VANTAGE WEST SPUR LATERAL PIPELINE
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1.0 Introduction

This report addresses the 2014 and 2015 wetland and waterbodies assessments on the proposed Vantage West Spur Lateral Pipeline project (West Spur). Vantage Pipeline US LP (Vantage) is proposing to construct and operate 47.3 miles (49.1 miles alternative route) of new, high vapor pressure steel pipeline from a natural gas processing plant near Williston, North Dakota to an existing pipeline system near Stady, North Dakota. The pipeline will connect to the Vantage Pipeline to transport ethane to the Alberta petrochemical industry.

The U.S. Army Corps of Engineers (USACE 1987) defines **wetlands** as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." As described in the Corps 1987 Manual, wetlands must have the following three characteristics:

1. *Hydrophytic vegetation*, Vegetation community dominated by plant species that are typically adapted to life in saturated soil.
2. *Hydric soil*. Soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions.
3. *Wetland hydrology*. Inundation or saturation of the soil during the growing season.

Under normal circumstances, an area is considered to have *hydrophytic vegetation* when more than fifty percent of the dominant species from all plant strata are classified as OBL, FACW, or FAC (Table 1, Lichvar 2012). Dominant species are those species in each stratum that, when ranked in descending order of estimated percent area coverage and cumulatively totaled, immediately exceed fifty percent of the total coverage. Additionally, any species comprising at least twenty percent of the total coverage for their respective stratum was also considered. If the plant community fails the dominance test but indicators for hydric soils or wetland hydrology are present, the plant community may be positively identified as hydrophytic if any other hydrophytic vegetation indicator is present. Hydrophytic vegetation indicators as described in the USACE Great Plains Regional Supplement consist of the prevalence index, evidence of morphological adaptations for growth in a wetland, and greater than fifty percent coverage by wetland non-vascular plants.

Table 1. National Wetland Plant List indicators used to determine wetland status.

Indicator Symbol	Indicator Status	Definition
OBL	Obligate	Species occur almost always (probability >99%) in wetlands under natural conditions.
FACW	Facultative Wetland	Species usually occur in wetlands (probability 67 to 99%), but occasionally are found in non-wetlands.
FAC	Facultative	Species are equally likely to occur in wetlands or non-wetlands (probability 33-67%).
FACU	Facultative Upland	Species usually occur in non-wetlands (probability 67-99%), but occasionally are found in wetlands.
UPL	Upland	Species occur almost always in non-wetlands under normal conditions (probability >99%).
NI	No Indicator	Species for which insufficient information was available to determine an indicator status.

An area is considered to have *wetland hydrology* when the soil is saturated within the major portion of the root zone, usually within twelve inches of the surface for 12½ percent or more of the growing season. The

growing season is defined as the number of days where there is a fifty percent probability that the average daily temperature is greater than or equal to 28°F (USACE 1987). Hydrology field indicators are divided into primary and secondary indicators. A sample area is considered to meet the wetland hydrology criterion if at least one primary or two secondary indicators are present.

Hydric soils are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper horizons (USACE 1987). Soil is saturated when all voids between soil particles are filled with water. Anaerobic conditions promote certain physical characteristics within hydric soils that can be observed in the field. Characteristic field indicators of hydric conditions include organic soils, thick organic layers (histic epipedons), gleying (gray soil colors), and low soil chromas (intensity of the soil hue) with or without redoximorphic features (mottles). Low soil chroma and mottles provide evidence of reduced soil conditions that develop under wet, anaerobic conditions. Mottles indicate a fluctuating water table. Indications of hydric soils identifications were guided by the Great Plains Regional Supplement to the Corps of Engineers Wetland Delineation Manual (USACE 2010).

Waterbodies are ponds, drainages, streams, or rivers that have a defined bed and bank. The United States Environmental Protection Agency (USEPA) and the USACE issued a joint memorandum providing guidance regarding jurisdiction of Waters of the United States (WOUS; USEPA and USACE 2007). The memorandum presents guidance for determining a significant nexus and for the following three categories:

1. Traditional navigable waters and adjacent wetlands.
2. Relatively permanent non-navigable tributaries of traditional navigable waters and wetlands with a continuance surface connection with such tributaries.
3. Certain adjacent wetlands and non-navigable tributaries that are not relatively permanent.

The memorandum states that the USEPA and USACE will assert Clean Water Act (CWA) jurisdiction over waters in the first two categories and will use the significant nexus to determine whether waters in the third category fall under CWA jurisdiction. Waters in the third category must have a significant nexus to traditional navigable waters or relatively permanent waters. A significant nexus is defined as a waterway that significantly affects the chemical, physical, or biological integrity of traditional navigable or interstate waters. For example, if a ditch affects the biological, hydrological, and habitat for species, it may be regulated under the CWA. The USEPA and USACE do not assert jurisdiction over waters in the third category if there is no significant nexus to traditional or interstate waters.

2.0 Project Location

The West Spur Lateral Pipeline is entirely in Divide and Williams Counties, North Dakota. The proposed Vantage West Spur Lateral Pipeline Project will convey ethane from ONEOK Partners' Stateline II Gas Processing Plant near Williston, North Dakota to the existing Vantage ethane pipeline system near Stady, North Dakota. Vantage is in the route planning, field assessment, and preliminary design phase of the project. Construction is expected to take place in the third and fourth quarters of 2015 and extend into the first quarter of 2016.

Construction of the pipeline would generally require a 100-foot-wide right-of-way (ROW), which is made up of 30 feet of permanent right-of-way and 40 feet of temporary work space, to allow for temporary storage of topsoil and spoil, and to accommodate safe operation of construction equipment. In certain places, such as road crossings or greater than 45 degree bends in the pipeline, the temporary work space will be 85 feet ROW. Public roads would typically be used to gain access to the construction right-of-way. In areas where public roads are limited, existing privately owned roads may be used to provide access to the construction right-of-way.

A field survey to ground truth, characterize, and map wetlands and waterbodies was conducted within a 500-foot survey corridor(s) along the pipeline route. The survey corridor is wider than the actual area of proposed disturbance to allow for movement of the pipeline within the corridor to avoid and minimize impacts to wetlands and waterbodies within the corridor.

3.0 Methods

Prior to field evaluation, a desktop analysis identified potential waterbodies (ponds, streams, etc.) and wetland habitats. Review of aerial photographs, existing databases, and other resources identified potential streams, wetlands, and drainages for follow up field assessment. The following items were used for the desktop review:

- Digital aerial photography
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (NWI) maps
- U.S. Geological Service (USGS) topographic maps with the National Hydrography Dataset (NHD)
- Location of USFWS wetland easements

An initial wetland and waterbody inventory was completed in September and October 2014 by wetland biologists at KC Harvey Environmental, LLC (KC Harvey). Wetlands within a 500 foot survey corridor or a preferred and alternative route were identified based on dominant vegetative cover, observable hydrology, and hydric soil indicators. Final surveys were completed in January, February, and March 2015 for rerouted areas. The pipeline route, 500-foot survey corridor, and NWI and NHD shapefiles were loaded into georeferenced pdfs on handheld Tablets to aid in field navigation and identification of potential wetland areas.

Preliminary discussions and correspondence with the USACE in August 2014 indicated that formal wetland delineations were not necessary for pipeline route planning (Daniel Cimarosti email and phone conversations August 2014 to present). Rather, a conservative and approximate wetland boundary based on visible hydrology and vegetation would be appropriate for impact avoidance and minimization efforts. To characterize wetlands along the route and identify wetland vegetation boundaries, some wetland delineations were completed. It was particularly important to have an understanding of wetland soils and hydrology to identify farmed wetland where hydrophytic vegetation may have been absent. In areas where wetlands of the same type (e.g. prairie pothole PEM) were clustered, the full wetland delineation form (wetland and upland points) was completed on one wetland within a two mile linear distance on the pipeline corridor. Other wetlands in this two mile distance were delineated using wetland vegetation and surficial hydrology indicators as a guide for the wetland/upland boundary. The full wetland delineation form was not needed and the new wetlands were ‘associated’ with the delineated wetland forms. If a wetland of a different type (PFO wetland) was encountered in the two mile distance, then a full wetland delineation form (wetland/upland) was completed.

