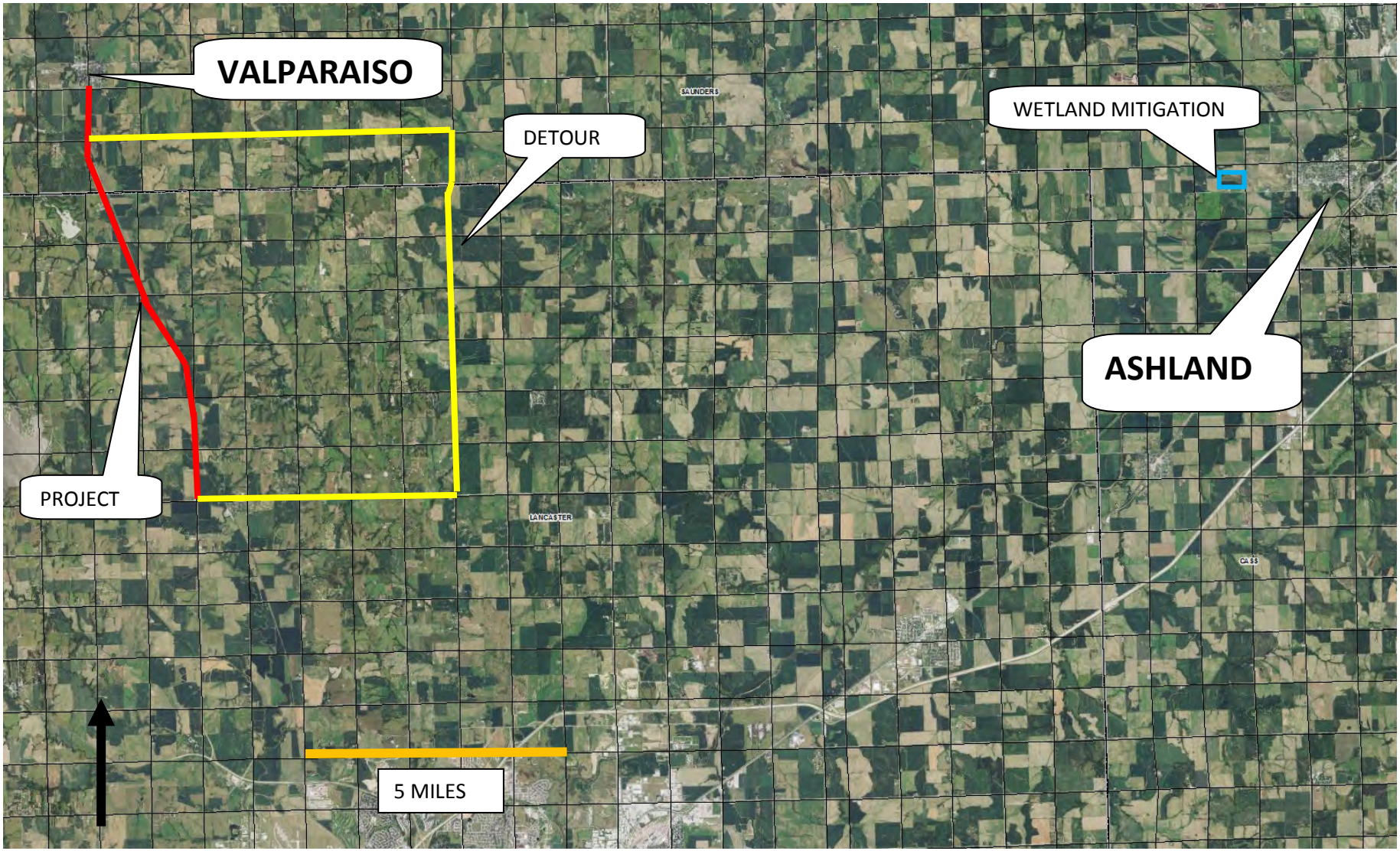
Sincerely,

Terry Steinacher
H.P. Archaeologist

Concurrence:

L. Robert Puschendorf
Deputy NeSHPO

ENCLOSURE 2



AGNEW NORTH AND SOUTH

ENCLOSURE 3

Nebraska Department of Roads

Project Description

Project Name:	Agnew North and South	
Project No.:	STPD-BR-79-2(108)	
Control No.:	CN 10584A	
Initial Draft:	Date: December 10, 2012	Written By: Olsson Associates –JGO

Updates/Reviews

Date	Update/Review By *(name)*	Items Updated	Plan Level *(PIH, etc.)*
6/6/14	Shane Swope	Replacing poor cond. CMP's with RCP's	PIH activity
12/2/14	Shane Swope	Update pavement design and PIH decisions	Functional
8/15/15	J. Baird	A permittee responsible mitigation site will be acquired and developed as part of this project.	Functional
8/25/15	Shane Swope	Update Project Description, offset right turn, passing lane, detour route	Functional
9/24/15	J. Baird	Building new field drives / installing lights / work on railroad crossing / closing railroad crossing	Functional
10/1/15	J Baird	Installing lights north of N-79 and Raymond Rd. Removed statement that LOCs would be determined by Roadway Design.	Final
11/3/15	J. Baird	Updated beginning of construction, beginning & end of project, length of project, lighting, mitigation site	Final
11/6/15	J. Baird	Updated ending MM and length of project	Final

Project Description:

This 3R (Resurfacing, Restoration and Rehabilitation) project will resurface 8.48 miles of N-79 located in Lancaster and Saunders Counties, starting just north of the junction of N-79 and the Raymond Spur, S-55J, at mile marker (MM) 5+09, and extending north to MM 13+57, just north of the junction of N-79 and N-66. Construction to accommodate transitioning the pavement may begin and/or end approximately 200 feet ahead of or beyond the actual project limits. Construction at the beginning of the project would be at MM 4+94 to install lights next to the existing turn lane.

Segments of this project will be built to meet New & Reconstruction minimum design standards due to structure replacements. Pavement replacement will be included at proposed structures to adjust roadway profile to new structures. The existing roadway on this segment of N-79 consists of two 12 foot wide asphalt lanes and 3 foot wide turf shoulders.

The 3R improvements on this project consist of milling and resurfacing the roadway, widening and surfacing the shoulders with asphalt in the rural segment, concrete box culvert replacement, bridge replacement, earth shoulder construction, and removing and replacing guardrail with surfacing placed underneath. Existing culverts within the Fixed Obstacle Clear Zone (FOC) will be extended or replaced and existing headwalls within the FOC will be removed and replaced with flared end sections. Existing culverts in poor condition will be removed and replaced utilizing full depth asphaltic pavement on prepared grade.

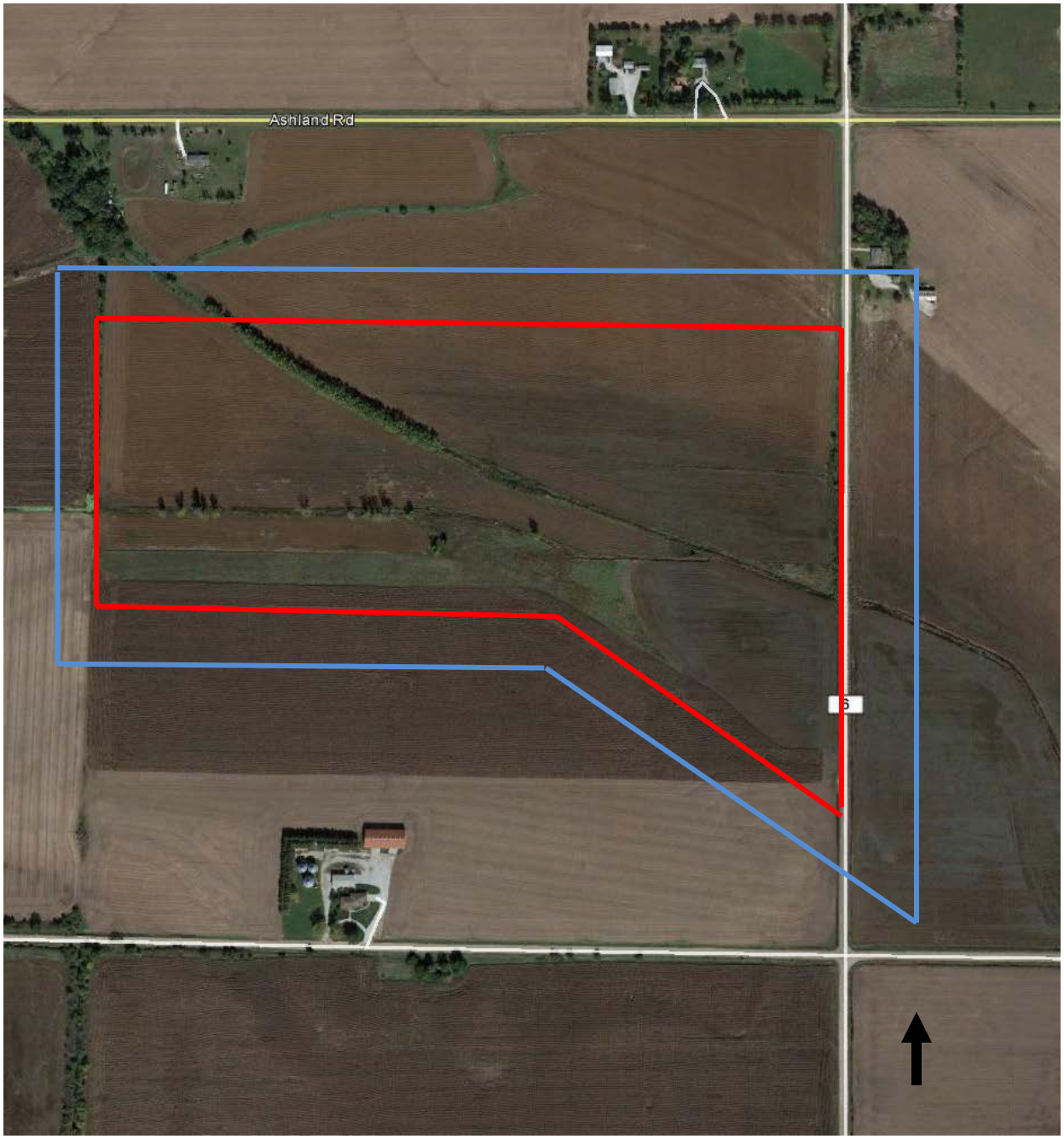
Areas of pavement replacement will include full depth asphaltic pavement on prepared subgrade, surfaced shoulders, and will include a profile adjustment to match pavement tie-ins and bridge and culvert constraints.

Scope details include:

- Grading beyond the hinge point will be required for the following work:
  - Culverts
  - Guardrail
  - Mailbox turnouts
  - Earth shoulder construction
  - Bridges
  - Drives and intersections
  - Railroad crossing
  - Shoulder widening and surfacing
  - Roadway grading for culvert extensions and structure replacement
- Grading beyond the hinge point will be required for the following work:
  - Correction of superelevation
  - Offset right turn lanes
  - Passing lane
- The scope of work at culvert sites on this project has been determined. There are 30 culverts, all of which will be impacted by the project. As-built plans indicate that all culverts are within Fixed Obstacle Clear Zone and impacts are anticipated. The following work will be required:
  - Culvert cleanout.
  - Culvert ends require extension beyond the Fixed Obstacle Clear Zone.
  - Existing culvert headwalls within the Fixed Obstacle Clear Zone will be removed and replaced with flared end sections.
  - Remove and replace existing corrugated metal pipe culverts in poor condition with reinforced concrete pipe culverts.
  - Boring and Jacking at least one replacement culvert will be necessary to maintain local traffic at all times.
- Guardrail
  - Remove and replace all existing guardrail with grading beyond the hinge point.
  - Surfacing will be placed under the guardrail.
- The right turn lane near MM 9+23 Rt. will be resurfaced with project.
- Right turn lane at 13+44 Lt. will be reconstructed as an offset right turn lane.
- The passing lane near MM 13+29 Rt. will be converted to a through lane with channelized left turn lane.
- The existing box culverts at MM 6+04 (Structure Number S079 00604) and MM 6+90 (Structure Number S079 00690) will be replaced with twin concrete box culverts. Structure Number S079 00690 reconstruction will include sloped apron inlets and a paved apron outlets. The roadway will be reconstructed adjacent to the culvert replacement work for this structure.
- The existing box culvert at MM 8+13 (Structure Number S079 00813) will be replaced with a concrete box culvert. The existing guardrail will be removed. The roadway will be reconstructed adjacent to the culvert replacement work for this structure.
- The bridge over Wagon Tongue Creek at MM 9+48 (Structure Number S079 00948) will be replaced and approach slabs and pavement will be added to the new structure. This work includes a low flow stream crossing which consists of culvert pipes for access during construction. The existing guardrail will be removed, replaced and surfaced underneath. The roadway will be reconstructed adjacent to the bridge replacement work for this structure.

- The bridge over North Oak Creek at MM 12+52 (Structure Number S079 01252) will be replaced and approach slabs and pavement will be added to the new structure. This work includes a low flow stream crossing which consists of culvert pipes for access during construction. The existing guardrail will be removed, replaced and surfaced underneath. The roadway will be reconstructed adjacent to the bridge replacement work for this structure. A temporary roadway will be constructed to maintain traffic on-site during MM 12+52 bridge construction.
- The existing asphalt will be milled and resurfaced with asphalt.
- Asphalt patching operations will be performed prior to resurfacing.
- Existing surfaced driveways and intersections will be resurfaced.
- Rock or gravel will be placed behind driveways and intersections to match the new asphalt.
- Mailbox turnouts will be constructed.
- Surfacing will be placed under the guardrail.
- The existing earth shoulders will be widened from 3 foot to 8 foot wide, with 6 foot surfaced with asphalt.
- Project surveying and staking will be required.
- Areas disturbed during construction will be stabilized utilizing methods of erosion control as shown in the Storm Water Pollution Prevention Plan (SWPPP).
- Rumble strips will be constructed on the resurfaced shoulders.
- An existing at-grade railroad crossing will need to be widened to accommodate the shoulder widening proposed with this project.
- Permanent pavement markings will be applied to all new surfacing.
- Existing street lights and railroad signals will be impacted by the shoulder widening and will be reconstructed.
- Surveying will be required.
- Additional property rights will be required to build this project.
- Access to adjacent properties will be maintained during construction but may be limited at times due to phasing requirements.
- N-79 will be closed to through traffic between West Raymond Road and County Road A . A detour will be provided. From County Road A to Valpariso, traffic will be maintained on N-79.
- No maintenance or upgrades are expected for the designated detour route to make it acceptable for state highway traffic.
- The railroad crossing at DOT 805387K (RP 7+59) will be widened and new signals installed.
- The railroad crossing (DOT No. 815376X) on County Road 28 will be closed. County Road 28 will be realigned to meet up with County Road A, west of N-79.
- New field drives will be built.
- New lights will be installed at intersections with new or existing turn lanes and at some intersections.
- A permittee responsible mitigation site will be acquired and developed under CN 10584b.

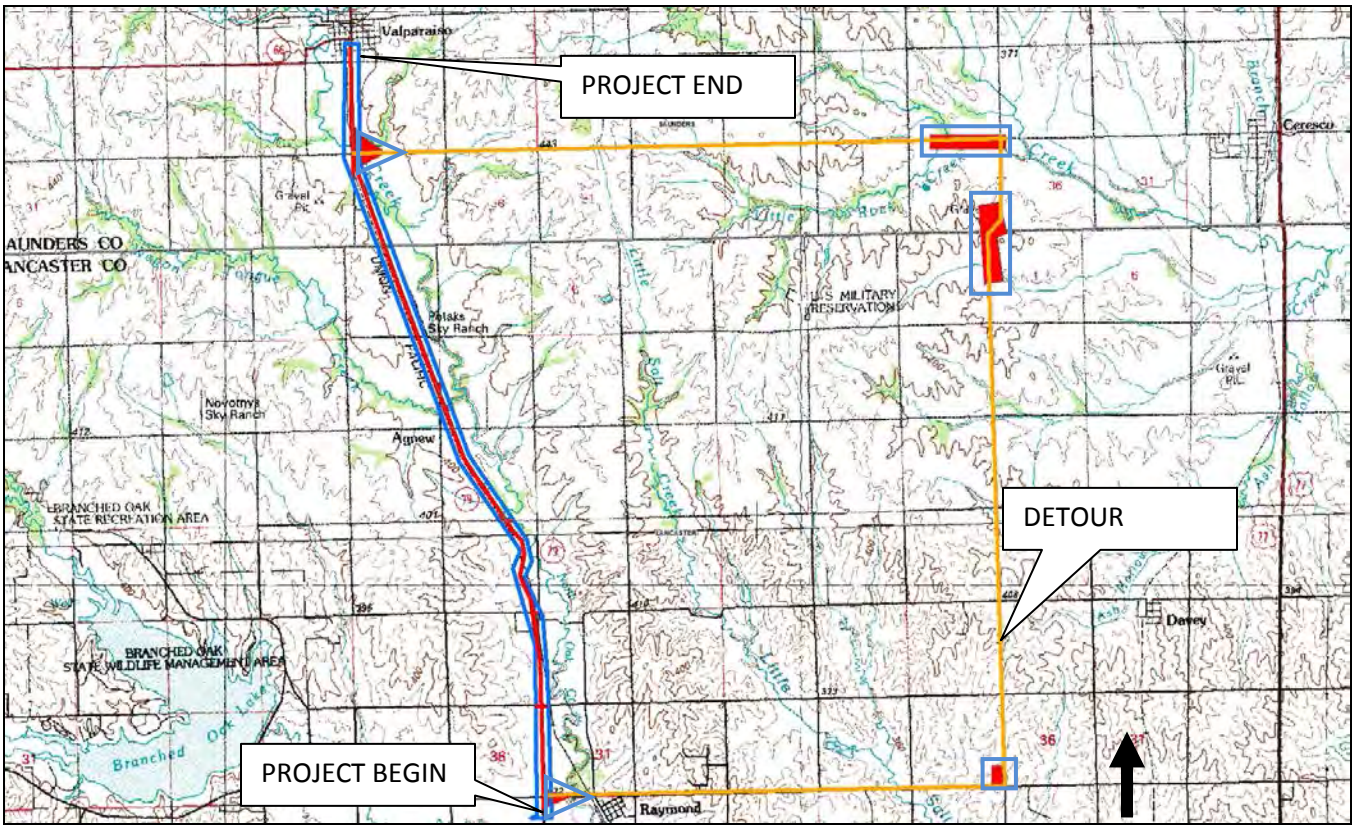
ENCLOSURE 4



WETLAND MITIGATION TRACT

PROJECT AREA AND APE FOR ARCHEOLOGY

APE FOR STANDING STRUCTURES



PROJECT AND DETOUR ROUTE

APE FOR ARCHEOLOGY

APE FOR ABOVE GROUND RESOUR CES

ENCLOSURE 5

Nebraska STATE HISTORICAL SOCIETY

Nebraska Highway Archeology Program

Project Name: Agnew North and South
CN: 10584A
Project Number: STP-79-2(108)

SUMMARY OF ARCHEOLOGICAL SURVEYS

This project was originally surveyed in the winter of 2004 and spring of 2005 by Nebraska Highway Archeology Program staff member John Ludwickson. Ludwickson's work included a complete survey of the right-of-way along the entire length of the project and resulted in the identification and National Register evaluation of two archeological sites (25LC31 and 25LC191). Both sites were recommended to be not eligible for the National Register based on poor integrity. The Nebraska State Historic Preservation Office concurred with these recommendations on October 19, 2015 under HP # 0510-027-01. See Ludwickson 2005 (attached)

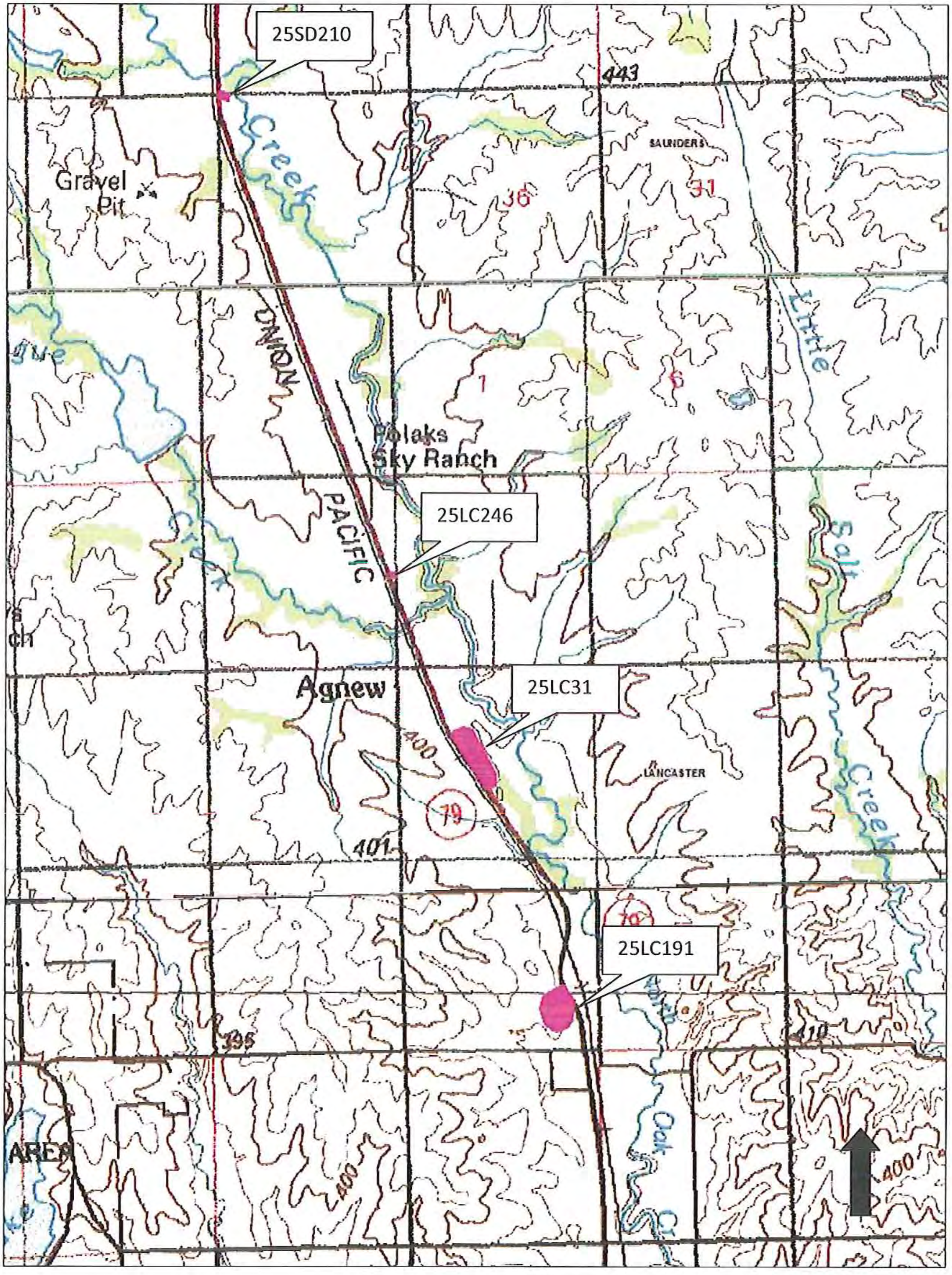
By 2013-2015, the project was determined to require an off-site mitigation tract, additional right-of-way, and construction along a proposed detour route. These changes required additional archeological survey.

In 2014, Nic Fogerty (Fogerty and Bozell 2014, attached) surveyed nine additional tracts along the project where additional right-of-way will be required. Two archeological sites (25LC246 and 25SD210) were recorded during Fogerty's investigation. Both sites are the archeological location of early-mid 20th century rural schools. Neither property carries the significance or integrity required for National Register eligibility.

Several areas along the detour route will require stream crossing modifications or road widening to accommodate increased truck traffic. These eleven tracts were surveyed in 2013 and 2014 by Nolan Johnson and Shaun Lynch although no archeological sites were discovered (Johnson and Bozell 2015, attached).

In the summer and fall of 2015, the entire proposed wetland mitigation tract was surveyed by Rob Bozell (Bozell 2015, attached). This tract is situated over 20 miles to the east of the project just outside the community of Ashland. No archeological sites were discovered.

Project survey summaries, survey maps, and site forms for the various episodes of investigation are attached to this summary.



25SD210
25LC246
25LC31
25LC191
Gravel Pit
UNION PACIFIC
Polaks Sky Ranch
Agnew
SAUNDERS
LANCASTER
Little Salt Creek
Oak Cr
Creek
443
401
395
410
400
79
36
31
1
6

Highway Archeology Program
Project Survey Summary

C. N. 10584a

Project Number: STPD - 79-2 (108) **Project Name:** Agnew North & South

County: Lancaster, Saunders **Nearest Water:** Oak Creek

Legal Description: T-13-N/R-5-E: between 26 & 27 & E-1/2 35; T-12-N/R-5-E: sec. 2, 11, SW of 12, 13, 24, between 25 (R-5-E) & 30 of T-12-N/R-6-E, and between 36 (R-5-E) & 31 of T-12-N/R-6-E (see maps)

Maps Used: Project air photos & plans , county and U.S.G.S. maps.

Project Character: Reconstuction along existing R.o.W. **Length/Area:** 8.3 miles

Date(s) of Archeological Survey: 21 Dec. 2004, 25 April, 4, 5, 18 May 2005

Name(s) of Survey Personnel: John Ludwickson

Person-Hours of Fieldwork: 8.o p.h.

Ground Cover (% - Visibility): For about 95% of the length of this project the highway is paralleled by U.P.R.R. track and the ground between is dense weeds in old side-borrow ditches which weren't surveyed. The other side (usually the east) was dominantly row-crop cultivated @ 80%+ visibility (~ 4 miles) or pasture/weedy @ 0-10% visibility

Survey Interval/Provisions: Pedestrian survey at interval of 2 to 5 meters.

Rationale for Nonsurveyed Area(s): Densely weed-grown ditches between Hiway 79 and the U.P.R.R. tracks not surveyed , one prior borrow area not surveyed.

Result of Survey:

___ **No Cultural Resources Discovered**

X **Site(s) Discovered** [Number(s) 25LC 191 (new) , 25LC31 (resurveyed)]

* **Other (explain)** Sites 25LC31 and 25LC 191 are Not eligible for the **N.R.H.P.** Both sites are light lithic scatters in plowed fields. At 25LC 191 six 30 cm square tests had negative results and revealed subsoil at base of plow-zone. The site has minimal integrity and there were no suggestions of the presence of buried features.

Project Effect on Archeological/Other Properties Potentially Eligible for the *National Register of Historic Places*:

X **None** (archeology)

___ **Other (explain)**

Are Further Cultural Resources Investigations Warranted? ___ **Yes** X **No**

Stipulations/Exceptions to Survey Results: Evaluate Buried Cultural Remains if Encountered
(Nebraska Department of Roads Standard Specifications 107.10)

Comments: Project borrow areas (if any) will require archeological evaluation.

Prepared By: John Ludwickson **Date:** 16 June, 2005

NSHS Archeology Division Form Revised January 1996

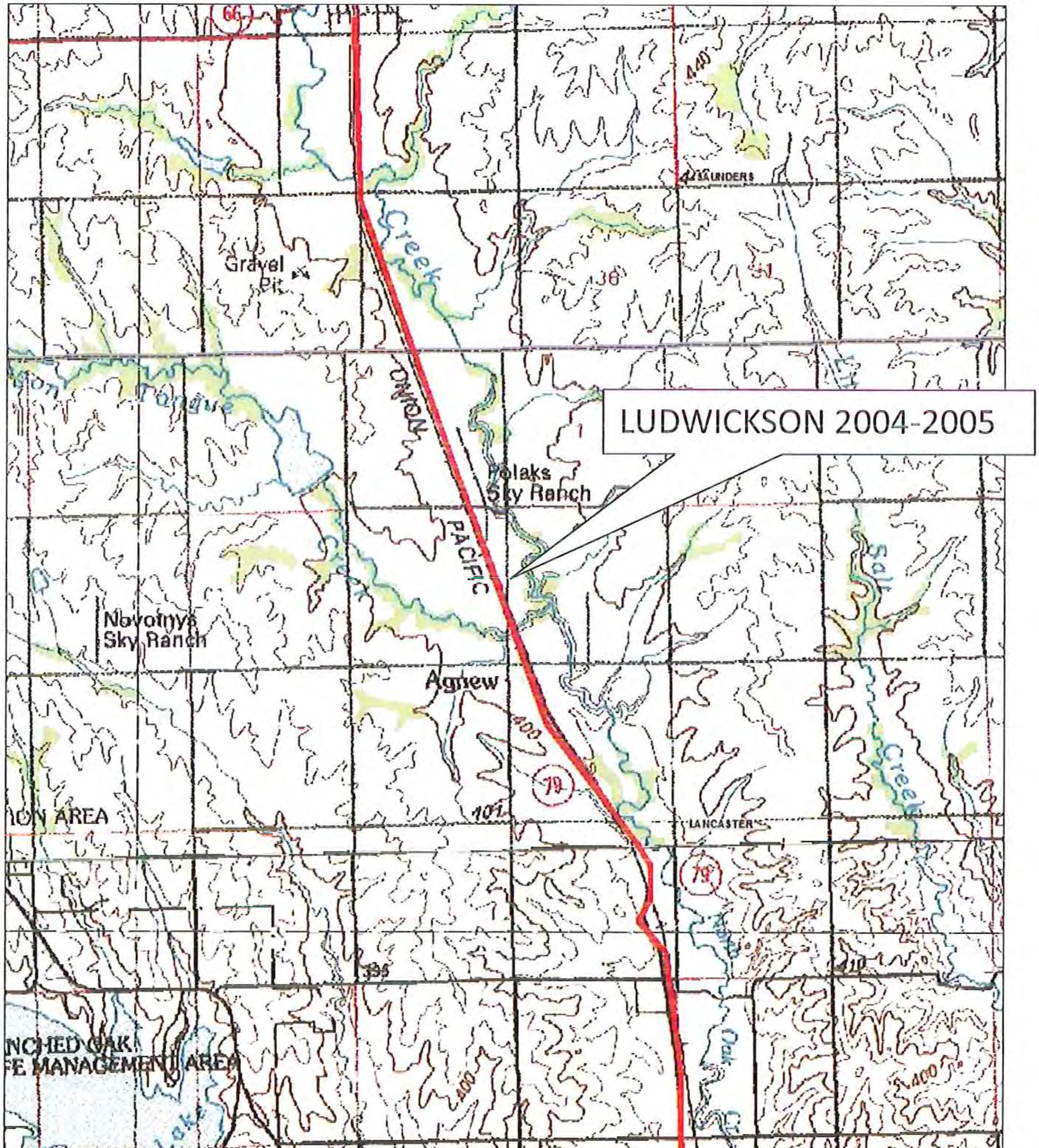
IDENTIFIED CULTURAL RESOURCES AND RECOMMENDATIONS
NDOR PROJECT STPD - 79 - 2 (108), AGNEW NORTH & SOUTH
C.N. 10584A, LANCASTER & SAUNDERS COUNTIES

John Ludwickson
5 July , 2005

One archeological site, 25LC 191 , was observed during the Agnew North and South cultural resources investigation conducted in Dec. 2004 and April and May, 2005. Site 25LC31, which existed in 1972 along the Highway 79 project R.o.W. appears to no longer possess even minimum integrity. Neither site 25LC31 nor 25LC 191 can be considered eligible for the *National Register of Historic Places* (*N.R.H.P.*). It appears that no additional cultural resources investigations are necessary, as long as no buried cultural remains are encountered before the project is finished (Nebraska Department of Roads Standard Specifications 107.10).

Site 25LC31, discovered in 1972 , was characterized by chipped stone debris observed in a field of alfalfa and otherwise cultivated. At that time no diagnostic artifacts, nor pottery , was discovered (Gayle F. Carlson site survey form, dated 4-10-1972). In the present investigation (2005), the 25LC31 location was examined under almost ideal survey conditions (near 100% visibility) and on several occasions. Over two hours devoted to attempting to re-verify this site resulted in the discovery of one flake fragment and a small amount of cracked cobble. In my opinion site 25LC31 is not eligible for the *N.R.H.P.* based on its presumed lack of potential to significantly contribute to our knowledge of the past, and apparent loss of all integrity.

Site 25LC 191 was discovered in 2005 as a result of the present investigation, and is characterized by a light distribution of chipped stone debris observed in a field of cultivation stubble. No diagnostic artifacts, and no pottery was discovered. Six small (~30cm x 30cm) shovel tests along the R.o.W. revealed that sterile yellow subsoil occurred at the base of the plow zone and that there were no preserved subsurface deposits. In my opinion site 25LC 191 is not eligible for the *N.R.H.P.* based on its presumed lack of potential to significantly contribute to our knowledge of the past, and apparent absence of subsurface archeological deposits.



LUDWICKSON 2004-2005
66
Gravel Pit
Creek
36
31
SAUNDERS
Tongue
UNION
PACIFIC
Polaks Sky Ranch
Novotnys Sky Ranch
Agnew
Creek
Salt
Creek
400
79
101
ION AREA
LANCASTER
79
395
410
NCHED OAK
FE MANAGEMENT AREA
Oak
400
Oak Lake
ched
36
31
389
372

Nebraska STATE HISTORICAL SOCIETY

Highway Archeology Program

Project Survey Summary

Control Number: 10584A

Project Number: 79-2 (108) **Project Name:** Agnew North and South (Additional ROW tracts)

County: Lancaster and Saunders **Nearest Water:** Oak Creek

Legal Description:

See Continuation Sheet

APE Description (Add Maps):

All tracts beyond original ROW that will require construction. This includes various stream channels and smaller adjacent road re-alignments (see survey maps)

Maps Used: USGS Topos and Google Earth maps

Project Character (Attach Project Description):

Resurfacing and Grading

Project Length/Area: 8.46 mi

Survey Length/Area: 33 ac

Detour? ☐ No ☐ Yes, without Constr. Activities ☒ Yes, w/ Constr. Activities

Date(s) of Archeological Survey: April 16 and May 7, 2014

Name(s) of Survey Personnel: Nicholas Fogerty

Person-Hours of Fieldwork: 12

Ground Cover (%-Visibility)

See Continuation Sheet

Survey Interval/Provisions:

20m wide transects. Area 6 was shovel tested on the two high terraces making up the majority of area 6. Ten shovel tests were conducted in a line approximately 30m apart. The shovel tests were dug to a depth of 15in, no subsurface artifacts were encountered.

Rationale for Non-surveyed Areas:

Results of Survey:

☐ **No Archeological Resources Discovered**

☒ **Site(s) Discovered** Site Numbers: 25LC246 and 25SD210

☐ **Other** (explain)

Project Effect Determination for Archeology

☐ **No Historic Properties Affected:** ☒ None Present ☐ Present but Not Affected

☐ **No Adverse Effect**

☐ **Adverse Effect**

Are Further Archeological Investigations Warranted? ☐ Yes ☒ No

Is THPO Consultation Required by FHWA? ☒ Yes ☐ No **List Tribes:** Ponca

Stipulations/Exceptions to Survey Results: Evaluate Buried Cultural Remains if Encountered (Nebraska Department of Roads Standard Specifications 107.10)

Comments:

Prepared by: Nic Fogerty and Rob Bozell **Date:** 4/21/2014

Nebraska STATE HISTORICAL SOCIETY

Highway Archeology Program

Project Survey Summary Continuation Sheet

Control Number: 10584A

Project Number: 79-2 (108)

25LC246 is the remains of a school destroyed by a flood in 1963 according to a local informant. 25LC246 does not possess the necessary integrity or research information to be recommended eligible for the National Register of Historic Places.

25SD210 (Indian Camp School) is also recommended not eligible for the National Register of Historic Places for lack of integrity and research potential. All that remains of the school is a pump, according to the land owner the school was sold and is now a garage or out building in Valparaiso.

In both cases, sufficient archival information on early 20th century rural schools in eastern Nebraska exists to the extent that archeological data would not provide useful additional information.