Field assessed wetland delineations follow the USACE Wetland Delineation Manual (USACE 1987), and the Great Plains Regional Supplement (USACE 2010). Wetland boundary identification is based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. The plant species, soil composition, and hydrology was visually assessed, and a GPS point and representative photographs were collected. Shallow soil pits were dug from 8 to 18 inch depth for observation of redox, matrix, and other hydric soil indicators. Data points are labeled *U* for Upland and *W* for wetland. The upland-wetland boundary was mapped with hand-held Ashtech Pro Mark 100 sub-meter accuracy GPS units. GPS data were processed utilizing ArcGIS version 10.2 software.

In addition to the delineation data, the Circular 39 wetland type (Shaw and Fredine 1956; Table 2), water type (Table 3), and Cowardin classification code (Cowardin et al. 1979; Table 3) were recorded during

the field survey. Wetland were also classified using the hydrogeomorphic (HGM) classification system (Smith 1995) identifying wetlands as riverine, slope, depressional, organic soil flats, or lacustrine.

Table 2. Circular 39 Wetland Types (Shaw and Fredine 1956).

Type	Description
1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Table 3. Hydrologic Water Type code defined as follows by USACE.

TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
TNWW	Wetlands adjacent to TNWs
RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
UPLAND	Uplands
TNWRPW	Tributary consisting of both RPWs and non-RPWs

Table 4. Cowardin wetland classification type (Cowardin et al. 1979).

System	SubSystem	**Class** (select 1)
Riverine (wetlands and deepwater habitats contained within a channel)	• **Lower Perennial** (gradient low, velocity slow, substrate sand and mud)	• Rock Bottom • Unconsolidated Bottom • Aquatic Bed • Rocky Shore • Unconsolidated Shore • Emergent Wetland
	• **Upper Perennial** (gradient high, velocity fast, substrate sand, rock, gravel)	• Rock Bottom • Unconsolidated Bottom • Aquatic Bed • Rocky Shore • Unconsolidated Shore
	• **Intermittent** (flowing for part of year, isolated pools)	• Streambed
Lacustrine (lakes and reservoirs >20 acre size, intermittent lakes, playas, typically deep water)	• **Limnetic** (deep water habitats)	• Rock Bottom • Unconsolidated Bottom • Aquatic Bed
	• **Littoral** (wetland habitats)	• Rock Bottom • Unconsolidated Bottom • Aquatic Bed • Rocky Shore • Unconsolidated Shore • Emergent Wetland
Palustine (vegetated wetlands)	•	• Rock Bottom • Unconsolidated Bottom • Aquatic Bed • Rocky Shore • Unconsolidated Shore • Moss-Lichen Wetland • Emergent Wetland • Scrub-Shrub Wetland • Forested Wetland

The USACE Jurisdictional Determination Form Instructional Guidebook (USACE 2007) was used for field delineating non-wetland waterbodies / WOUS. Waterbodies along the pipeline route were identified during the field surveys. Waterbodies are ponds, drainages, streams, or rivers that have a defined bed and bank. If the wetland was entirely contained within the ordinary high water mark (OHWM) of the waterbody, these wetlands were not delineated separately but were noted as present. If wetlands were present outside the OHWM adjacent to the waterbody, the wetland was recorded separately using the wetland delineation methods noted above. At each waterbody, the following data was collected at pipeline centerline: bank height and slope; width of OHWM, bank-to-bank, and water edge; water depth; substrate; dominant vegetation; watercourse name, and waterbody classification code (Table 5). The waterbody boundary was recorded at the OHWM with a sub-meter GPS unit using the poly line feature. Representative photographs were collected at each waterbody.

Table 5. Waterbody classification of flow descriptions.

Waterbody Classification	Code	Waterbody Classification	Code
Perennial Streams[1]		**Intermittent Streams[2]**	
Major (>100 feet wide)	PS 1	Major (>100 feet wide)	IS 1
Intermittent (>10 – 100 feet wide)	PS 2	Intermittent (>10 – 100 feet wide)	IS 2
Minor (≤10 feet wide)	PS 3	Minor (≤10 feet wide)	IS 3
Ephemeral Drainages[3]		**Man-Made Drainages**	
Major (>10 feet wide)	ED 1	Canal	C
Intermediate (>3 – 10 feet wide)	ED 2	Irrigation Ditch	ID
Minor (≤ 3 feet wide)	ED 3	Drainage Ditch	DD
Swale (no defined bed/banks)	S	Roadside Ditch	RD
		Grassed Waterway	GW

[1]Perennial streams flow year-round.
[2]Intermittent streams flow seasonally and may or may not be flowing during the construction season.
[3]Ephemeral drainages flow only in response to snowmelt or precipitation events.

All areas within the project corridor and ROW were surveyed for wetlands and waterways. Sampling was not performed at obvious uplands. Previously un-mapped (NWI/NHD) wetlands and waterways were surveyed. All NWI and NHD features were field verified for wetland indicators. If wetland indicators were present, the wetland was delineated. If field crews determined the feature was not a wetland due to a lack of vegetation, soil and hydrology indicators, an upland (UP) GPS point was taken with notes justifying why it is not a wetland. Full wetland delineation forms were not completed in these areas due to the quantity of potential wetland features encountered in the survey corridor. Many features along the project corridor mapped as NWI wetlands did not met the USACE criteria for wetlands. Most of these sites lacked wetland vegetation and/or soil indicators. In farmed areas, many NWI features may have been wetlands in the past, but due to farming and tiling (draining), the areas now lack hydric soil indicators.

4.0 Results

The wetland investigations resulted in the identification and mapping of 62 wetlands within the 500 foot survey corridor of the preferred route and 69 wetlands on the alternative route (Table 6). Type 1 PEM and PFO wetlands, and one Type 6 PSS wetland were observed in the survey corridor. No Type 2, 3, 4 or 5 wetlands occur in the study corridor. Exhibit F.2 provides a summary of the classification and dominant species of all surveyed wetlands in the project area. Wetland data was collected and are provided for the Preferred Route and Alternative Route. Brief descriptions of the vegetation and hydrology characteristics for each wetland type observed are provided below.

4.1 Type 1 (Palustrine Emergent Wetland; Palustrine Forest Wetland): Seasonally Flooded Basins

A total of 61 Type 1 wetlands totaling 18.9 acres were identified in the preferred route survey corridor, and there were 68 Type 1 wetlands totaling 22.6 acres were identified in the preferred route survey corridor (Table 6, Exhibit F.2). One Type 1 wetland was a PFO surrounding a PEM wetland, and the remaining Type 1 wetlands were PEM. Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season. This type of wetland is very common throughout the prairie pothole region. Many of the seasonally flooded basins observed in the project area were cultivated with a variety of crops, although those basins that were fallow developed some wetland vegetation. Dominant vegetation in the

seasonally flooded basins included water smartweed (*Polygonom amphibium*), reed canarygrass (*Phalaris arundinacea*), foxtail barley (*Hordeum jubatum*), American sloughgrass (*Beckmannia syzigachne*), common spikerush (*Eleocharis palustris*), and cattail (*Typha latifolia*). The one PFO wetland observed had a mix of willow (*Salix spp.*) and eastern cottonwood (*Populus deltoides*) fringing a PEM wetland.

The hydric soil indicators recorded for this wetland Type were redox dark surface, depleted below dark surface, and thick dark surface. Soils were dark in color (10yr) with low chroma and values. Redox concentrations were most commonly 10yr 5/8. Primary indicators of wetland hydrology observed in the seasonally flooded basins were algal mats and crusts, sediment deposits, salt crusts, saturation, and water stained leaves. Secondary indicators observed including surface soil cracks, sparsely vegetated concave surface, drainage patterns, geomorphic position, oxidized rhizospheres, and the FAC-neutral test.

Table 6. Wetlands by Type within the project 500-ft Corridor.[1]

CLASSIFICATION		WETLANDS OBSERVED			
		Preferred Route		Alternative Route	
Circular 39[2]	Cowardin[3]	Number	Area (acres)	Number	Area (acres)
1	PEM	60	18.4	67	22.1
1	PFO	1	0.5	1	0.5
6	PSS	1	0.6	1	0.6
Totals		62	19.5	69	23.2

[1] Includes only wetland area within the 500-foot pipeline corridor. Actual wetland boundaries may extend past the project limits and may be larger than indicated. Not all the wetlands within the 500 foot corridor will be impacted, see Exhibit F.2.
[2] Wetlands of the United States, Circular 39. (Shaw and Fredine, 1956)
[3] Classification of Wetlands and Deepwater Habitats of the United States. (Cowardin et al.1979)

4.2 Type 6 (Palustrine Scrub-Shrub Wetland): Shrub-swamps

One Type 6 shrub-swamp community was identified within both the preferred and alternative study corridors, encompassing 0.6 acres. Scrub-Shrubs are plant communities composed of tall, deciduous shrubs growing on saturated to seasonally flooded soils. They are typically dominated by willows or dogwood (*Cornus spp.*) shrub canopy with a ground layer of sedges, grasses and forbs of sedge meadow a communities. The diversity of species composing the ground layer is dependent on degree of shrub canopy cover, degree of disturbance, and water source. The observed Scrub-shrub wetland was dominated by a willow species shrub canopy and reed canarygrass in the understory.

The primary indicators of wetland hydrology observed in the Type 6 basin was high water table (frozen water during time of survey). Due to frozen soils, no soils pits were dug.

4.3 Waterbodies

A total of 11 waterbodies are within the preferred route survey corridor (10 waterbodies alternative route). However, 3 waterbodies on the preferred route (4 on alternative route) are avoided by routing within the 500 ft corridor (Exhibits F.3 and F.4). Seven (7) of these preferred route waterbodies (6 alternative route waterbodies) are ephemeral drainages (Exhibit F.3). These are drainages that flow only in response to snowmelt or precipitation events. Three waterbodies occurring on both routes are intermittent drainages, and one is a perennial streams. Intermittent streams flow seasonally and may or may not be flowing during the construction season. The intermittent streams had some areas of ponded water while the remaining streambed is dry during survey. The dominant vegetation along the banks of waterbodies were reed canarygrass, smooth brome (*Bromis inermis*), prairie cordgrass (*Spartina pectinata*), and snowberry (Symphoricarpos occidentalis).

Figure 1. PEMA Seasonally Flooded Basins

4.4 USFWS Wetland Easements

The USFWS Wetland Easement program pays landowners to enter wetlands in this permanent protection program. Wetlands protected under a wetland easement are regulated by the USFWS and cannot be drained, filled, graded, or burned. Vantage has been working closely with the USFWS to identify wetlands under easement. The West Spur Lateral Pipeline crosses 0.41 miles of land (both routes) enrolled in the wetlands easement. The USFWS determined that the pipeline is near wetlands on only one of these parcels. Further, USFWS stated that by avoiding impacts to these wetlands within your 100 foot right-of-way would satisfy USFWS's land interest perspective (Williams 2015). In areas where wetland easements have been identified, the temporary construction right-of-way will be narrowed to avoid impact to any wetlands protected by a wetland easement.

4.5 Wetland Reserve Program

The Wetlands Reserve Program (WRP) provides landowner assistance in protecting, restoring, and enhancing wetlands in an effort to preserve wildlife habitat. This voluntary program offers landowners the opportunity to protect, restore, and enhance wetlands and grasslands on their property. In January, February and March 2015, the Divide and Williams County NRCS District Conservationists were contacted to determine if the pipeline study area included any lands enrolled in the WRP. Divide County

responded that they do not have any enrolled parcels in the County. To date, Williams County NRCS has not responded regarding WRP programs (Exhibit H.1).

5.0 Wetland and Waterbody Impacts

The proposed Vantage West Spur Lateral Pipeline would be installed using open-cut trenching techniques. Vantage would maintain a 30-foot permanent right-of-way (five feet on one side of the pipeline and 25 feet on the other). Additionally, a 70-foot temporary construction right-of-way would be established adjacent to the permanent right-of-way. The combined right-of-way would be 100 feet wide with the pipeline at the center of the permanent right-of-way. However, neck-down areas will be used around wetlands to avoid or minimize impacts

For the field investigation, a 500-foot corridor was surveyed for wetlands and waterbodies on the preferred and alternative routes (Exhibits F.2 through F.4). The field investigation resulted in the identification and mapping of 62 wetlands and 11 waterbodies present within the preferred 500-foot corridor (69 wetlands and 10 waterbodies alternative route). Fifty-five (55) wetlands and 3 waterbodies would be avoided during construction by routing around the wetland within the 500-ft corridor (60 wetlands and 4 waterbodies avoided on alternative route). Seven (7) wetlands and 8 waterbodies would be within or on the edge of the 30-foot permanent right-of-way (9 wetlands and 6 waterbodies on alternative route). Overall, 1.08 acres of wetlands within the temporary work space will be temporarily impacted on the preferred route, and 1.76 acres on the alternative route. In an effort to avoid and minimize impacts to wetlands, the initial pipeline corridor was revised through several iterations. Pipeline routing identified wetland areas to be excluded from the temporary work areas by necking down the work area width.

Permanent wetland impacts are those that involve permanent dredging of material from, or the placement of permanent fill into waters of the United States. No pump stations or other permanent structures would be constructed in wetlands. There will be no discharges into or filling of wetlands. The proposed project would therefore NOT create any permanent impacts to wetlands.

While the 30-foot permanent right-of-way would be maintained free of trees and shrubs. One PFO wetland was observed within the permanent or construction right-of-way. This is a wetland with a small treed area surrounding a PEM wetland. The permanent right-of-way will not impact the treed area. Tree and shrub removal is not considered to constitute a wetland loss, but does result in permanent wetland type conversion. The clearing of any tree and/or shrub vegetation is considered a secondary wetland impact and would be regulated by the U.S. Army Corps of Engineers. No clearing of this type of vegetation would be necessary, and no permanent wetland type conversion would occur as a result of the proposed project.

All of the wetland and waterbody impacts would be avoided or minimized to the extent practicable. Vantage would implement additional measures to avoid impacts to wetlands by the temporary right of way by either necking down the right-of-way for a short distance in order to avoid identified wetlands, or relocating the construction right-of-way to the opposite side of the permanent right-of-way in order to fully avoid temporary impacts. In addition the perennial waterway may be avoided by boring or horizontal directional drills (HDDs) under the water feature.

Ten (10) waterbodies are classified as ephemeral or intermittent waterways on the preferred route (9 on alternative route), and 61 wetlands on preferred route (69 alternative route) are Type 1 (seasonally flooded). Impacts to these areas will be minimized by constructing the pipeline during the dry season and implementing best management practices (BMP) as outlined in the Environmental Protection Plan (EPP).

The project would temporarily impact 7 isolated wetlands and 8 waterbodies within the preferred route permanent right-of-way (nine isolated wetlands and 6 waterbodies within the alternative route). Vantage would consider various mitigation measures identified in the EPP to reduce wetland impacts. For instance, wetland soils excavated during pipeline construction would be stockpiled for reuse and the area would be restored to its original grade and seeded or planted with native plants after construction. Many other construction activities, such as stockpiles, lay down areas, and construction staging areas would be located outside of wetlands.

6.0 Mitigation Summary

All wetland and waterbody impacts caused by the construction and operation of the Vantage West Spur Lateral Pipeline would be temporary. There will be no discharges into or filling of wetlands. The majority of wetlands will be avoided by routing around the wetland within the survey corridor (Exhibit F.2 and F.3). Vantage would consider various mitigation measures identified in the EPP to reduce any temporary wetland impacts. No additional mitigation measures are necessary or proposed.

In general, the potential residual effects of pipeline construction and operation on local wetlands or waterways are expected to be localized, short-term, and reversible in nature. Many potentially traversed wetlands identified during the field surveys have already been directly impacted by agriculture (margins tilled, vegetation cut for hay, etc). The pipeline construction would result in the temporary, localized increase of certain effects such as sedimentation, temporary disruption to local wildlife and vegetation, and alteration of surface drainage patterns.

By adhering to established and successful mitigation practices and reclamation methods, and following a proactive post-construction monitoring program, it is believed that there would be no long-term or permanent cumulative impacts to local wetlands as a result of the Vantage West Spur Lateral Pipeline project. Any potential cumulative impacts are expected to be equally localized, short-lived, and reversible.