Nebraska STATE HISTORICAL SOCIETY

Highway Archeology Program

Project Survey Summary Continuation Sheet

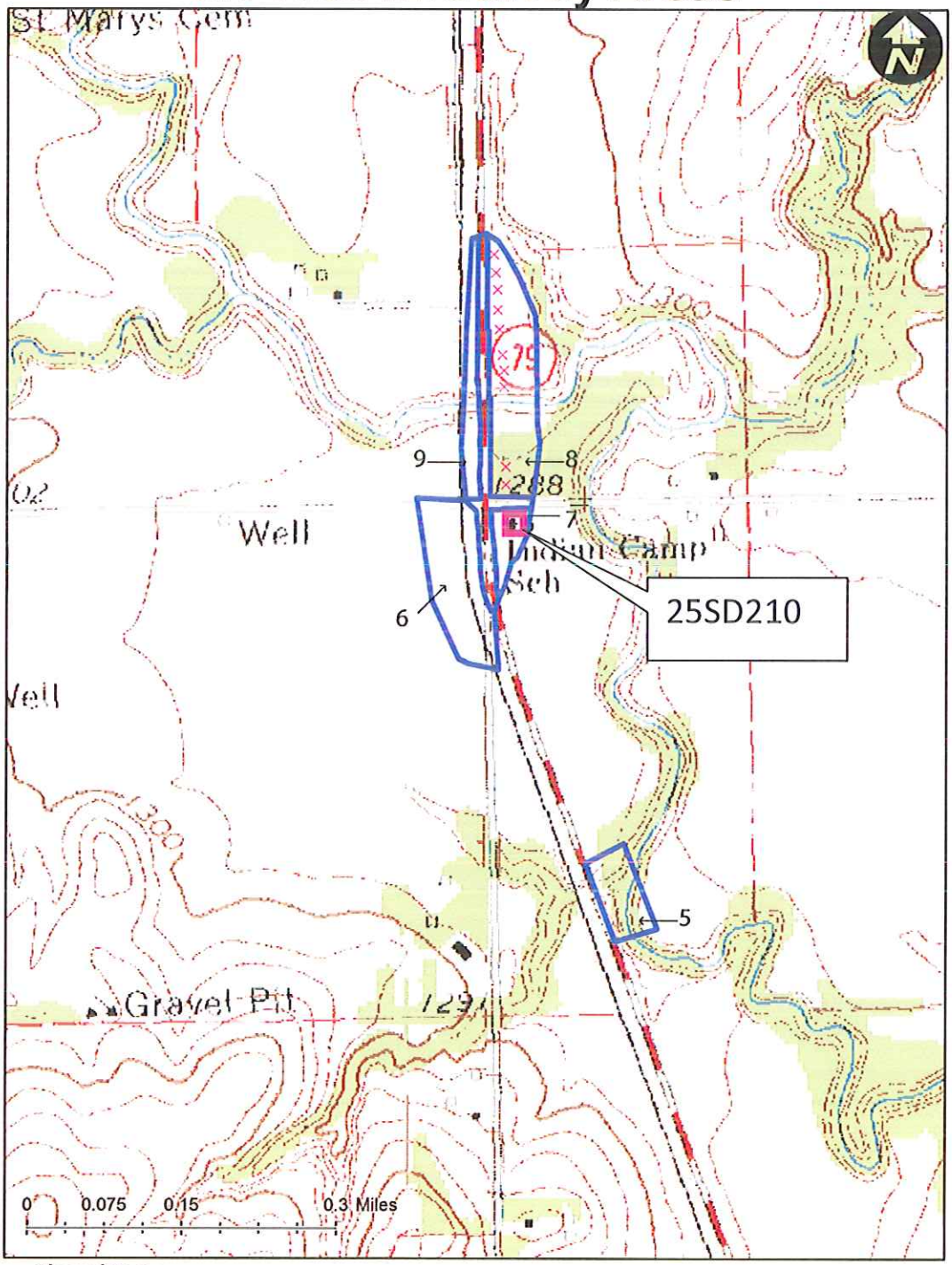
CN: 10584A

Project Number: STP-79-2(108)

Survey Area	Location	Nearest Water	Legal Description	Ground Cover/ Visibility
1	See Attached Maps	Oak Creek	SE ¼ of SW ¼ of SE ¼ of Sec. 13 and NE ¼ of NW ¼ of NE ¼ of Sec. 24	R.O.W., grass no visibility
2	See Attached Maps	Oak Creek	SE ¼ of SW ¼ of SE ¼ of Sec. 13 and NE ¼ of NW ¼ of NE ¼ of Sec. 24	Field, bean and corn stubble, 70-90% visibility
3	See Attached Maps	Oak Creek	SE ¼ of SW ¼ of SE ¼ of Sec. 13 and NE ¼ of NW ¼ of NE ¼ of Sec. 24	Field, bean and corn stubble, 70-90% visibility
4 (includes 25LC246)	See Attached Maps	Oak Creek	W ½ of SW ¼ of Sec. 12 and SE ¼ of SE ¼ of SE ¼ of NE ¼ of Sec. 11	Field, bean and corn stubble, 70-90% visibility
5	See Attached Maps	Oak Creek	SE ¼ of SW ¼ of NW ¼ of Sec. 35	Heavily wooded, no visibility
6	See Attached Maps	Oak Creek	NE ¼ of NE ¼ of NE ¼ of Sec. 34	Winter wheat, 70-90% visibility

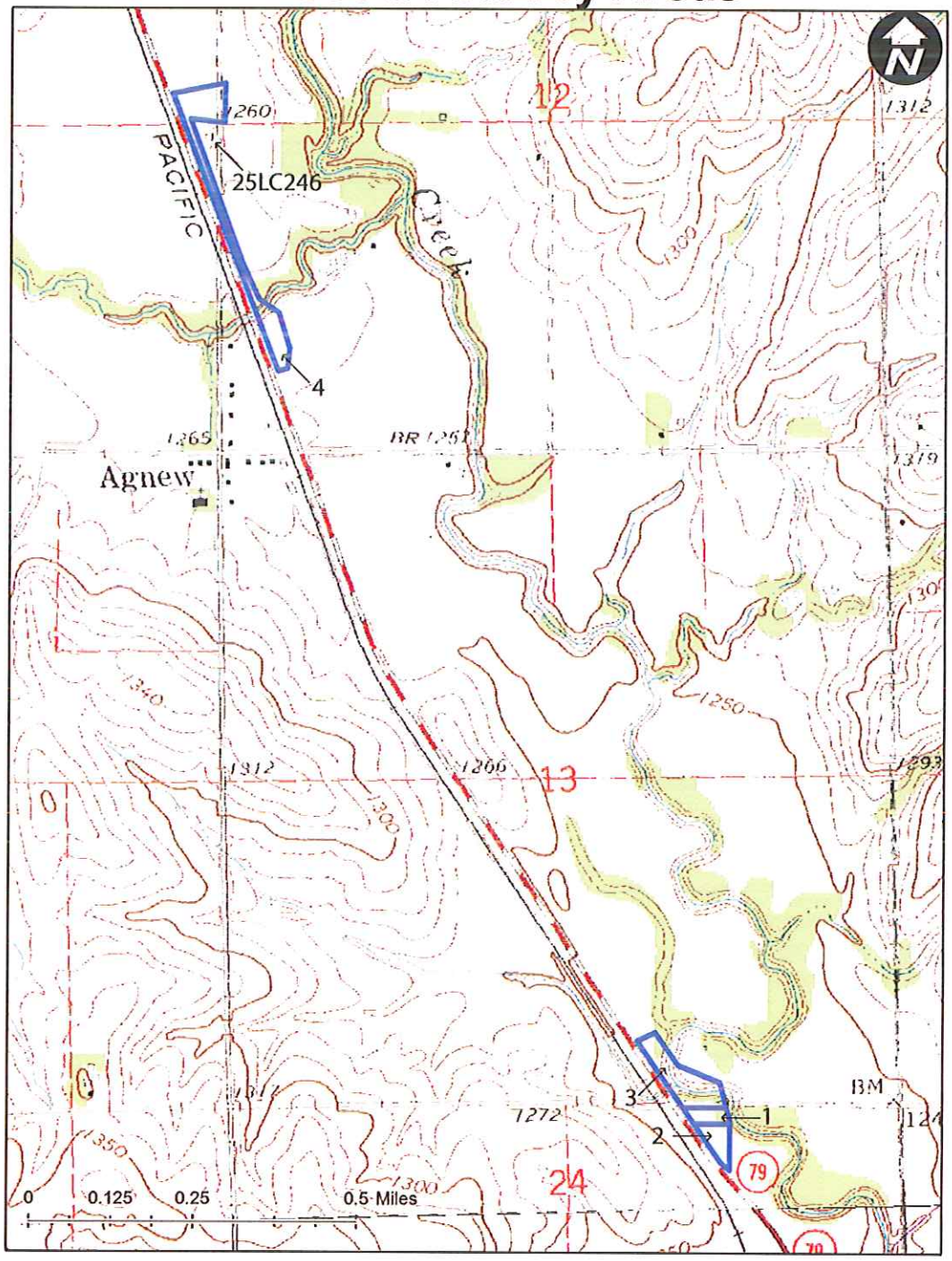
Survey Area	Location	Nearest Water	Legal Description	Ground Cover/ Visibility
7 (includes 25SD210)	See Attached Maps	Oak Creek	NW ¼ of NW ¼ of NW ¼ of Sec. 35	Unplanted field, 90% visibility
8	See Attached Maps	Oak Creek	W ½ of SW ¼ of Sec. 26	Pasture, 30% visibility
9	See Attached Maps	Oak Creek	E ½ of SE ¼ of Sec. 27	Field, bean and corn stubble, 70-90% visibility

CN 10584A Survey Areas



× Shovel Tests

CN 10584A Survey Areas



Nebraska STATE HISTORICAL SOCIETY

Highway Archeology Program

Project Survey Summary

Control Number: 10584A

Project Number: 79-2(108) **Project Name:** Agnew North and South (Detour Route)

County: Lancaster and Seward **Nearest Water:** See Continuation Sheet

Legal Description:

See Continuation Sheet

APE Description (Add Maps):

The APE for the detour route includes five general areas where construction may be needed to allow for detour traffic (see maps) . The detour is about 19 miles long but the tracts requiring construction include about 100 ac

Maps Used: USGS Topo Maps and Google Earth Maps

Project Character (Attach Project Description):

Grading and road widening to allow for increased traffic.

Project Length/Area: 19 mi

Survey Length/Area: 45 ac

Detour? ☐ No ☐ Yes, without Constr. Activities ☒ Yes, w/ Constr. Activities

Date(s) of Archeological Survey:

Name(s) of Survey Personnel: Nolan Johnson and Shaun Lynch

Person-Hours of Fieldwork: 9

Ground Cover (%-Visibility)

See Continuation Sheet

Survey Interval/Provisions:

10 m linear or zig-zag transects

Rationale for Non-surveyed Areas:

Areas of construction with very low potential for site locations (wetland, prior disturbance etc.)

Results of Survey:

- ☐ **No Archeological Resources Discovered**
- ☒ **Site(s) Discovered** Site Numbers: 25SD210
- ☐ **Other** (explain)

Project Effect Determination for Archeology

- ☐ **No Historic Properties Affected:** ☒ None Present ☐ Present but Not Affected
- ☐ **No Adverse Effect**
- ☐ **Adverse Effect**

Are Further Archeological Investigations Warranted? ☐ Yes ☒ No

Is THPO Consultation Required by FHWA? ☒ Yes ☐ No **List Tribes:** Ponca

Stipulations/Exceptions to Survey Results: Evaluate Buried Cultural Remains if Encountered (Nebraska Department of Roads Standard Specifications 107.10)

Comments:

Prepared by: Nolan Johnson and Rob Bozell **Date:** May 13, 2013 & Nov 3, 2015

Nebraska STATE HISTORICAL SOCIETY

Highway Archeology Program

Project Survey Summary Continuation Sheet

Control Number: 10584A

Project Number: 79-2 (108) Detour Route

25SD210: This site is the remains of the Indian Camp School # 93 and is expressed by a land water pump in an otherwise cultivated field. A sparse scatter of glass, ceramics, and brick was also noted nearby. The school district was formed in 1875 and the school originally in another section but moved to this location sometime before 1907. The school was closed in 1969.
The school site dates from a period where written records provide a detailed description of education in eastern Nebraska. The site does not have the potential to add significant information to our understanding of rural education and therefore is not eligible for the NRHP.

Nebraska STATE HISTORICAL SOCIETY

Highway Archeology Program

Project Survey Summary Continuation Sheet

CN: 10584A

Project Number: STP-79-2(108)

Survey Area	Location	Nearest Water	Legal Description	Ground Cover/ Visibility
1	See Attached Maps	North Oak Creek	N ½ N ½ NW ¼ NW ¼ of Sec. 6 T11N R6E, S ½ S ½ SW ¼ SW ¼ of Sec. 31 T12N R6E	Corn stubble 10-25%
2	See Attached Maps	Unnamed Tributary of Little Salt Creek	SE ¼ SE ¼ SE ¼ of Sec. 35 T12N R6E	Corn stubble 10-25%
3	See Attached Maps	Unnamed Tributary of Ash Hollow Creek	SE ¼ SE ¼ SE ¼ NE ¼ of Sec. 2 T12N R6E	Corn stubble 10%
4	See Attached Maps	Unnamed Tributary of Ash Hollow Creek	W ½ NW ¼ NW ¼ of Sec. 1 T12N R6E	Corn stubble 25-50%
5	See Attached Maps	Unnamed Tributary of Ash Hollow Creek	E ½ E ½ NE ¼ NE ¼ of Sec. 2 T12N R6E	Corn stubble 25-50%
6	See Attached Maps	Unnamed Tributary of Ash Hollow Creek	SE ¼ SE ¼ SE ¼ of Sec. 35 T13N R6E	Corn stubble 25-50%

Survey Area	Location	Nearest Water	Legal Description	Ground Cover/ Visibility
7	See Attached Maps	Unnamed Tributary of Ash Hollow Creek	SE ¼ SE ¼ SE ¼ of Sec. 35 T13N R6E, N ½ NW ¼ NW ¼ NW ¼ of Sec. 1 T12 R6E	Old borrow area 50%
8	See Attached Maps	Little Rock Creek	W ½ W ½ NW ¼ NW ¼ of Sec. 36 T13N R6E, E ½ NE ¼ NE ¼ of Sec. 35 T13N R6E	Corn stubble 75%
9	See Attached Maps	Little Rock Creek	N ½ NE ¼ NE ¼ NW ¼ of Sec. 35 T13N R6E, SE ¼ SE ¼ SE ¼ SW ¼ & SW ¼ SW ¼ SW ¼ SE ¼ of Sec. 26 T13N R6E	W of bridge corn stubble 25%, creek banks grass 0%, E of bridge bean stubble 25%
10	See Attached Maps	North Oak Creek	N ½ N ½ NW ¼ NW ¼ of Sec. 35 T13N R5E	Tilled fields 100%, vegetated stream bed 10%
11	See Attached Maps	North Oak Creek	SW ¼ SW ¼ of Sec. 26 T13N R5E	Pasture 25%

Nebraska STATE HISTORICAL SOCIETY

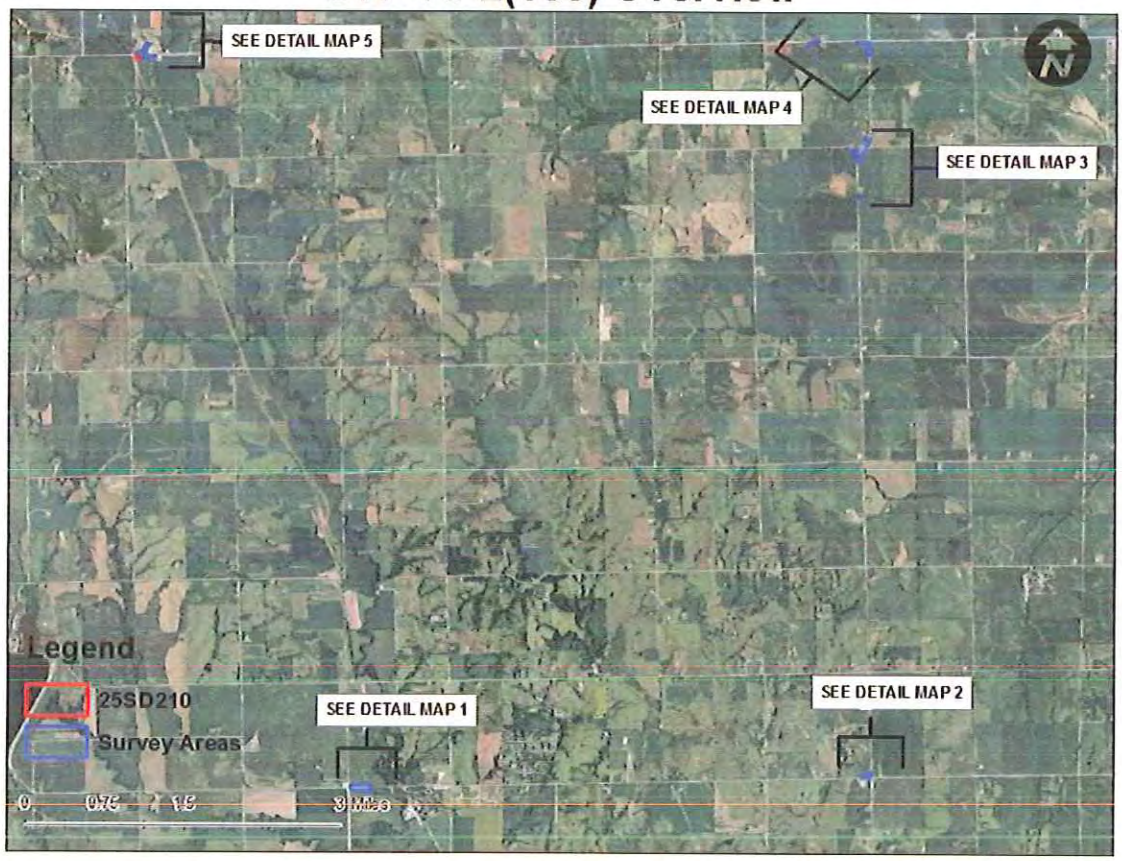
Highway Archeology Program

Project Survey Summary Map/Image Sheet

Control Number: 10584A

Project Number: STP-79-2(108)

STP-79-2(108) Overview



Nebraska STATE HISTORICAL SOCIETY

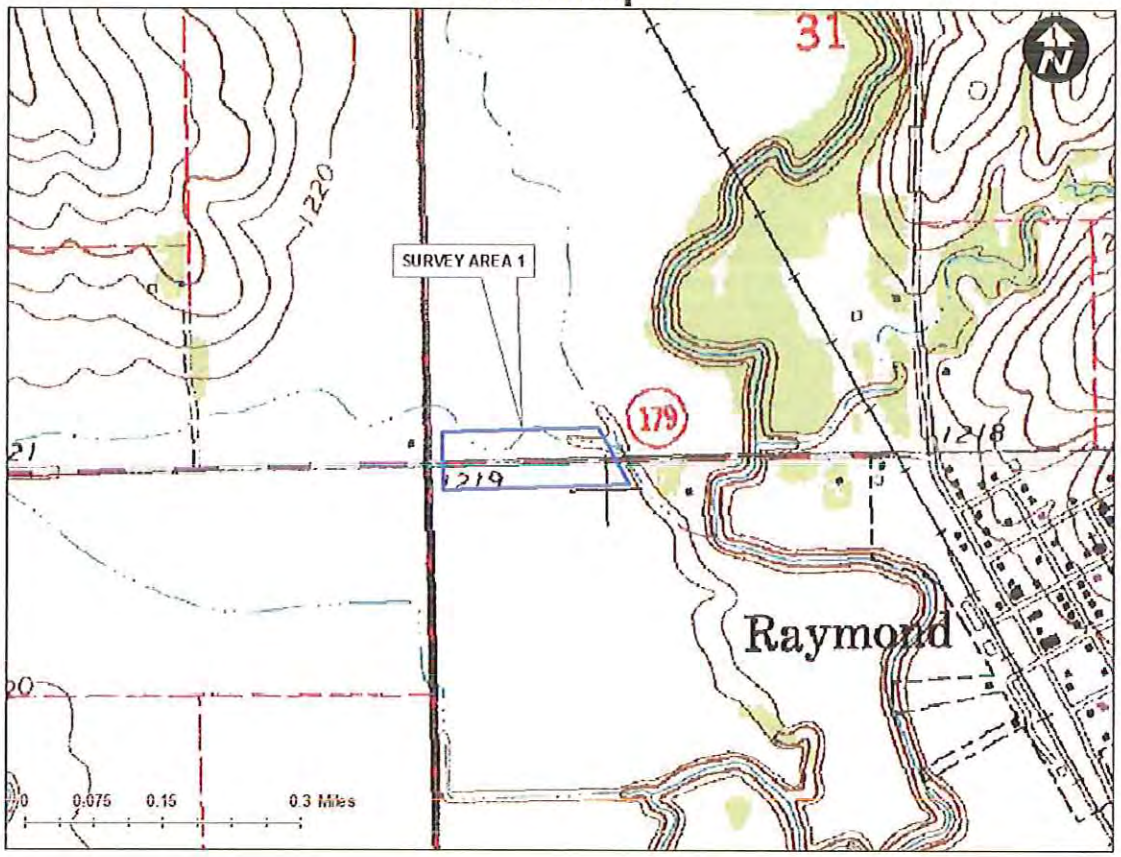
Highway Archeology Program

Project Survey Summary Map/Image Sheet

Control Number: 10584A

Project Number: STP-79-2(108)