7.0 Disclaimer Statement

The information and conclusions drawn in this report are the professional judgment of the document preparers and should be used with caution until the results are verified by the USACE.

Wetlands that are abutting, adjacent to, or share a significant nexus with a traditional navigable water or a relatively permanent water are considered waters of the United States and are regulated under Section 404 of the Clean Water Act. Isolated wetlands, such as many of the prairie potholes identified within the project area, are not considered to be waters of the United States, and therefore, are not subject to federal jurisdiction. The U.S. Army Corps of Engineers would establish its jurisdiction on wetlands proposed to be impacted through a formal jurisdictional determination process prior to construction.

8.0 References

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Exhibit F.1: US Army Corp of Engineers Correspondence

KC HARVEY ENVIRONMENTAL, LLC

VANTAGE PIPELINE US LP

April 2, 2015

Dan Cimarosti, Program Manager
US Army Corps of Engineers, Omaha District
North Dakota Regulatory Office
1513 South 12th Street
Bismarck, North Dakota 58504

RE.: Request for Coordination and Informal Consultation for the Proposed Vantage West Spur Lateral Pipeline - Divide and Williams Counties, North Dakota.

Dear Mr. Cimarosti,

Vantage Pipeline US LP (Vantage) proposes to construct an eight-inch diameter pipeline in Divide and Williams Counties, North Dakota. The pipeline will be constructed as the centerline of the study area with an anticipated 70 foot wide disturbance area. The proposed Vantage West Spur Pipeline Project (West Spur Pipeline) will convey ethane from ONEOK Partners' Stateline II Gas Processing Plant near Williston, North Dakota to the existing Vantage ethane pipeline system near Stady, North Dakota. Vantage has completed the route planning and field phase of the project, and is currently filing an application with the Public Service Commission. Construction is expected to take place in the third and fourth quarters of 2015 and extend into the first quarter of 2016.

To facilitate our environmental review of West Spur, we have prepared the attached Wetland and Waterbodies Assessment Report. The project will have no discharges into or filling of wetlands, and there be will permanent impacts to wetlands. **As we discussed on the phone recently, we would like a letter from the USACE stating that the attached report has been reviewed, an informal determination of jurisdiction, and statement of any permitting needs for the project.**

In summary, a 500-foot corridor was surveyed for wetlands and waterbodies on the preferred and alternative routes. The field investigation resulted in the identification and mapping of 62 wetlands and 11 waterbodies present within the preferred 500-foot corridor (69 wetlands and 10 waterbodies alternative route). Fifty-five (55) wetlands and 3 waterbodies would be avoided during construction by routing around the wetland within the 500-ft corridor (60 wetlands and 4 waterbodies avoided on alternative route). Seven (7) wetlands and 8 waterbodies would be within or on the edge of the 30-foot permanent right-of-way (9 wetlands and 6 waterbodies on alternative route). Overall, 1.08 acres of wetlands within the temporary work space will be temporarily impacted on the preferred route, and 1.76 acres on the alternative route. All wetlands impacted are isolated PEM wetlands. Ten (10) of the waterbodies on the preferred route are classified as ephemeral or intermittent waterways (9 on alternative route). Construction in the vicinity of these waterbodies is planned for the fall and winter to minimize impacts.

All of the wetland and waterbody impacts would be avoided or minimized to the extent practicable. Vantage would implement additional measures to avoid impacts to wetlands by the temporary right of way by either necking down the right-of-way for a short distance in order to avoid identified wetlands, or relocating the construction right-of-way to the opposite side of the permanent right-of-way in order to

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fully avoid temporary impacts. In addition the one perennial waterway may be avoided by boring or horizontal directional drills (HDDs) under the water feature.

Vantage has contracted KC Harvey to assist with environmental review and permitting of West Spur Pipeline. If you have questions or need additional information, please contact Monica Pokorny at KC Harvey (406-585-7402 x108, mpokorny@kcharvey.com). Thank you for your assistance.

Thank you for your consideration in this matter.

Sincerely,

David Cameron, P.E.
Principle Engineer, KC Harvey Environmental, LLC
Vantage West Spur Pipeline Project

Enclosures: Wetlands and Waterbodies Assessment Report
Wetlands and Waterbodies Map
Delineation Data Sheets

cc: Monica Pokorny, KC Harvey

Exhibit F.2: Summary of Surveyed Wetlands

Wetland ID	Circular 39 Classification	Cowardin Classification	Hydrologic Water Type	Preferred Route	Alternative Route	Potential Impacts	Acres of Impact[1]
W_KC1_DV_20	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_26	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_35	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_36	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_37	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_38	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_39	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_40	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_42	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_44	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_55	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_56	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_57	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_58	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_59	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_60	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_61	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_62	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_63	1	PEM	ISOLATE	X	X	Short term impacts through wetland	0.07
W_KC1_DV_64	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_65	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_66	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_67	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_68	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_69	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_DV_70	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0

Wetland ID	Circular 39 Classification	Cowardin Classification	Hydrologic Water Type	Preferred Route	Alternative Route	Potential Impacts	Acres of Impact[1]
W_KC1_WM_4	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_WM_5	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_WM_7	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_WM_16	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_WM_45	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_WM_46	1	PEM	ISOLATE	X	X	Short term impacts through wetland	0.17
W_KC1_WM_47	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_WM_48	1	PEM	ISOLATE	X	X	Short term impacts through wetland	0.03
W_KC1_WM_50	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_WM_54	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC1_WM_75	1	PEM	ISOLATE	X		Avoided by routing within corridor	0
W_KC1_WM_76	1	PEM	ISOLATE	X		Avoided by routing within corridor	0
W_KC1_WM_77	1	PEM	ISOLATE		X	Avoided by routing within corridor	0
W_KC1_WM_78	1	PEM	ISOLATE		X	Avoided by routing within corridor	0
W_KC1_WM_80	1	PEM	ISOLATE		X	Avoided by routing within corridor	0
W_KC2_DV_3	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC2_DV_4	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC2_WM_1	1	PEM	ISOLATE	X	X	Short term impacts through wetland	0.14
W_KC2_WM_16	1	PEM	ISOLATE		X	Avoided by routing within corridor	0
W_KC2_WM_24	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC2_WM_25	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_DV_11	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_DV_12	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_DV_13	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_DV_14	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_DV_15	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_DV_16	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0

Wetland ID	Circular 39 Classification	Cowardin Classification	Hydrologic Water Type	Preferred Route	Alternative Route	Potential Impacts	Acres of Impact[1]
W_KC3_DV_20	6	PSS	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_WM_5	1	PEM	ISOLATE		X	Avoided by routing within corridor	0
W_KC3_WM_6	1	PEM	ISOLATE	X	X	Short term impacts on edge of wetland	0.02
W_KC3_WM_7	1	PFO	ISOLATE	X	X	Short term impacts, missing treed area	0.07
W_KC3_WM_24	1	PEM	ISOLATE		X	Short term impacts through wetland	0.45
W_KC3_WM_25	1	PEM	ISOLATE	X	X	Short term impacts on edge of wetland	0.23
W_KC3_WM_26	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_WM_27	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_WM_28	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_WM_29	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_WM_30	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_WM_31	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_WM_32	1	PEM	ISOLATE		X	Short term impacts on edge of wetland	0.28
W_KC3_WM_33	1	PEM	ISOLATE		X	Short term impacts on edge of wetland	0.07
W_KC3_WM_34	1	PEM	ISOLATE		X	Avoided by routing within corridor	0
W_KC3_WM_36	1	PEM	ISOLATE		X	Avoided by routing within corridor	0
W_KC3_WM_37	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_WM_38	1	PEM	ISOLATE	X	X	Avoided by routing within corridor	0
W_KC3_WM_39	1	PEM	ISOLATE	X		Avoided by routing within corridor	0

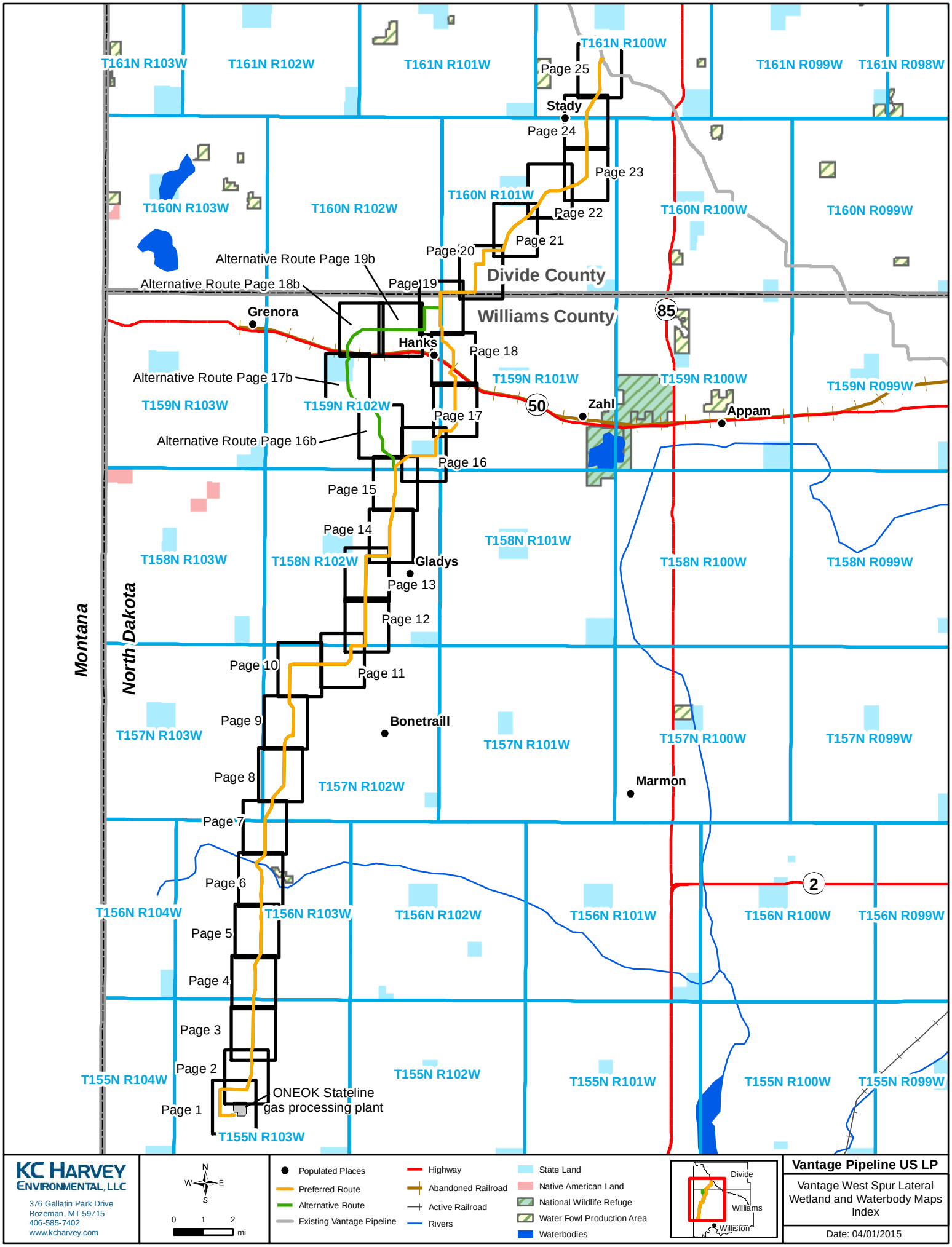
[1]Acres of impact is the wetland land area within the workspace.

Exhibit F.3: Summary of Surveyed Waterbodies

Waterbody ID	Classification (Flow Regime)[1]	Waterbody Name	AWD* at Centerline (ft)	OHWMW* at Centerline (ft)	Stream Bank Vegetation	Preferred Route	Alternative Route	Potential Impacts
S_KC1_WM_2	ED 1	Blacktail Creek	0.0	30.0	Reed canarygrass, smooth brome, Canada thistle, snowberry	X	X	Short term impacts
S_KC1_WM_3	ED 3	N Tributary Cow Creek	0.0	1.0	Smooth brome, prairie cordgrass	X	X	Short term impacts
S_KC1_WM_4	PS2	na	5.0	50.0	Reed canarygrass, cattail, prairie cordgrass	X	X	Short term impacts
S_KC1_WM_6	ED 1	na	1.0	10.0	Smooth brome, chokecherry, green ash, prairie cordgrass	X		Avoided by routing
S_KC1_WM_7	ED 1	na	0.0	20.0	Smooth brome, crested wheatgrass, Kentucky bluegrass, snowberry	X		Short term impacts
S_KC1_WM_8	IS 2	na	1.0	25.0	Reed canarygrass, cattail, smooth brome, prairie cordgrass	X	X	Short term impacts
S_KC2_WM_3	IS 3	na	0.0	2.0	Foxtail barley	X	X	Short term impacts
S_KC2_WM_6	ED 1	na	0.0	40.0	Reed canarygrass,	X	X	Avoided by routing
S_KC2_WM_7	ED 3	na	0.5	2.0	Agricultural	X	X	Avoided by routing
S_KC3_WM_3	IS 3	Cow Creek	0.0	3.0	Prairie cordgrass	X	X	Short term impacts
S_KC3_WM_4	ED 3	na	0.5	2.0	Reed canarygrass, Prairie cordgrass		X	Avoided by routing
S_KC3_WM_5	ED 3	Cottonwood Creek	6.0	2.0	Reed canarygrass,		X	Avoided by routing
S_KC3_WM_6	ED 2	Tributary Scorio Creek	0.3	0.0	Manna grass	X		Short term impacts

[1]ED1: Ephemeral >10 ft wide; ED2: Ephemeral 3 – 10 ft wide; ED3: Ephemeral <3 ft wide IS2: Intermittent 10 – 100 feet wide; IS3: Intermittent <10 feet wide; PS2: Perennial 10 - 100 ft wide.
Note: OHWMW: Ordinary High Water Mark Width; AWD - Average Water Depth

Exhibit F.4: Wetland and Waterbody Maps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Vantage West Spur Lateral
Wetland and Waterbody Maps
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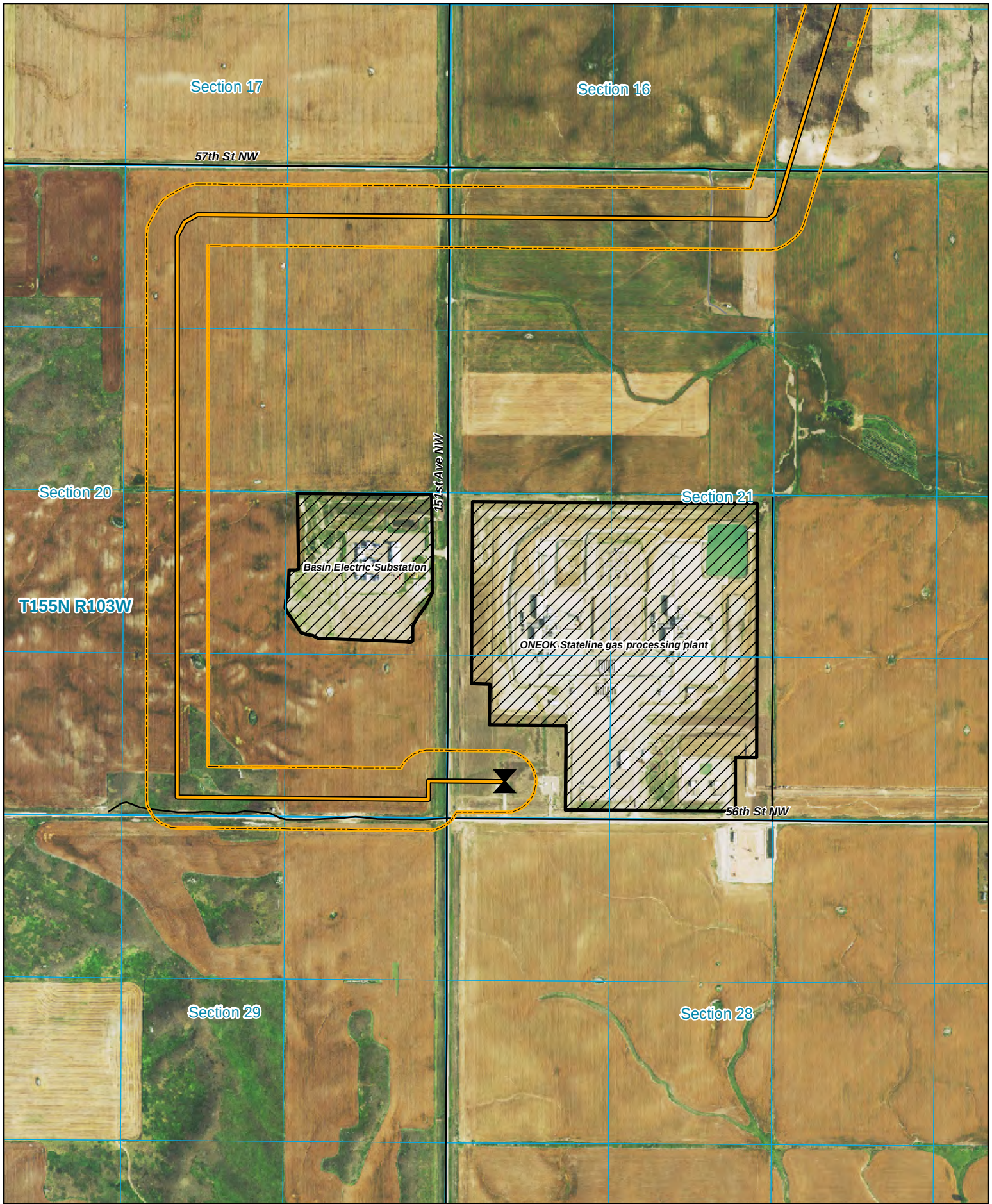