Detail Map 1



Nebraska STATE HISTORICAL SOCIETY

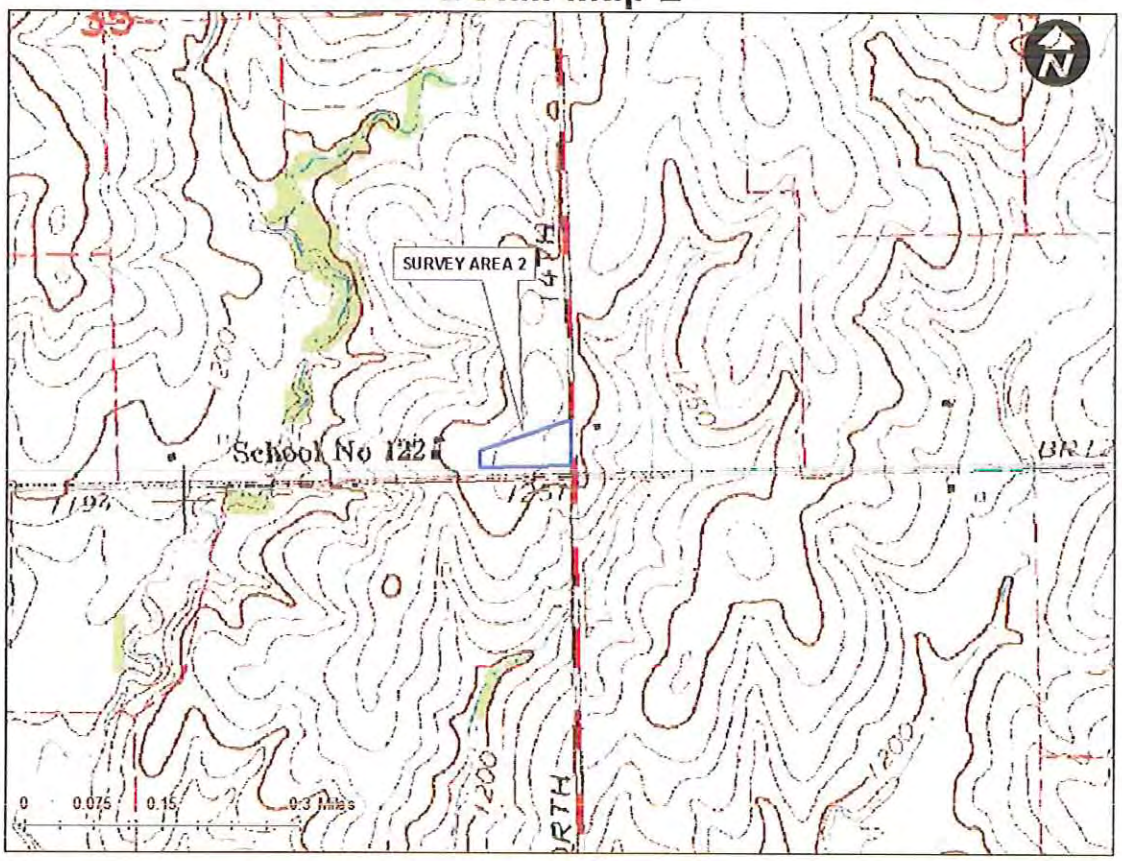
Highway Archeology Program

Project Survey Summary Map/Image Sheet

Control Number: 10584A

Project Number: STP-79-2(108)

Detail Map 2



Nebraska STATE HISTORICAL SOCIETY

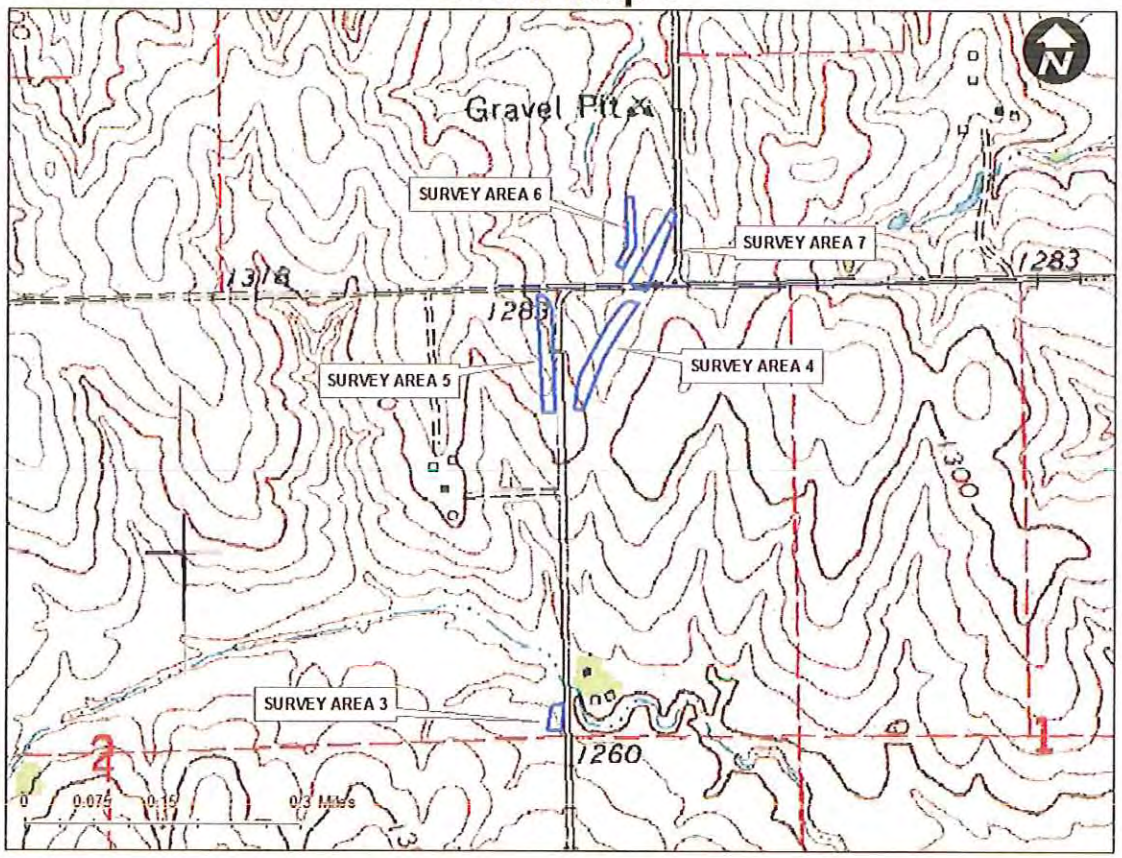
Highway Archeology Program

Project Survey Summary Map/Image Sheet

Control Number: 10584A

Project Number: STP-79-2(108)

Detail Map 3



Nebraska STATE HISTORICAL SOCIETY

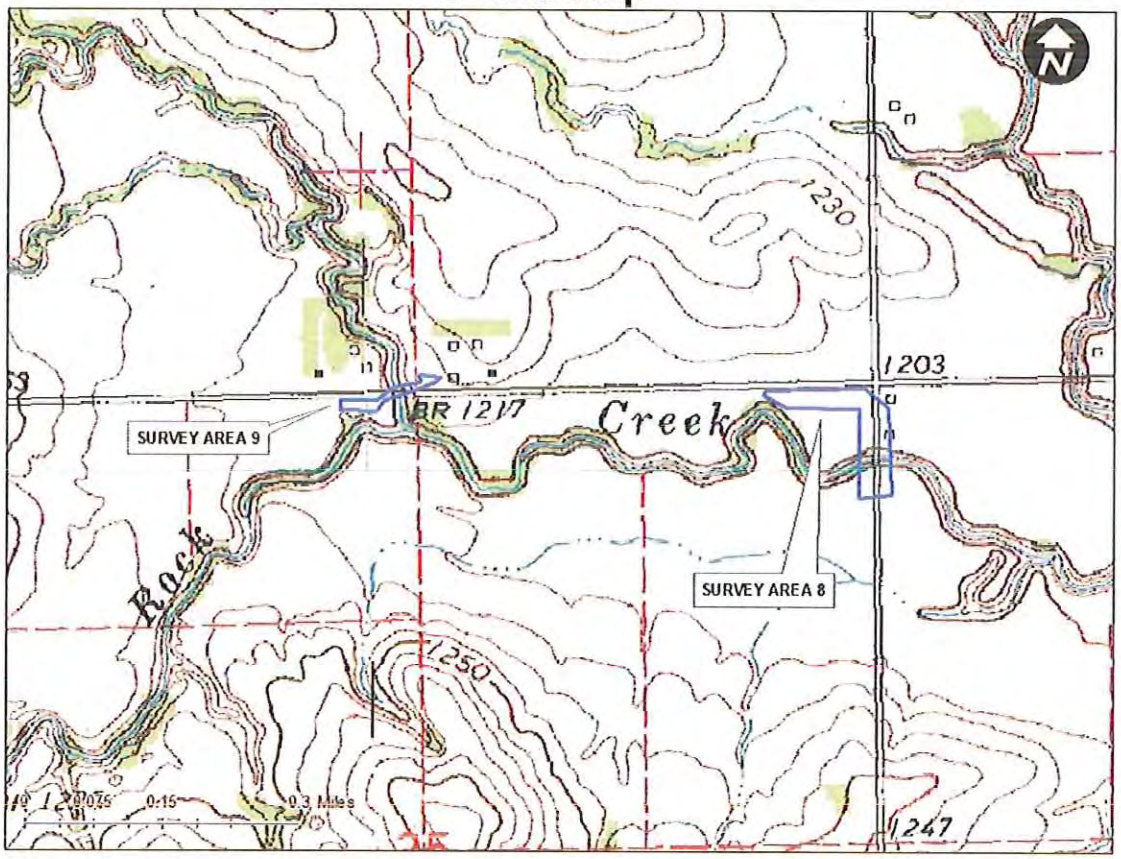
Highway Archeology Program

Project Survey Summary Map/Image Sheet

Control Number: 10584A

Project Number: STP-79-2(108)

Detail Map 4



Nebraska STATE HISTORICAL SOCIETY

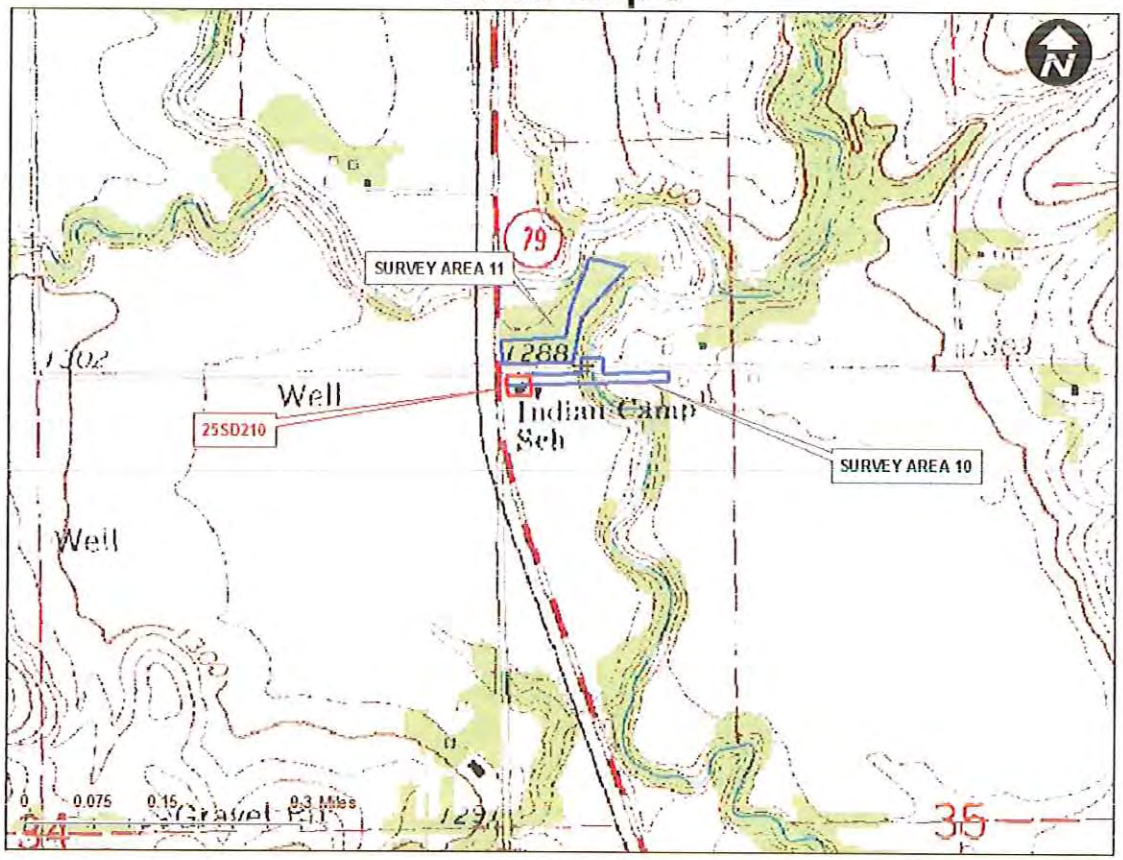
Highway Archeology Program

Project Survey Summary Map/Image Sheet

Control Number: 10584A

Project Number: STP-79-2(108)

Detail Map 5



Nebraska STATE HISTORICAL SOCIETY

Highway Archeology Program

Project Survey Summary

Control Number: 10584A

Project Number: 79-2 (108) **Project Name:** Agnew North and South (Wetland Mitigation Site)

County: Saunders **Nearest Water:** Unnamed Salt Creek Trib.

Legal Description:

NW of Section 4; T12N R9E

APE Description (Add Maps):

The entire proposed wetland mitigation tract

Maps Used: USGS Topo map (Ashland West) and Google Earth air photos

Project Character (Attach Project Description):

Wetland mitigation that will probably involve grading etc. (email from NDOR JUne 22, 2015)

Project Length/Area: 60 AC

Survey Length/Area: 60 AC

Detour? [X] No [ ] Yes, without Constr. Activities [ ] Yes, w/ Constr. Activities

Date(s) of Archeological Survey: 9-22-2015

Name(s) of Survey Personnel: Rob Bozell **Person-Hours of Fieldwork:** 3

Ground Cover (%-Visibility)

Pasture (10-20%) with some crop stubble on east and southeast portions of the tract (50%)

Survey Interval/Provisions:

10-30 m linear or zig-zag transects

Rationale for Non-surveyed Areas:

All areas surveyed.

Results of Survey:

- [X] **No Archeological Resources Discovered**
- [ ] **Site(s) Discovered** Site Numbers:
- [ ] **Other** (explain)

Project Effect Determination for Archeology

- [X] **No Historic Properties Affected:** [X] None Present [ ] Present but Not Affected
- [ ] **No Adverse Effect**
- [ ] **Adverse Effect**

Are Further Archeological Investigations Warranted? [ ] Yes [X] No

Is THPO Consultation Required by FHWA? [X] Yes [ ] No **List Tribes:** Ponca

Stipulations/Exceptions to Survey Results: Evaluate Buried Cultural Remains if Encountered (Nebraska Department of Roads Standard Specifications 107.10)

Comments:

Prepared by: Rob Bozell **Date:** Nov. 3, 2015

Nebraska STATE HISTORICAL SOCIETY

Highway Archeology Program

Project Survey Summary Continuation Sheet

Control Number: 10584A

Project Number: 79-2 (108)