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- Mapped Pond
- Mapped Stream

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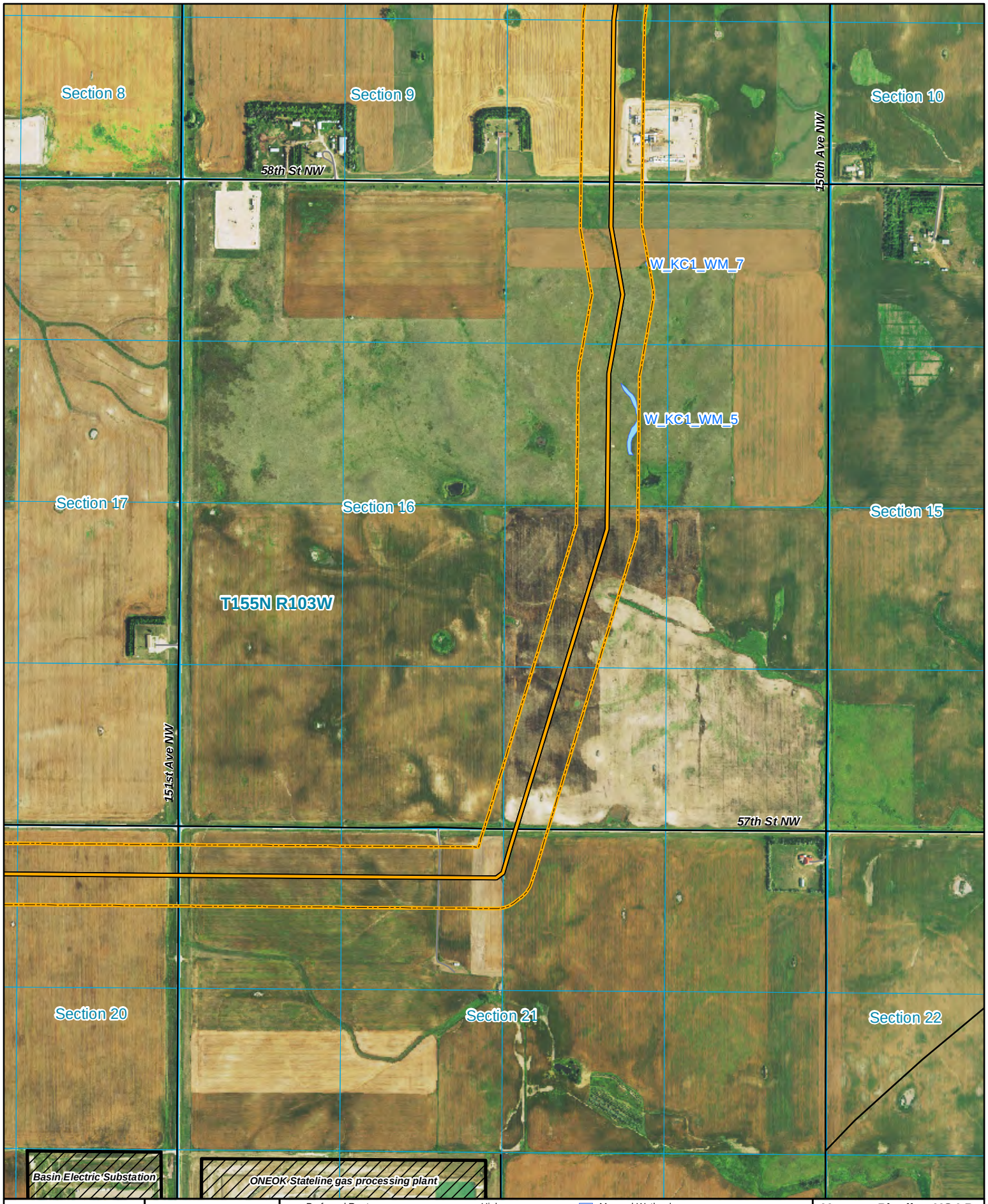

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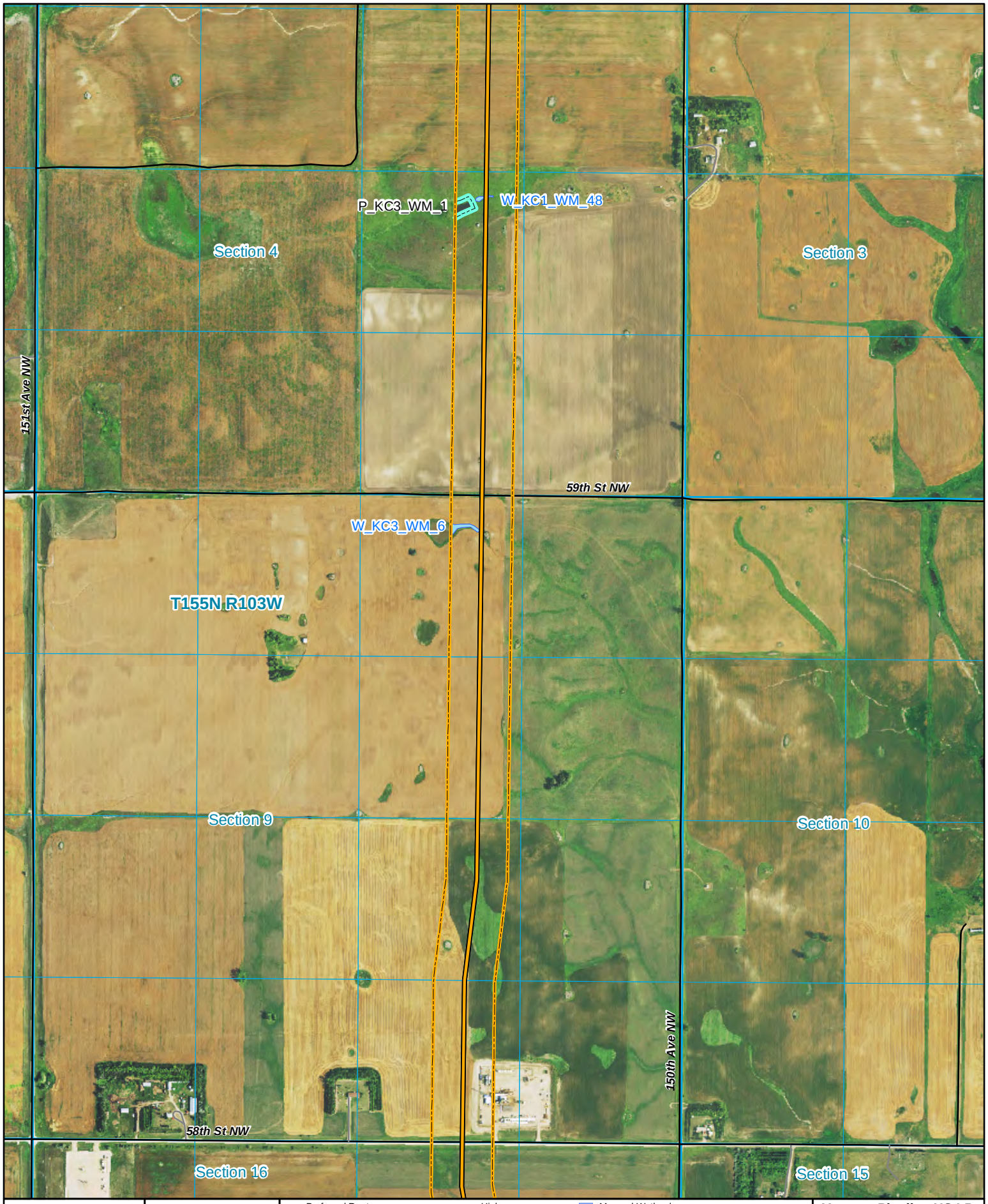