NONE

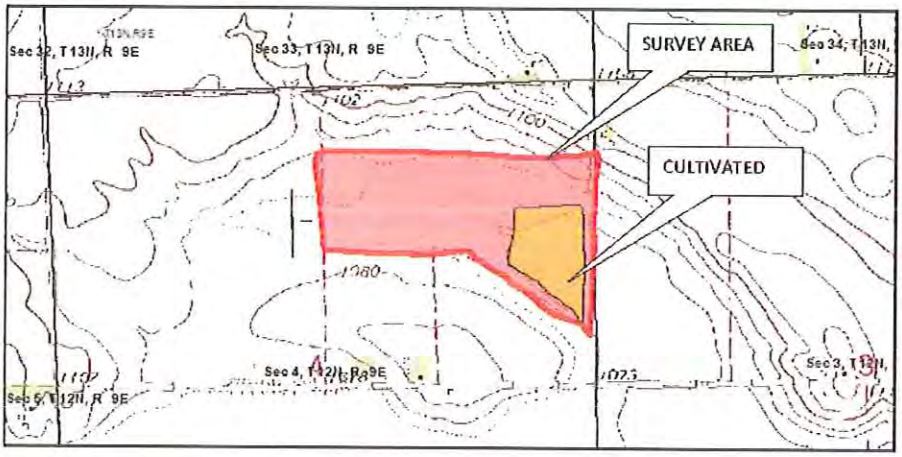
Nebraska STATE HISTORICAL SOCIETY

Highway Archeology Program

Project Survey Summary Map/Image Sheet

Control Number: 10584a

Project Number: 79-2(108) Wetland Mitigation



NEBRASKA STATE HISTORICAL SOCIETY

SITE SURVEY FORM

Project _____ Site No. 25LC31

State NEBRASKA County LANCASTER

1. Map reference USGS (VALPARAISO QUAD) 2. Type of Site CAMP (?)

3. Cultural affiliation UNKNOWN

4. Location ABOUT A HALF MILE SE OF AGNEW ON THE E. SIDE OF HWY 79, NE¼ SW¼ AND SE¼ NW¼ Sec. 13 T. 12N R. 5E

5. Owner & Address _____

6. Previous owners _____

7. Tenant _____

8. Informants _____

9. Previous designations for site NONE

10. Site description SPUR OR EXTENSION OF WEST EDGE OF OAK CREEK VALLEY.

11. Position of site and surroundings OAK CREEK ABOUT 800 FT. TO EAST, FLOODPLAIN TO N. AND S., ROLLING COUNTRY TO WEST.

12. Area of occupation PROBABLY CA. 800-1000 FT. NW-SE X 200-300 FT. NE-SW

13. Depth and character of fill UNKNOWN.

14. Present conditions PARTLY UNDER CULTIVATION (S. OF FENCE), PARTLY IN ALFALFA (N. OF FENCE)

15. Previous excavations NONE (EXCEPT TERRACING ON PART OF SITE)

16. Material collected FLAKING DEBITAGE, NO DIAGNOSTIC ARTIFACTS, NO POTTERY FOUND.

17. Material observed _____

18. Material reported and owner _____

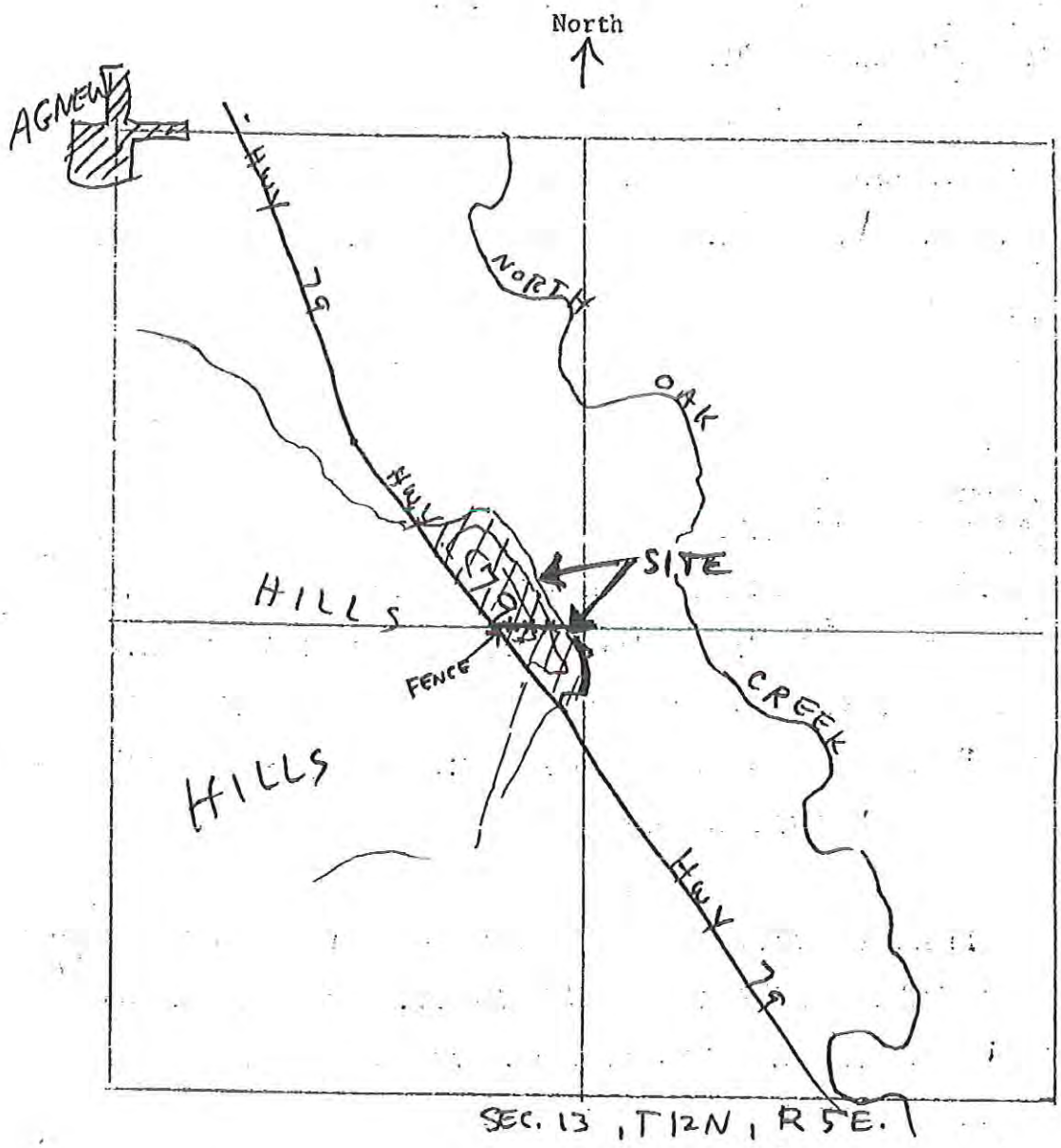
19. Recommendations for further work A BETTER COLLECTION MIGHT BE MADE AFTER ALFALFA IS PLOWED UP

20. Photograph numbers _____

21. Maps of site _____

Recorded by Gayle F. Carlson Date 4-10-72

Site No. 25LC31 Mapped by _____ Date _____



SKETCHED FROM USGS MAP (VALPARAISO)

Scale ENTIRE SQUARE = 1 SECTION
When entire square represents a section, 1" = 1000'

22. Approach to site:

23. Remarks: SEE HIGHWAY SALVAGE REPORT NUMBER 2, 1972 FOR MORE DETAILS.

Site number 25 LC 191

Non-Archival

Nebraska State Historical Society
Archeological Site Survey Form

1. Site Number: 25 LC 191 2. Site Name:

3. Project: STPD-79-2(108) Agnew N & S 4. Survey Agency/Co.: N. S. H. S.

5. Field Number: 6. Sponsor/Contract Agency: Dept. of Roads

7. County: Lancaster 8. Drainage (NSHS only):

9. U.S.G.S. Quad. Map: Raymond, NE (1964) NAD: ___ 1927 ___ 1983

10. X New Site ___ Previously Known Site (form is an update)

11. Legal Description:

QUARTER/HALF SECTIONS				SECTION	TOWNSHIP	RANGE
	NW ¼	SE ¼	SE ¼	24	12 - N	5 - E
	SW ¼	NE ¼	SE ¼	24	12 - N	5 - E

___ See Comments/Continuation Sheet

12. Site Size (m^2): ~ 2500 13. Elevation (ft): Min. 1250' Max. 1270'

14. Descriptive Site Type:

- X Surface
- ___ Buried Features/Cultural Layer(s)
- ___ Cave/Rock shelter
- ___ Unknown
- ___ Other ___

15. Functional Site Type:

- ___ Burial(s)
- ___ Ceremonial/Religious
- ___ Extraction/Processing
- ___ Habitation
- ___ Unknown
- ___ Other ___

16. Cultural Context:

- ___ Paleoindian
- ___ Archaic
- ___ Woodland
- ___ Central Plains
- ___ Coalescent
- ___ Oneota
- ___ Western Nebraska Protohistoric
- ___ Caddoan Villagers
- ___ Sedentary Siouan Villagers
- ___ Equestrian Nomads
- ___ Reservation Native American
- ___ Non-Specific Ceramic
- ___ Non-specific Late Prehist./Protohistoric
- X Unknown Prehistoric
- ___ Euro-American
- ___ Other Ethnic Historic
- ___ Unknown Historic
- ___ Unknown

17. Specific Cultural Affiliation (phase, context, etc.) ___

18. Features:

	TYPE	NO.		TYPE	NO.
____	Mounds	_____	____	Rock Outline/Concentrations	_____
____	Depressions	_____	____	Historic Standing/Collapsed Buildings, Structures or Objects	_____
____	Stains	_____	____	Historic Foundations	_____
____	Petroglyphs	_____	____	Middens/Trash Deposits	_____
____	Petrographs	_____	____	Other (_____)	_____

19. Artifactual Material:

	OBSERVED/NOT COLLECTED	COLLECTED	
	0	_____	Chipped Stone Tools
+	5	_____	Chipped Stone Debris
	0	_____	Ground Stone
	0	_____	Natural Stone Tools
+	+	_____	Fire-cracked Rock
	0	_____	Other Lithic Debris
	0	_____	Rim Sherds
	0	_____	Body Sherds
	0	_____	Worked Bone
	0	_____	Worked Shell
	0	_____	Historic Artifacts
	0	_____	Faunal Remains
	0	_____	Floral Remains
	0	_____	Human Bone
	0	_____	Burned Earth
	0	_____	Daub
	0	_____	Isolated Item _____
	_____	_____	Other _____

20. Site Work Status (check all work done):

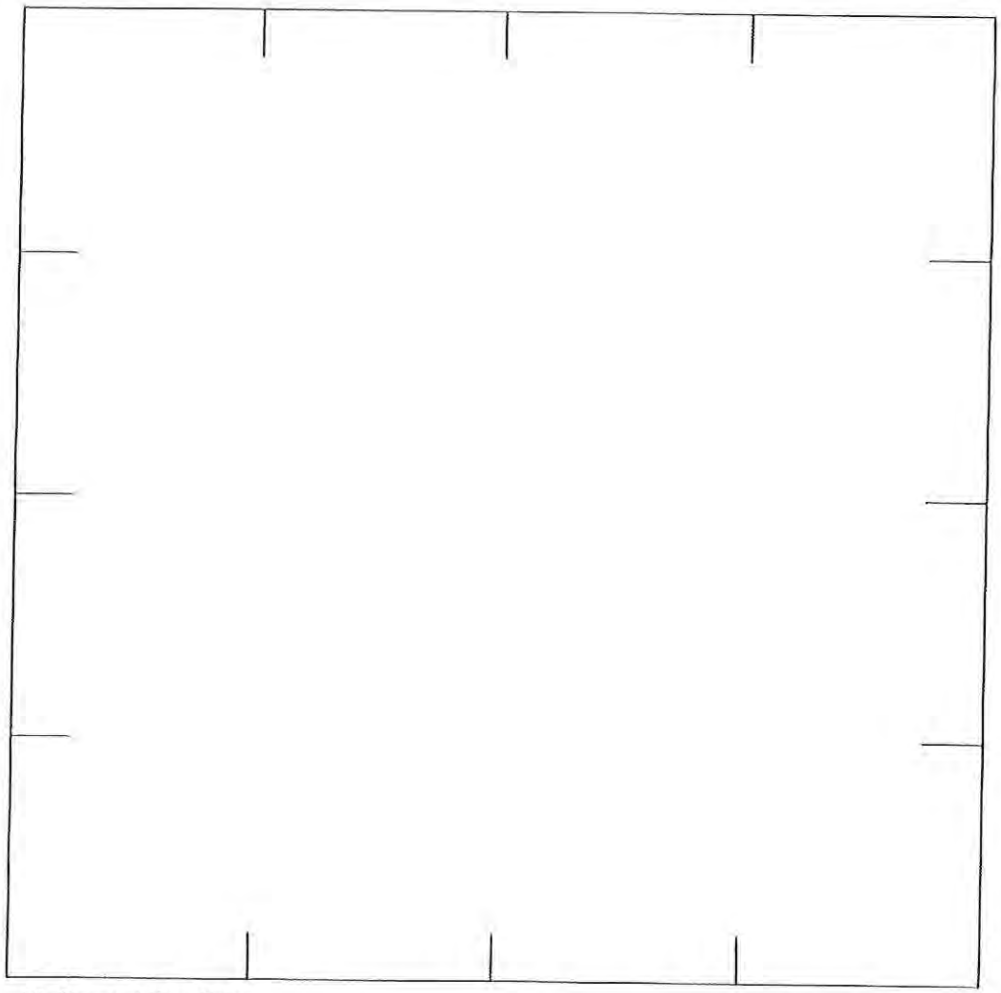
____	Reported	____	Soil Cored/Probed
X	Surveyed	X	Tested (pits/posthole/backhoe)
____	Photographed	____	Remote Sensing _____
____	Sketch Mapped	____	Excavated Partially
____	Instrument Mapped	____	Excavated Completely
____	Mapped with GPS	____	Surface Collected (uncontrolled)
	GPS make/ model _____	____	Surface Collected (controlled)
	Differentially Corrected? ____Y ____N	____	Other

21. ATTACH TO THIS SURVEY A XEROX COPY OF THE U.S.G.S. OR APPROPRIATE MAP SHOWING SITE LOCATION. IF NO APPROPRIATE SCALE MAP IS AVAILABLE, PLEASE PROVIDE A SKETCH MAP.

22. Sketch Map (optional):

Site No. _____ Mapped by _____

Scale _____ Date _____



23. Present Condition:

___ Undisturbed X Disturbed ___ Destroyed

24. Site Impacts:

Fill in the appropriate number(s): 1 = past, 2 = current, 3 = anticipated

___	Water Erosion	___	Recreation
___	Wind Erosion	1 , 3	Construction
___	Animal Activity	1,2,3	Agriculture
___	Vandalism	___	Other ___

25. National Register Status (SHPO only):

___ On Register
___ Eligible
___ Not Eligible

26. Investigators Impression of National Register:

___ Potentially Eligible
X Not Eligible
___ Unevaluated/Unknown

27. Informant: _____
Address: _____

28. Owner of Site:

X Private (Name/Address, if known) _____

___ State (Agency) _____

___ Federal (Agency) _____

___ Other _____

29. Primary Information Location:

NSHS	UNL Museum	UNL Anthro. Dept	Other	
X	___	___	_____	Written Records
___	___	___	_____	Map/Chart Records
___	___	___	_____	Photo Records
___	___	___	_____	Collections

30. Report References:

31. Comments:

Site 25LC 191 is situated on a remnant hill top which has been about half removed during previous construction of hiway N-79. The remnant has also been heavily plowed and eroded. A light scatter of 5-6 gray (Permian or Pennsylvanian) chert debris fragments and a few fragments of broken Sioux quartzite and other till cobbles was found over a 60 meter (~N-S) by 40 meter (~E-W) area. Six 30cm square shovel tests were sterile, with the sub-soil appearing at the bottom of the plow-zone, so the site has been plowed away.

___ See Comments/Continuation Sheet for Additional Comments

32. Survey Conducted By:

John Ludwickson

(Name)

21 Dec. 2004, 25 April, 4, 5, 18 May 2005

(Date)

33. Form Filled Out By:

John Ludwickson

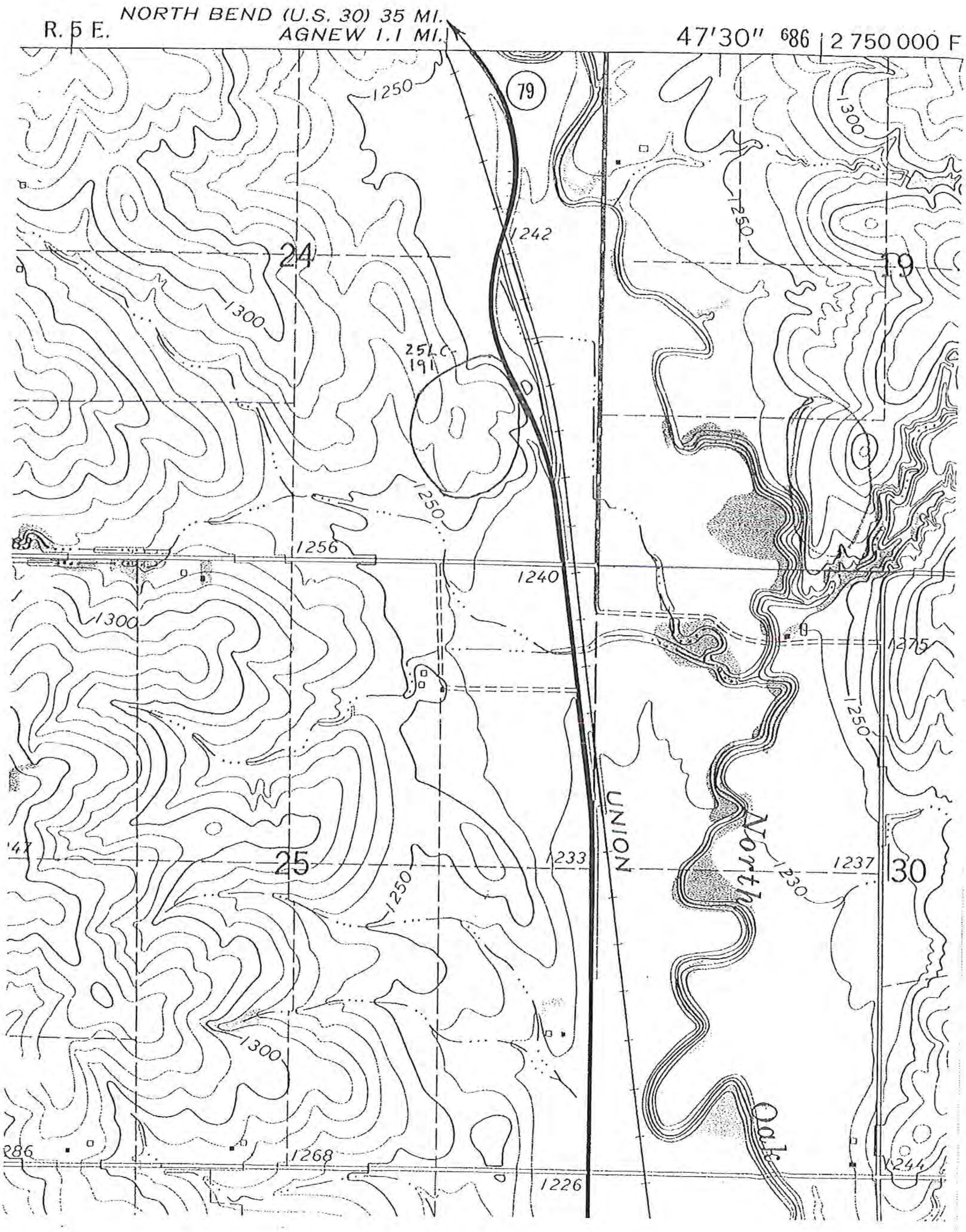
(Name)

16 June 2005

(Date)

Send Completed Forms To: Nebraska State Historical Society
Archeology Division
P. O. Box 82554
Lincoln, Nebraska 68501-2554

NSHS Archeology Division Form Revised March 2002


R. 5 E.
NORTH BEND (U.S. 30) 35 MI.
AGNEW 1.1 MI.
47'30"
686
2 750 000 F
79
1250
1300
1242
24
19
25LC-191
1250
1256
1240
1300
1275
1250
UNION
North
1233
25
1250
1230
1237
30
1300
Oak
286
1268
1226
1244

Nebraska State Historical Society

Archeological Site Survey Form

1. Site Number: 25LC246 **2. Site Name:**

3. Project:

4. Survey Agency/Co.: NSHS **5. Field Number:**

6. Sponsor/Contract Agency: **7. County:** Lancaster

8. (•) **New Site** ( ) **Previously Known Site**

9. USGS Quad. Map: Valparaiso **NAD:** (•) **1927** ( ) **1983**

10. Legal Description:

QUARTER/HALF SECTIONS	SECTION	TOWNSHIP	RANGE
NE 1/4 of NE 1/4 of SE 1/4	11	12N	5E

[ ] See Comments/Continuation Sheet for more legal description.