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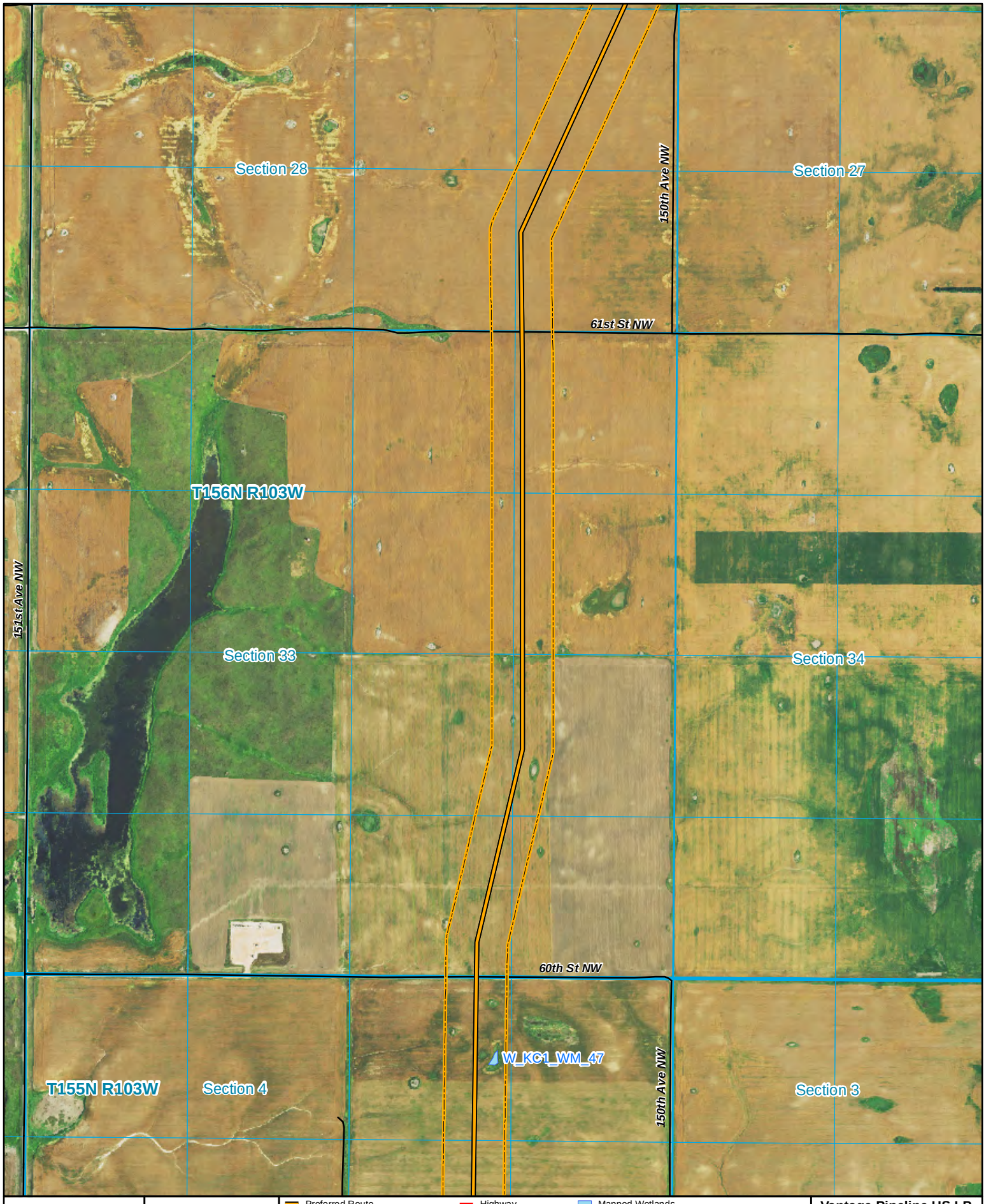

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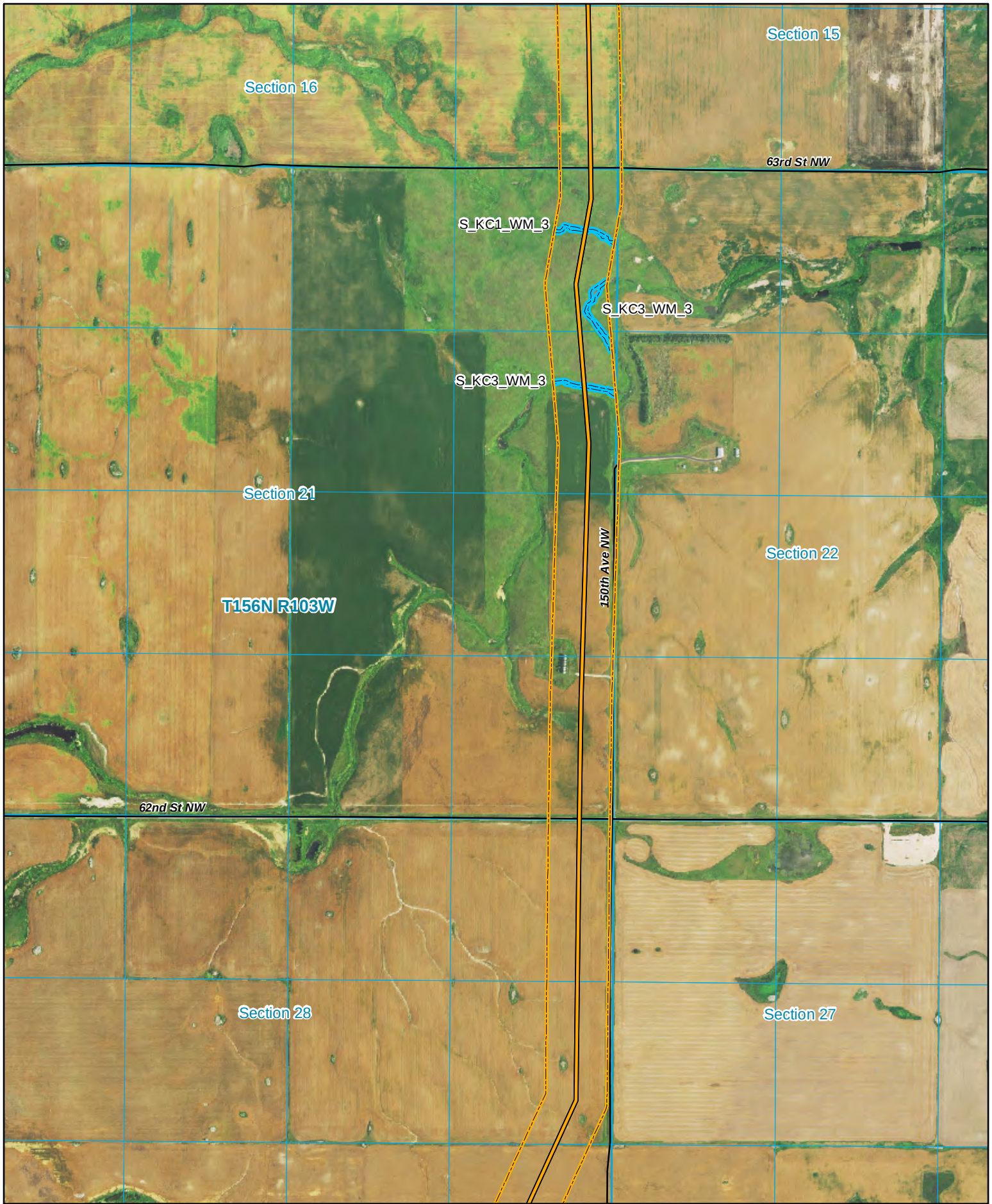