11. Site Size (m^2): ~50 m^2 **12. Min. Elevation (ft.):** 1250' **13. Max. Elevation (ft.):** 1250'

14. Descriptive Site Type:

- [X] Surface
- [ ] Buried Features/Cultural Layers
- [ ] Cave/Rock Shelter
- [ ] Unknown
- [ ] Other

15. Functional Site Type:

- [ ] Burial(s)
- [ ] Habitation
- [ ] Transport
- [ ] Unknown
- [X] Other School
- [ ] Ceremonial/Religious
- [ ] Extraction/Processing
- [ ] Defensive

16. Cultural Context. Choose general context(s) and specific affiliation(s) from pull-down menus; if more than one selection is needed from a pull-down menu, type additional specific cultural affiliations in the space provided below.

- [ ] Paleoindian
- [ ] Archaic
- [ ] Woodland
- [ ] Central Plains
- [ ] Coalescent
- [ ] Oneota
- [ ] Western NE Protohistoric
- [ ] Caddoan Villagers
- [ ] Sedentary Siouan Villagers
- [ ] Equestrian Nomads
- [ ] Reservation Native American
- [X] Euro-American EA-REL = Religious/Ceremonial
- [ ] Non-specific Ceramic
- [ ] Non-specific Late Prehist./Protohistoric
- [ ] Unknown Prehistoric
- [ ] Other Ethnic Historic
- [ ] Unknown Historic
- [ ] Unknown

additional cultural affiliation(s):

17. Features:

	No.		No.
[ ] Mounds		[ ] Rock Outlines/Concentrations	
[ ] Depressions		[X] Historic Standing/Collapsed Buildings, Structures or Objects	1
[ ] Stains		[ ] Historic Foundations	
[ ] Petroglyphs		[ ] Transport	
[ ] Petrographs		[ ] Unknown	
[ ] Middens		[ ] Other	

Site Number: 25LC246

18. Artifacts:

Observed	Collected*		Observed	Collected*	
☐	☐	Chipped Stone Tools	☐	☐	Worked Shell
☐	☐	Chipped Stone Debris	☐	☐	Historic Artifacts
☐	☐	Ground Stone	☐	☐	Faunal Remains
☐	☐	Natural Stone Tools	☐	☐	Floral Remains
☐	☐	Fire-Cracked Rock	☐	☐	Human Bone
☐	☐	Other Lithic Debris	☐	☐	Burned Earth
☐	☐	Rim Sherds	☐	☐	Daub
☐	☐	Body Sherds	☐	☐	Other _____
☐	☐	Worked Bone	☐	☐	Isolated Item _____

* The NSHS does not automatically curate artifacts collected in Nebraska.

19. Site Work Status (check all that apply):

- ☒ Reported
- ☐ Surveyed
- ☒ Photographed
- ☐ Sketch Mapped
- ☐ Instrument Mapped
- ☐ Mapped with GPS
  - Make/Model _____
  - Differentially Corrected? ◯ yes ◯ no
- ☐ Soil Cored/Probed
- ☐ Tested (pits/posthole/backhoe)
- ☐ Remote Sensing _____
- ☐ Excavated Partially
- ☐ Excavated Completely
- ☐ Surface Collected (uncontrolled)
- ☐ Surface Collected (controlled)
- ☐ Other

20. Present Condition: ◯ Undisturbed ◉ Disturbed ◯ Destroyed

21. Site Impacts:

Past	Present	Future		Past	Present	Future	
☒	☐	☐	Water Erosion	☐	☐	☐	Recreation
☐	☐	☐	Wind Erosion	☐	☐	☐	Construction
☐	☐	☐	Animal Activity	☐	☐	☐	Agriculture
☐	☐	☐	Vandalism	☐	☐	☐	Other _____

22. Investigator's Impression of National Register Status: ◯ Potentially Eligible ◉ Not Eligible ◯ Unevaluated/Unknown

23. SHPO Determination of National Register Status: ◯ On Register ◯ Eligible ◯ Not Eligible

24. Informant: _____

Address: _____

25. Owner of Site:

- ☐ Private (Name/Address if known) _____
- ☐ State (Agency) _____
- ☐ Federal (Agency) _____
- ☐ Other _____

Site Number: 25LC246

26. Information Collected and Stored:

- [x] **A digital copy of this site form (including a map of the site location and a shapefile if created) will be sent to: trisha.nelson@nebraska.gov.**
- [x] **It is understood that the NSHS does not automatically accept artifacts collected nor all records generated from archeological investigations in Nebraska.**
- [ ] **Reports in need of Section 106 review have been or will be submitted to NESHPO.**
- [ ] **Artifacts were collected and are currently stored:** _____
- [x] **Photos/digital images were created and are currently stored:** _____
- [ ] **Additional maps were created and are currently stored:** _____
- [ ] **Additional written records were created and are currently stored:** _____

27. Report Reference(s):

28. Comments:

The site consists of a poured concrete porch and a water pump. No other artifacts or features were observed.

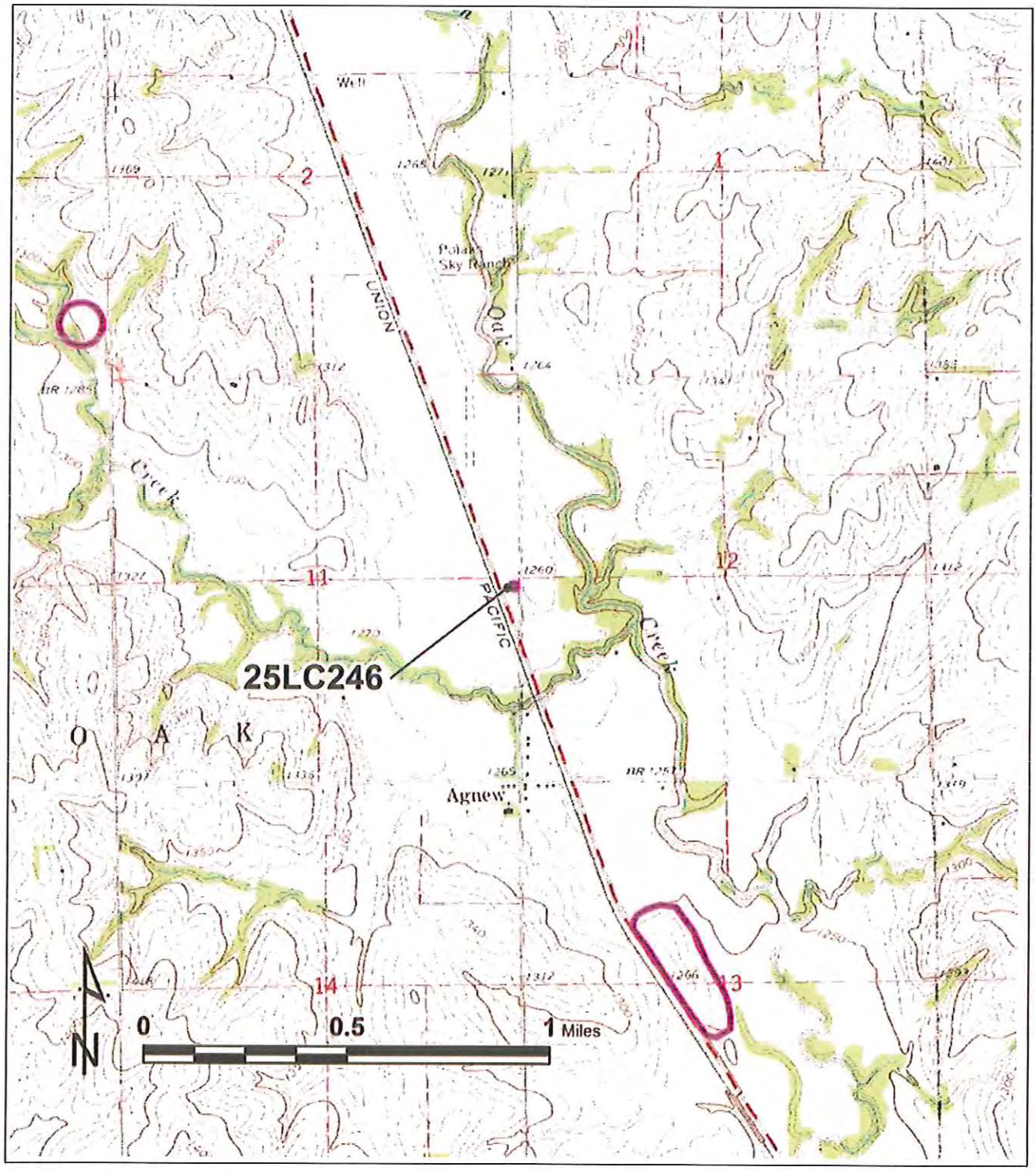
- [ ] See Comments/Continuation Sheet for more comments.

29. Survey Conducted by: Nicholas Fogerty **Survey Date:** 4/16/2014

30. Form Completed by: Nicholas Fogerty **Date:** 4/23/2014

Site Number: 25LC246

31. A map of the site location, preferably on a 7.5 minute U.S.G.S topographic map, must be included. Use the space provided below to insert an image file or attach a separate map sheet.
Additional images and/or detailed site maps can also be attached.
If the site location was mapped with a GPS, please send the resulting shapefile(s) to trisha.nelson@nebraska.gov.



Print with a .pdf creator and/or Save As site number.pdf and email to: trisha.nelson@nebraska.gov

Phone: 402-471-4760

Nebraska State Historical Society
PO Box 82554
Lincoln, NE
68501-2554
www.nebraskahistory.org

Nebraska State Historical Society

Archeological Site Survey Form

1. Site Number: 25SD210 **2. Site Name:** Indian Camp School

3. Project: NDOR STP-79-2(108)

4. Survey Agency/Co.: NSHS **5. Field Number:**

6. Sponsor/Contract Agency: NDOR **7. County:** Saunders

8. (•) **New Site** ( ) **Previously Known Site**

9. USGS Quad. Map: Valparaiso **NAD:** (•) **1927** ( ) **1983**

10. Legal Description:

QUARTER/HALF SECTIONS	SECTION	TOWNSHIP	RANGE
NW 1/4 NW 1/4 NW 1/4	35	13N	5E

☐ See Comments/Continuation Sheet for more legal description.

11. Site Size (m^2): 1400 **12. Min. Elevation (ft.):** 1290 **13. Max. Elevation (ft.):** 1290

14. Descriptive Site Type:

- ☒ **Surface**
- ☐ **Buried Features/Cultural Layers**
- ☐ **Cave/Rock Shelter**
- ☐ **Unknown**
- ☒ **Other** Hand Water Pump with Concrete Base

15. Functional Site Type:

- ☐ **Burial(s)**
- ☐ **Habitation**
- ☐ **Transport**
- ☐ **Unknown**
- ☒ **Other** School
- ☐ **Ceremonial/Religious**
- ☐ **Extraction/Processing**
- ☐ **Defensive**

16. Cultural Context. Choose general context(s) and specific affiliation(s) from pull-down menus; if more than one selection is needed from a pull-down menu, type additional specific cultural affiliations in the space provided below.

- ☐ **Paleoindian**
- ☐ **Archaic**
- ☐ **Woodland**
- ☐ **Central Plains**
- ☐ **Coalescent**
- ☐ **Oneota**
- ☐ **Western NE Protohistoric**
- ☐ **Caddoan Villagers**
- ☐ **Sedentary Siouan Villagers**
- ☐ **Equestrian Nomads**
- ☐ **Reservation Native American**
- ☒ **Euro-American** EA-EDU = Education
- ☐ **Non-specific Ceramic**
- ☐ **Non-specific Late Prehist./Protohistoric**
- ☐ **Unknown Prehistoric**
- ☐ **Other Ethnic Historic**
- ☐ **Unknown Historic**
- ☐ **Unknown**

additional cultural affiliation(s):

17. Features:

	No.		No.
☐ **Mounds**		☐ **Rock Outlines/Concentrations**	
☐ **Depressions**		☒ **Historic Standing/Collapsed Buildings, Structures or Objects**	1
☐ **Stains**		☐ **Historic Foundations**	
☐ **Petroglyphs**		☐ **Transport**	
☐ **Petrographs**		☐ **Unknown**	
☐ **Middens**		☐ **Other**	

Site Number: 25SD210

18. Artifacts:

Observed	Collected*		Observed	Collected*	
☐	☐	Chipped Stone Tools	☐	☐	Worked Shell
☐	☐	Chipped Stone Debris	☒	☐	Historic Artifacts
☐	☐	Ground Stone	☐	☐	Faunal Remains
☐	☐	Natural Stone Tools	☐	☐	Floral Remains
☐	☐	Fire-Cracked Rock	☐	☐	Human Bone
☐	☐	Other Lithic Debris	☐	☐	Burned Earth
☐	☐	Rim Sherds	☐	☐	Daub
☐	☐	Body Sherds	☐	☐	Other
☐	☐	Worked Bone	☐	☐	Isolated Item

* The NSHS does not automatically curate artifacts collected in Nebraska.

19. Site Work Status (check all that apply):

- ☐ Reported
- ☒ Surveyed
- ☐ Photographed
- ☐ Sketch Mapped
- ☐ Instrument Mapped
- ☐ Mapped with GPS
  - Make/Model _____
  - Differentially Corrected? ◯ yes ◯ no
- ☐ Soil Cored/Probed
- ☐ Tested (pits/posthole/backhoe)
- ☐ Remote Sensing _____
- ☐ Excavated Partially
- ☐ Excavated Completely
- ☐ Surface Collected (uncontrolled)
- ☐ Surface Collected (controlled)
- ☐ Other

20. Present Condition: ◯ Undisturbed ◉ Disturbed ◯ Destroyed

21. Site Impacts:

Past	Present	Future		Past	Present	Future	
☒	☒	☒	Water Erosion	☐	☐	☐	Recreation
☒	☒	☒	Wind Erosion	☐	☐	☒	Construction
☐	☐	☐	Animal Activity	☒	☒	☒	Agriculture
☐	☐	☐	Vandalism	☐	☐	☐	Other

22. Investigator's Impression of National Register Status: ◯ Potentially Eligible ◉ Not Eligible ◯ Unevaluated/Unknown

23. SHPO Determination of National Register Status: ◯ On Register ◯ Eligible ◯ Not Eligible

24. Informant: _____

Address: _____

25. Owner of Site:

- ☒ Private (Name/Address if known) Masek Family
- ☐ State (Agency) _____
- ☐ Federal (Agency) _____
- ☐ Other _____

Site Number: 25SD210

26. Information Collected and Stored:

- [x] **A digital copy of this site form (including a map of the site location and a shapefile if created) will be sent to: trisha.nelson@nebraska.gov.**
- [x] **It is understood that the NSHS does not automatically accept artifacts collected nor all records generated from archeological investigations in Nebraska.**
- [x] **Reports in need of Section 106 review have been or will be submitted to NESHPO.**
- [ ] **Artifacts were collected and are currently stored:** _____
- [ ] **Photos/digital images were created and are currently stored:** _____
- [ ] **Additional maps were created and are currently stored:** _____
- [ ] **Additional written records were created and are currently stored:** _____

27. Report Reference(s):

28. Comments:

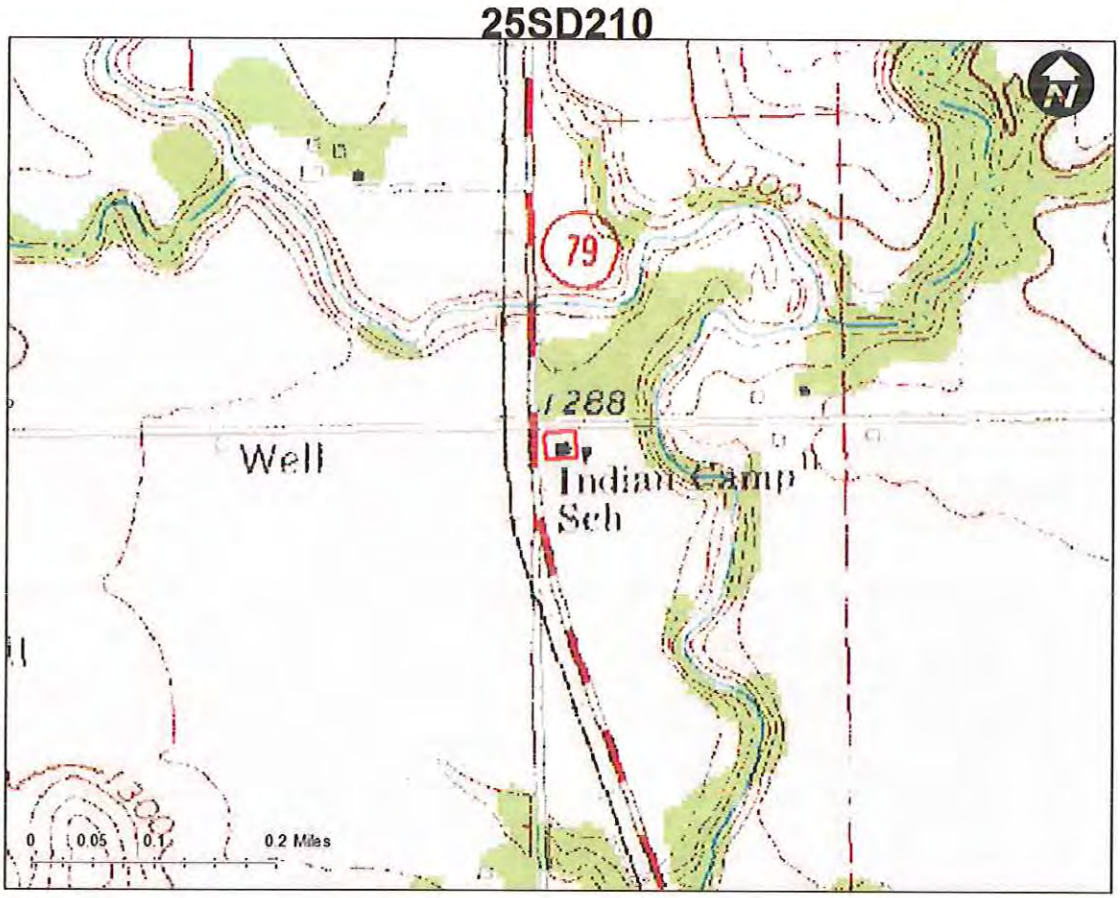
- [ ] See Comments/Continuation Sheet for more comments.

29. Survey Conducted by: Nolan Johnson & Shaun Lynch **Survey Date:** 5/7/2013

30. Form Completed by: Nolan Johnson **Date:** 5/13/2013

Site Number: 25SD210

31. A map of the site location, preferably on a 7.5 minute U.S.G.S topographic map, must be included. Use the space provided below to insert an image file or attach a separate map sheet.
Additional images and/or detailed site maps can also be attached.
If the site location was mapped with a GPS, please send the resulting shapefile(s) to trisha.nelson@nebraska.gov.

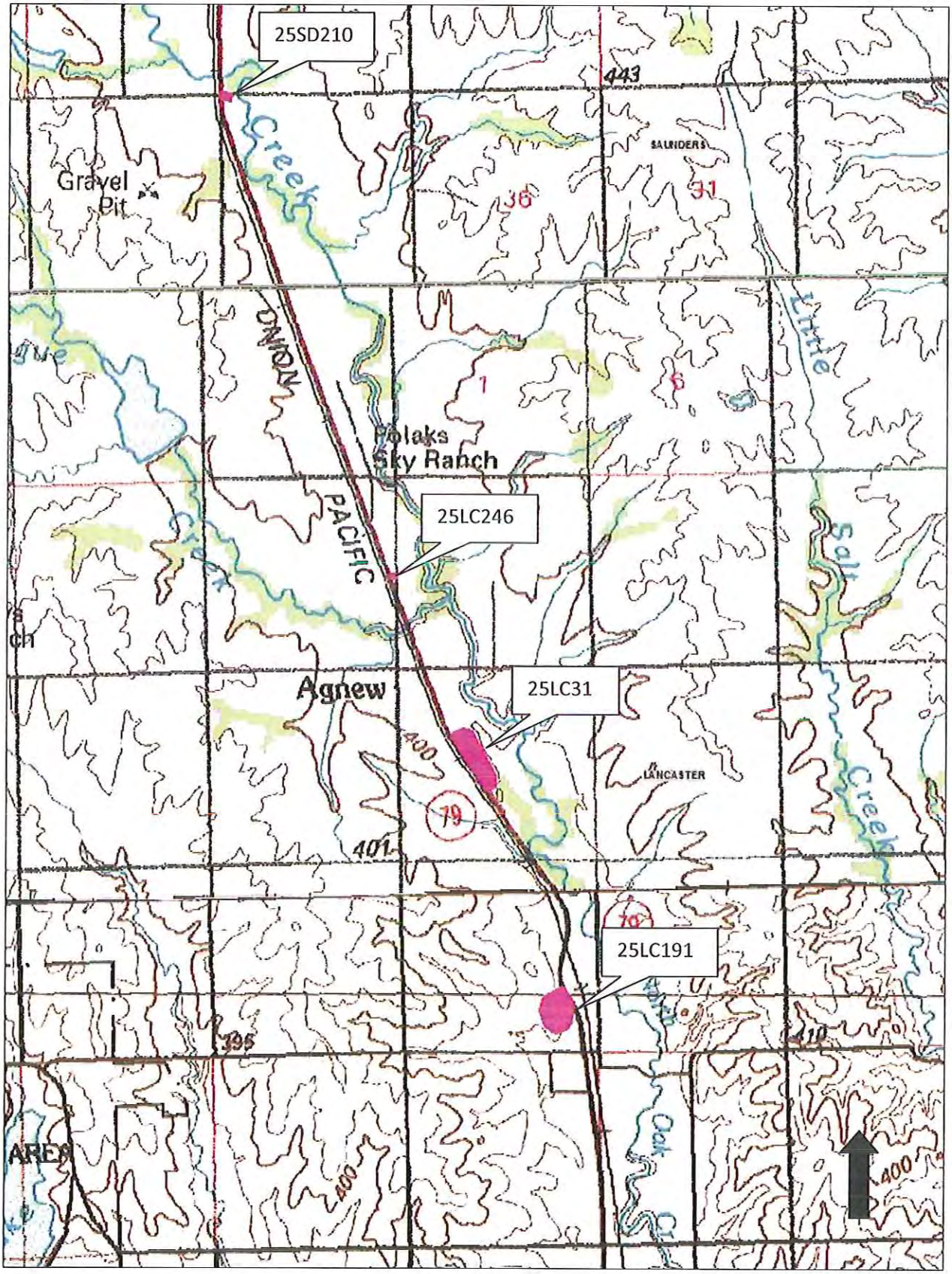


Print with a .pdf creator and/or Save As site number.pdf and email to: trisha.nelson@nebraska.gov

Phone: 402-471-4760

Nebraska State Historical Society
PO Box 82554
Lincoln, NE
68501-2554
www.nebraskahistory.org

AGNEW NORTH AND SOUTH: ARCHEOLOGICAL SITE LOCATIONS



ENCLOSURE 6

NDOR Above Ground Resources Project Survey Summary

Control Number 10584A Project Number STPD-BR-79-2(108) Survey Date May 19, 2015

Project Name Agnew North and South Project Location Lancaster and Saunders Counties

Recommendation of Effect Regarding Above Ground Historic Properties No Historic Properties Affected

Project Description Date November 6, 2015 Project Description Attached ☐ Yes ☑ No

Above Ground Resources Area of Potential Effects (APE):

100 feet beyond existing right of way and APE also includes any structures 100 feet from construction areas along the detour route and the proposed mitigation site near Ashland.

Are above ground resources present within the APE? ☐ No ☑ Yes

Background Resources Consulted: ☑ NHRSI/NRHP files ☐ Post-1945 Exceptional Bridges ☐ Historic Maps
☑ Historic Bridge Inventory ☐ Local/State Historical Society ☐ Other: Lancaster Co Survey (08)

List Maps, Etc.

File Search: List NRHP Listed or Previously Recommended NRHP Eligible Properties (Use NHRSI # and Common Name if applicable)

LC01-002
LC00-288 (NON-EXTANT)

List Applicable Historic Context(s):

Commerce, Agriculture

Current NRHP Listed and NRHP Eligible Above Ground Resources Evaluation(s) and Recommendations (use continuation sheets as necessary):

FN#

Property location Agnew, Lancaster County, Nebraska NHRSI # LC01-002

Property Name Grain Elevator NRHP Criteria: ☑ A ☐ B ☐ C ☐ D

NRHP Significance Level of Significance:

Commerce

Extant
Non-Extant

Aspects of Integrity Present: ☑ Location ☑ Setting ☑ Feeling ☑ Association ☑ Design ☑ Materials ☑ Workmanship

Verbal Boundary Description

NW NW Section 13; T12N R5E Lot 42 (NW)

FN#

Property location 16909 NW 56th Street NHRSI # LC00-288

Property Name Farmstead NRHP Criteria: ☐ A ☐ B ☐ C ☐ D

NRHP Significance Level of Significance Local

Formerly Agriculture but no longer extant.

Extant
Non-Extant ✔

Aspects of Integrity Present: ☐ Location ☐ Setting ☐ Feeling ☐ Association ☐ Design ☐ Materials ☐ Workmanship

Verbal Boundary Description

SW Section 25; T12N R5E, Lot 19 SE

Are Historic or Post-1945 Exceptional Bridges Present within the APE? ☑ No ☐ Yes - If yes, please list bridges (structure no. / name) below.

Above Ground Effects Finding:

☐ No Adverse Effect ☐ Adverse Effect ☑ No Historic Properties Affected

☐ No Above Ground Historic Properties Present within the APE

☑ Above Ground Historic Properties Present within APE but would not be affected

Basis for Effects Finding:
No ROW/TE is expected at LC01-002, so no direct effects to this property are anticipated with the project as planned. The project will resurface the roadway adjacent to this property with in-kind materials and visual effects will be consistent with what currently exists along this property. The project as planned will not introduce new visual elements to LC01-002 that will affect the property's setting or how the contributing elements interact with their landscape.

Attachments ☑ Above Ground Resources APE map ☐ USGS Map/Resources Map ☑ NHRSI form(s) ☐ Other

Additional Information/Comments:
The construction areas currently planned along the detour or within the wetland mitigation tract, does not involve any surrounding known historic properties or properties worthy of survey under SHPO guidelines.

Relative to Historic Properties and Based Upon the attached NDOR Project Description:

Is Temporary Easement Required? ☑ No ☐ Yes - If yes, please describe below. ☐ Undetermined
Is Permanent Easement Required? ☑ No ☐ Yes – If yes, please describe below. ☐ Undetermined
Is Right of Way Required? ☑ No ☐ Yes – If yes, please describe below. ☐ Undetermined

Consultant _____ 11/17/15

Signature Date

NDOR PQS Review _____ 11/19/15

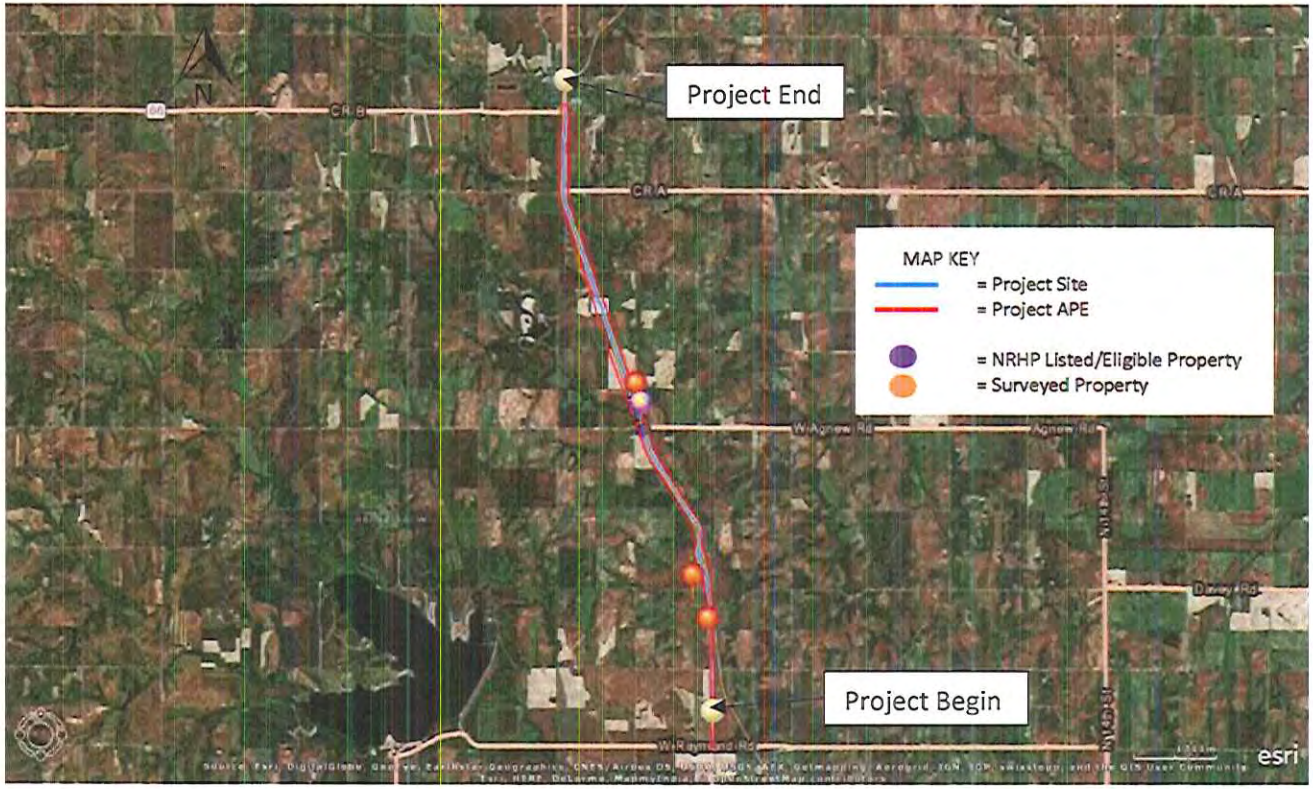
Signature Date

ENCLOSURE 7

STANDING STRUCTURES SECTION 106 COMPLIANCE REPORT
APE MAPS

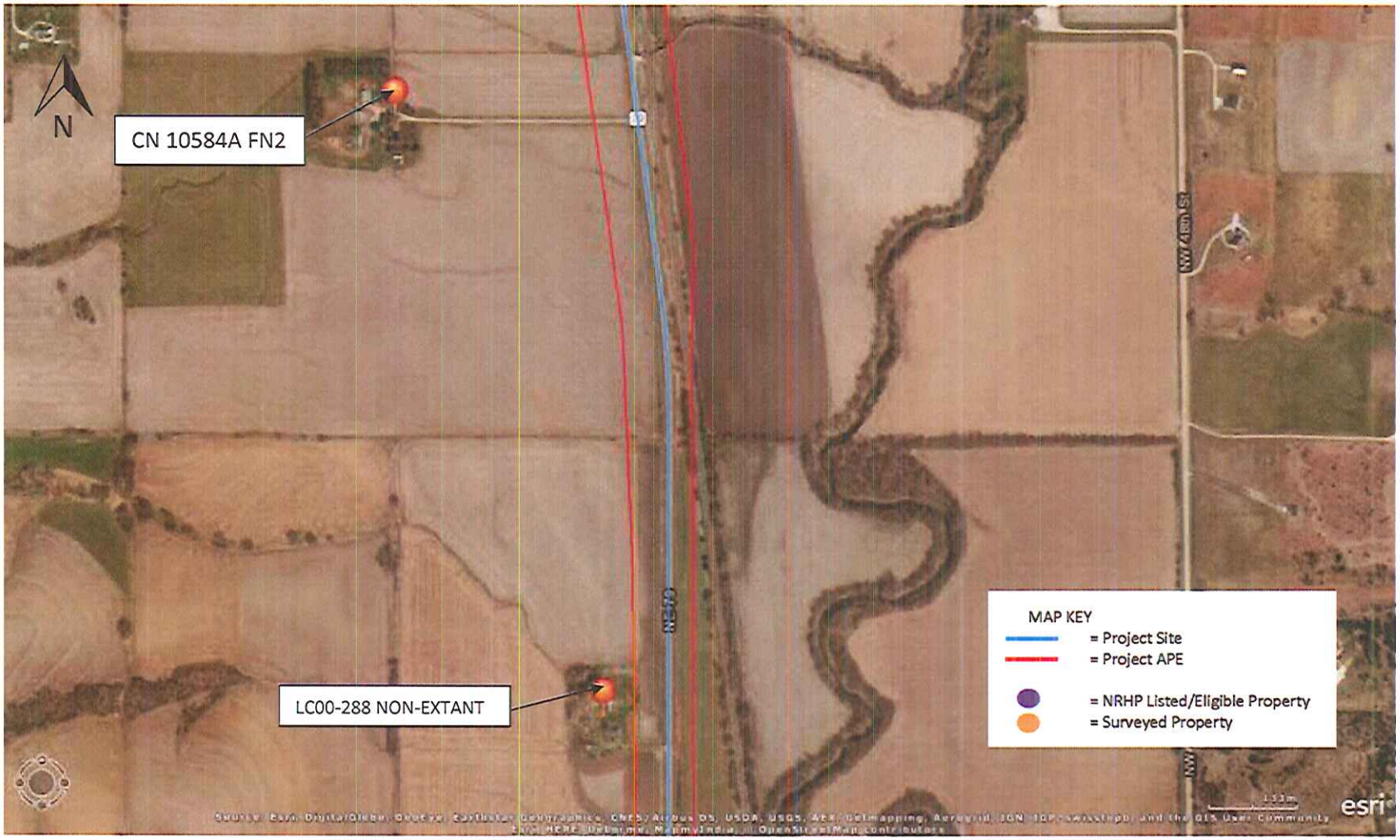
Megan Hilger, Preservation Associate
Nebraska Highway Archeology Program
June 2015

Project Name: Agnew North and South
Project No.: STPD-BR-79-2(108)
Control No.: 10584A
Lancaster/Saunders Counties, Nebraska



Original Report dated June 2015.

Detail 1

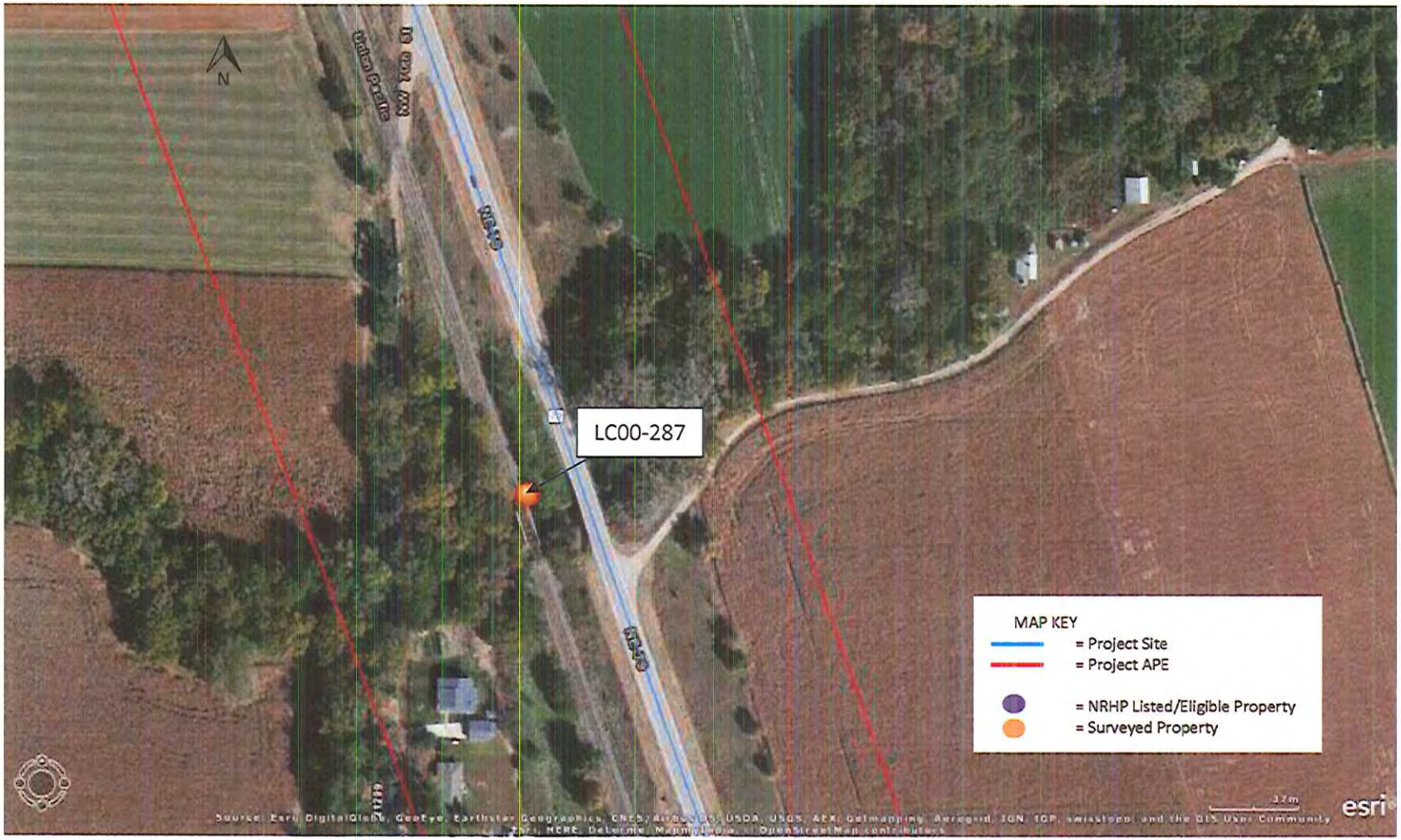


Original Report dated June 2015.

Detail 2

Original Report dated June 2015.

Detail 3



Original Report dated June 2015.

Control No.	Property	County	Address, Town
10584A	Grain Elevator	Lancaster	6815 W AGNEW RD

NHRSI No.	Direction of View	Photo by, Date	Map Ref.
LC01-002	SW	Hilger, 051915	APE Detail Map 2

Description

Previously Recommended NRHP Eligible under Criterion A, Commerce.
Contributing elements are Grain Elevator and associated outbuildings.
c1900
Wood grain elevator and metal quoinset hut. Previously pictured metal silos are now gone. Shed roof addition on the west side of the grain elevator with entry.
Eligibility is recommended despite the loss of the metal silos.

Control No.	Property	County	Address, Town
10584A	Farmstead	Lancaster	16909 NW 56 ST

NHRSI No.	Direction of View	Photo by, Date	Map Ref.
LC00-288	SW	Lancaster County Assessor, 101714	APE Detail Map 1

Description

NON-EXTANT, replaced in 2014 with modern residence.

0625400003000 10/17/2014

Control No.	Property	County	Address, Town
10584A	Railroad Bridge	Lancaster	North of Agnew

NHRSI No.	Direction of View	Photo by, Date	Map Ref.
LC00-287	W	Hilger, 051915	APE Detail Map 3

Description

Recommended NRHP Ineligible, lacks significance under Criterion A, B, or C.
c1940
Railroad Bridge with metal support and girder system

Control No.	Property	County	Address, Town
10584A	House	Lancaster	17701 NW 56 St

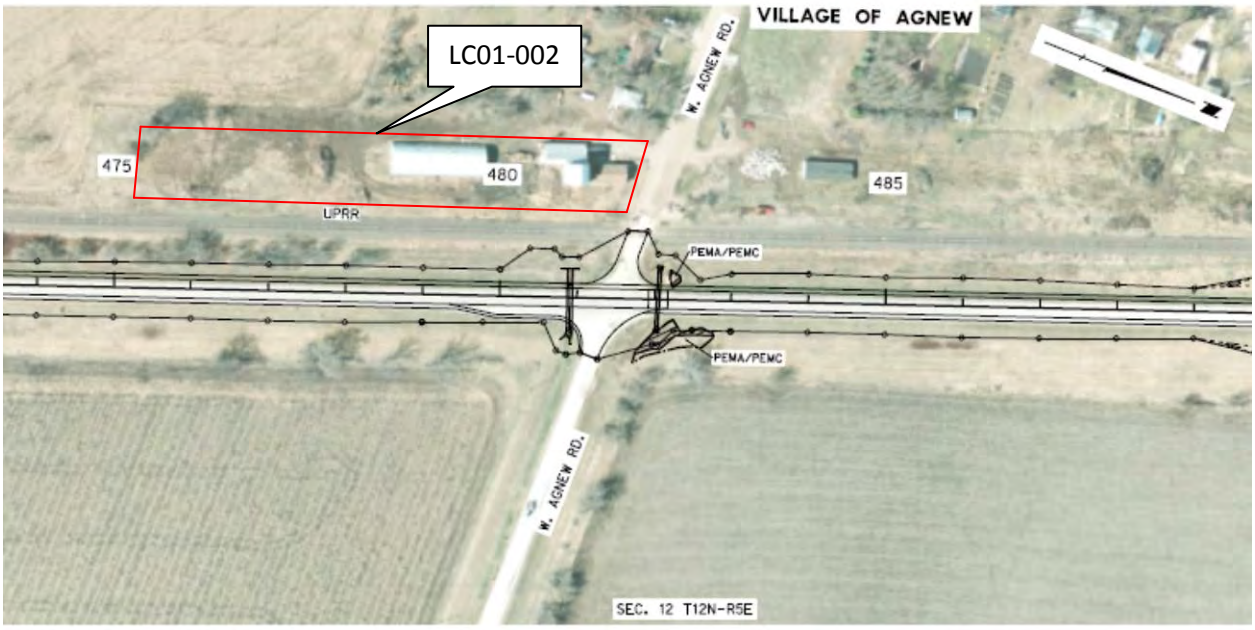
NHRSI No.	Direction of View	Photo by, Date	Map Ref.
CN 10584A FN2	NE	Lancaster County Assessor, 042613	APE Detail Map 1

Description

Recommended NRHP ineligible, lacks significance under Criterion A, B, or C.
c1956
Ranch, one-story, hip roof with asphalt shingling
Aluminum or hard-board siding and concrete block foundation.
One-over-one and picture window styles, appear modern.
Central entry under the roofline with an open-air deck.
Attached one-car garage with double door entry.

0625200001000 04/26/2013

ENCLOSURE 8


LC01-002
VILLAGE OF AGNEW
W. AGNEW RD.
475
480
485
UPRR
PEMA/PEMC
PEMA/PEMC
W. AGNEW RD.
SEC. 12 T12N-R5E

Threatened & Endangered Species

NEBRASKA
GAME PARKS

2200 N. 33rd St. • P.O. Box 30370 • Lincoln, NE 68503-0370 • Phone: 402-471-0641

March 21, 2018

Melissa Marinovich
Nebraska Department of Transportation
1500 Highway 2
PO Box 94759
Lincoln, NE 68509-4759

RE: Threatened and Endangered Species Consultation, Ashland Mitigation Site, MISC-79-2(1019); CN 10584B

Dear Ms. Marinovich:

Please make reference to your letter dated February 2, 2018. This letter is in response to your request for a review of this project's potential impacts to endangered and threatened species in Saunders County, Nebraska. As we understand it, the project involves construction of a wetland mitigation site. We have completed our review of the proposed project under Neb. Rev. Stat. § 37-807 (3) of the Nongame and Endangered Species Conservation Act and we offer the following comments.

This project is within the range of the federally and state-listed threatened western prairie fringed orchid (*Platanthera praeclara)* and Northern long-eared bat (*Myotis septentrionalis*). However, there are no records of endangered or threatened species in the vicinity of this project, nor does there appear to be habitat for state-listed species.

Based on the information provided, we concur the proposed project will have "No Effect" on all state-listed endangered or threatened species. This concurrence is based on a review of the material you sent, aerial photographs, and our Nebraska Natural Heritage Database. If the proposed project is changed or new information regarding endangered or threatened species becomes available, then this determination is no longer valid and further consultation with the Nebraska Game and Parks Commission will be necessary.

For an assessment of potential impacts to habitats and species protected under federal wildlife laws, including federally listed, candidate or proposed endangered or threatened species, please contact Eliza Hines (eliza_hines@fws.gov), Nebraska Field Office, U.S. Fish and Wildlife Service, 9325 South Alda Road, Wood River, Nebraska 68883.

Thank you for the opportunity to comment. If you have any questions or need additional information, please feel free to contact me at (402) 471-5423 or carey.grell@nebraska.gov.

Sincerely,

Carey Grell
Environmental Analyst Supervisor
Planning and Programming Division

ec: USFWS (Brooke Stansberry)

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Pete Ricketts, Governor

February 2, 2018

Carey Grell
Nebraska Game and Parks Commission
2200 North 33rd Street
Lincoln, NE 68503

RE: Threatened and Endangered Species Consultation
Ashland Mitigation Site; MISC-79-2(1019); CN 10584B

Dear Ms. Grell:

The Nebraska Department of Transportation (NDOT) is submitting information on the proposed project for your review and concurrence. This project will be completed with state funds; no federal funds are involved.

Scope
The improvements on this project consist of construction of a wetland mitigation site on approximately 97.1 acres of land. This project is located one mile west of the west corporate limits of Ashland in Saunders County in Sections 3 and 4, Township 12N, Range 9E, between Ashland Road and Cooper Road.

Details:

- Coordination with Saunders County may be needed for impacts to county roads.
- Relocation of utilities may be required.
- Project surveying and staking will be required.
- Grading will be required.
- Areas disturbed during construction will be stabilized utilizing methods of erosion control as shown in the Storm Water Pollution Prevention Plan (SWPPP).
- The project does appear to have a “Zone A” floodplain within the project study area; therefore, a floodplain permit will be required from Saunders County.
- The project does appear to have FEMA identified floodway within the project study area.
- No additional property rights will be required.

Location and Setting
This project occurs in the Rolling Hills of Nebraska, consisting of hilly land with moderate to steep slopes and rounded ridge crests composed of glacial till, clay, or clay-shale beds. Nebraska Natural Legacy Project classifies this portion of the state as Tall Grass Prairie. This property is located within the Saline Wetlands Biologically Unique Landscape boundary which follows Salt Creek. While no saline

Kyle Schneweis, P.E., Director
Department of Transportation
1500 Highway 2
PO Box 94759
Lincoln, NE 68509-4759
OFFICE 402-471-4567 FAX 402-479-4325
NDOT.ContactUs@nebraska.gov
dot.nebraska.gov

wetlands have been identified on the property at the time of the delineation; a small seepy area appeared to have a white salty residue.

Local land use includes row crop agriculture, pasture/hay ground, and many acreages/mini-subdivisions. Adjacent vegetative cover includes primarily non-native row crop species, as there has been significant agricultural development and disturbance on and adjacent to this property.

Endangered Species Review
NDOR has conducted a review of the project pursuant to the State of Nebraska's Non-game and Endangered Species Conservation Act. The Nebraska Game and Parks Commission website identifies that the following species are listed in Saunders County: Interior least tern, lake sturgeon, Northern long-eared bat, pallid sturgeon, piping plover, river otter, Salt Creek tiger beetle, saltwort, sturgeon chub, western prairie fringed orchid.

The Nebraska Game and Parks Commission species range maps identify that this project is within the range of Northern Long-Eared Bat and Western Prairie Fringed Orchid. A review of the Natural Heritage Database revealed records of interior least tern, piping plover, pallid sturgeon, and sturgeon chub within five miles of the project location; however, no records are located within 1-mile of the Project.

Habitat in the project limits consists of tilled agricultural fields, a channelized drainage feature that drains to Salt Creek, and a few remnant wetlands. Adjacent land uses consist of agricultural fields, pasture and tilled farm ground, and acreages. The proposed wetland site does not currently include any identified saline wetlands or salt flats, therefore would likely not support Saltwort nor Salt Creek Tiger Beetle. Although the project is within Western Prairie Fringed Orchid range, this property and adjacent land use is cultivated or converted and does not support native vegetation and undisturbed wet-mesic prairies conducive to orchids. With a few scattered small trees on the edges of the project area there does not appear to be suitable summer roosting habitat for the northern long-eared bats. No other habitat suitable to any listed species is found on this property.

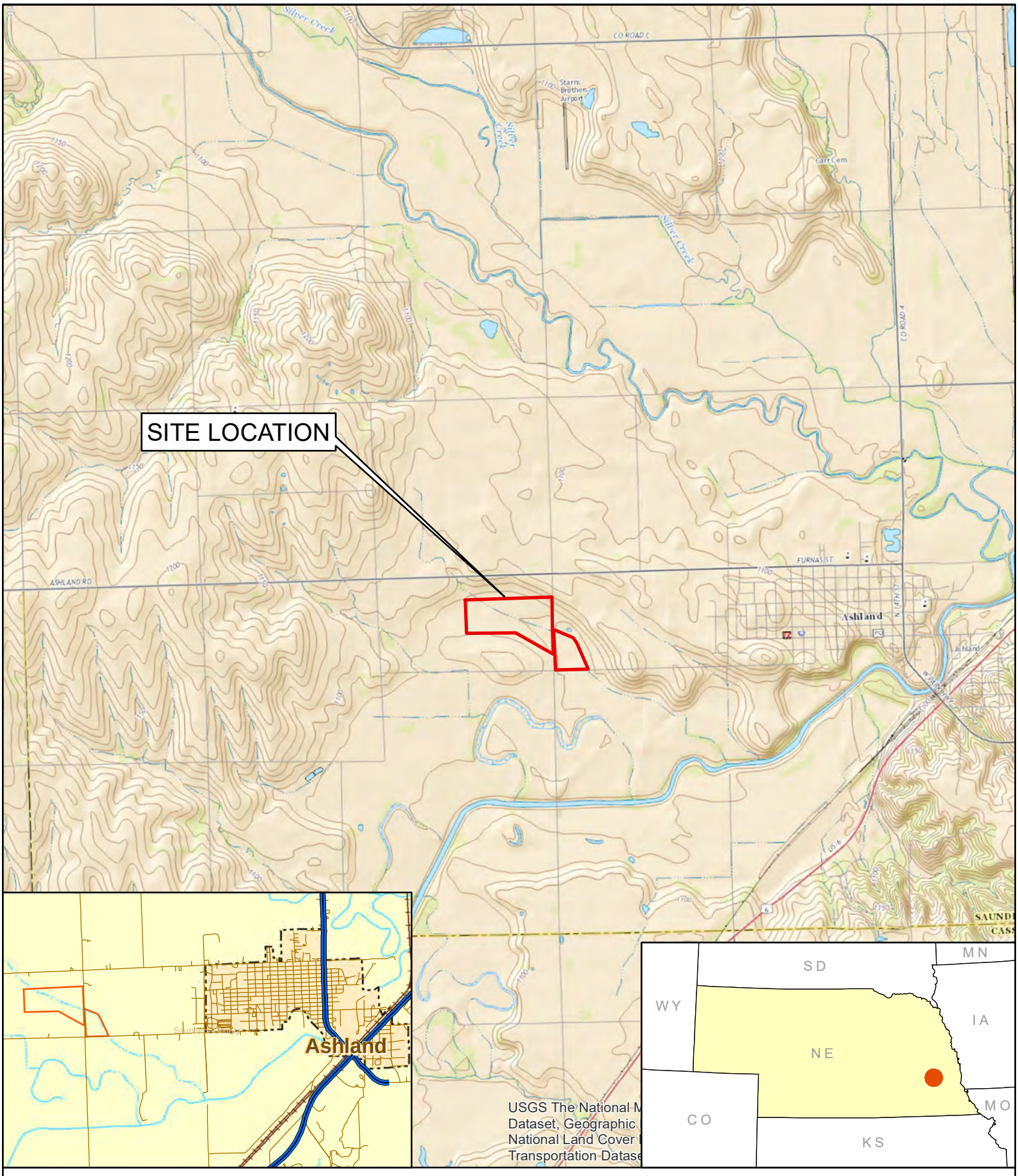
Due to no suitable listed species habitat within or adjacent to this proposed wetland site, NDOR has determined that this project would have "**No Effect**" to any state or federally listed species or their associated habitat.

NDOR respectfully asks for your concurrence. Should you have questions, please contact me at 402-479-3546.

Sincerely,

Melissa Marinovich
NDOT Highway Environmental Biologist

Cc: Brooke Stansberry, U.S. Fish and Wildlife Service



SITE LOCATION MAP - FIGURE - 1

Nebraska Department of Roads
Project Number: MISC-79-2(1019)
CN: 10584B
Ashland Mitigation Site
Suanders County, NE
T. 13N, R. 9E, S. 3 & 4

N
W E
S

0 1,900 3,800 7,600
Feet

benesch
engineers · scientists · planners

Y:\Omaha\120400S\00120472.00\GIS\Figures\Figure-01-SiteLocationMap.mxd

NEBRASKA
Good Life. Great Journey.
DEPARTMENT OF TRANSPORTATION

Biological Assessment PQS Memorandum

Project Name: **Ashland Mitigation Site** Project Number: **MISC-79-2(1019)** Control Number: **10584B**

The attached concurrence letter signed on 3/21/18 by Carey Grell, NGPC, is the documentation required for threatened & endangered species concurrence for a State Funds Only project.

The project, as proposed, has been determined to have **"no effect"** to all state or federally listed species or their designated critical habitat.

Below are the Conservation Conditions and survey protocol (if applicable) that will be required for this project. They must be included verbatim in the "green sheet".

(Responsible Party for the measure is found in parentheses)

General Conservation Conditions for All Projects:

- **Changes in Project Scope**. If there is a change in the project scope, the project limits, or environmental commitments, the NDOR Environmental Section must be contacted to evaluate potential impacts prior to implementation. Environmental commitments are not subject to change without prior written approval from the NDOR Environmental Section. (District Construction, Contractor)

- **Threatened and Endangered Species**. The Contractor shall reference the AGC Endangered Species Guide or the Nebraska Game and Parks Commission website for a reference of federal and state listed species that may occur in the project vicinity prior to starting project construction. These guidance documents can be found at:

    - http://agcne.org/member-portal/
    - http://outdoornebraska.gov/naturalheritageprogram/

    If federal or state listed species are observed during construction, stop work and contact the NDOR Environmental Section to determine action required prior to resuming work.

- **Refueling**. Refueling will be conducted within the confines of the paved roadway surface or within the boundaries of an approved stockpile/staging site (Contractor)

- **Restricted Activities**. The following project activities shall, to the extent possible, be restricted to between the beginning and ending points of the project, within the right-of-way designated on the project plans.

    - Borrow sites
    - Construction debris waste disposal areas
    - Asphalt plants
    - Haul roads
    - Stockpiling areas
    - Staging areas
    - Material storage sites

Any project related activities that occur outside of the project limits (includes the paved surface and within 12 inches of the paved surface) must be environmentally cleared/permitted with the Nebraska Game and Parks Commission as well as any other appropriate agencies by the contractor and those clearances/permits shall be submitted to the District Construction Project Manager prior to the start of the above listed project activities. The contractor shall submit a NDOR Plant Site/Stockpile Site Request Identification and Evaluation Form (DR Form 56) and/or a Borrow Site/Waste Site Request Identification and Evaluation Form (DR Form 119) as appropriate, and include information such as an aerial photo showing the proposed activity site, a plan-sheet or drawing showing the location and dimensions of the activity site, ground photos showing the existing conditions at the proposed activity site, etc. The contractor must receive notice of acceptance from NDOR, prior to starting the above listed project activities. These project activities cannot adversely affect state and/or federally listed species or designated critical habitat. Fill cannot be placed in Wetland, Stream or other Waters of the U.S without authorization. (NDOR Environmental, District Construction, Contractor)

- **Waste/Debris**. Construction waste/debris will be disposed of in areas or a manner which will not adversely affect state and/or federally listed species and/or designated critical habitat. (Contractor)

Melissa Maish

NDOT PQS Reviewer

March 27, 2018

Date

This(These) Project(s) has(have) been reviewed for compliance with the Nebraska Nongame and Endangered Species Conservation Act (Neb. Rev. Stat. 37-807).