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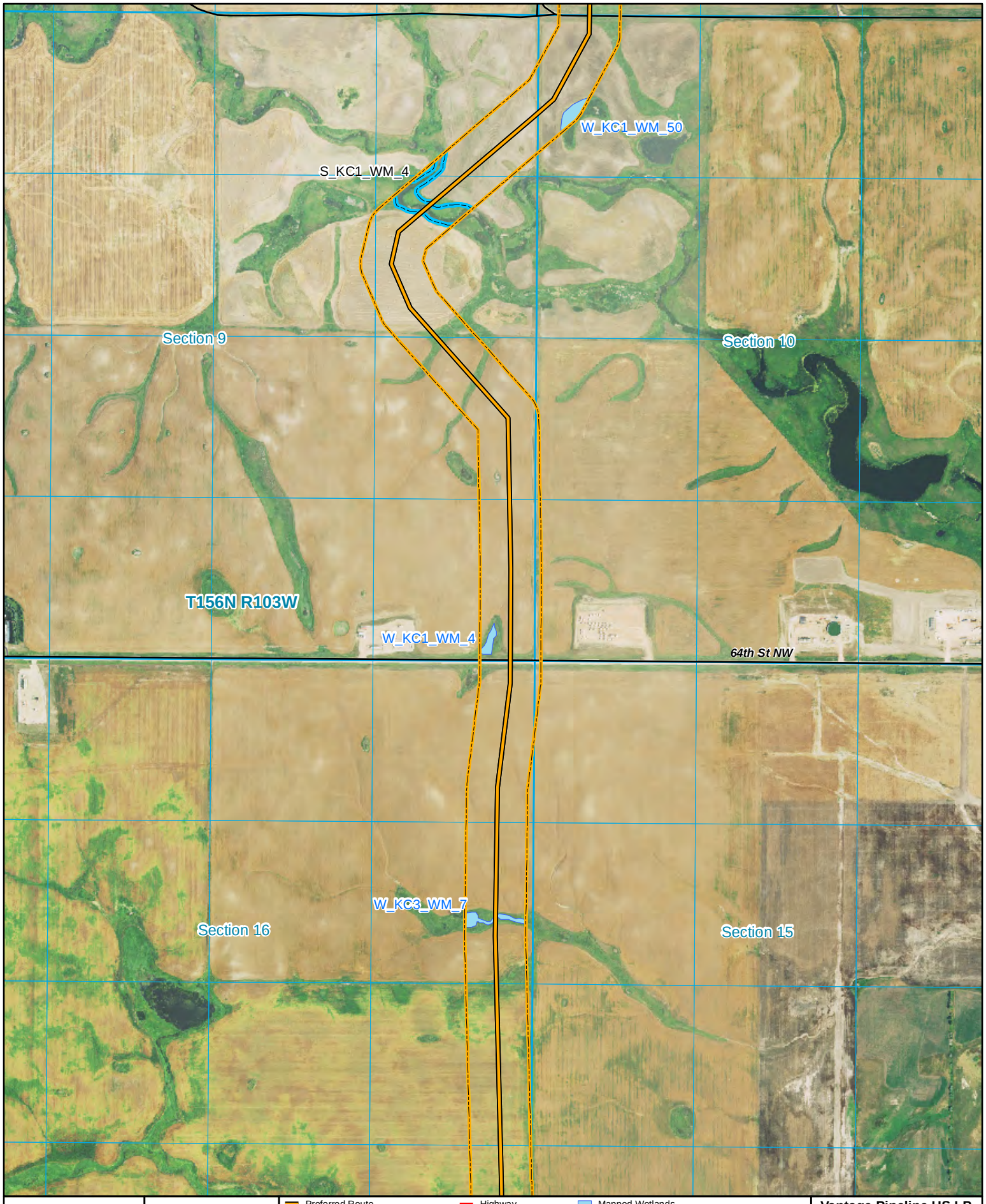

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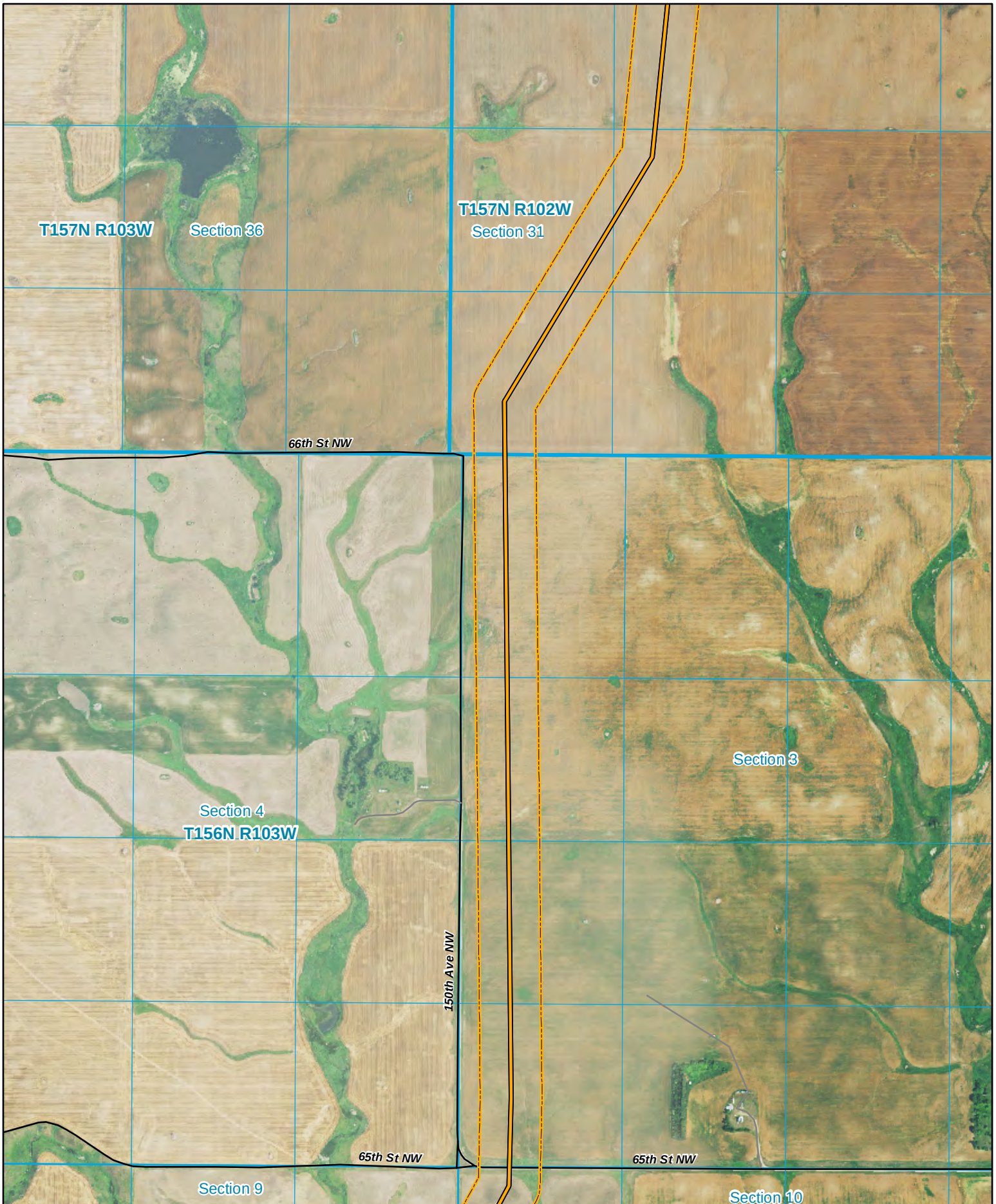

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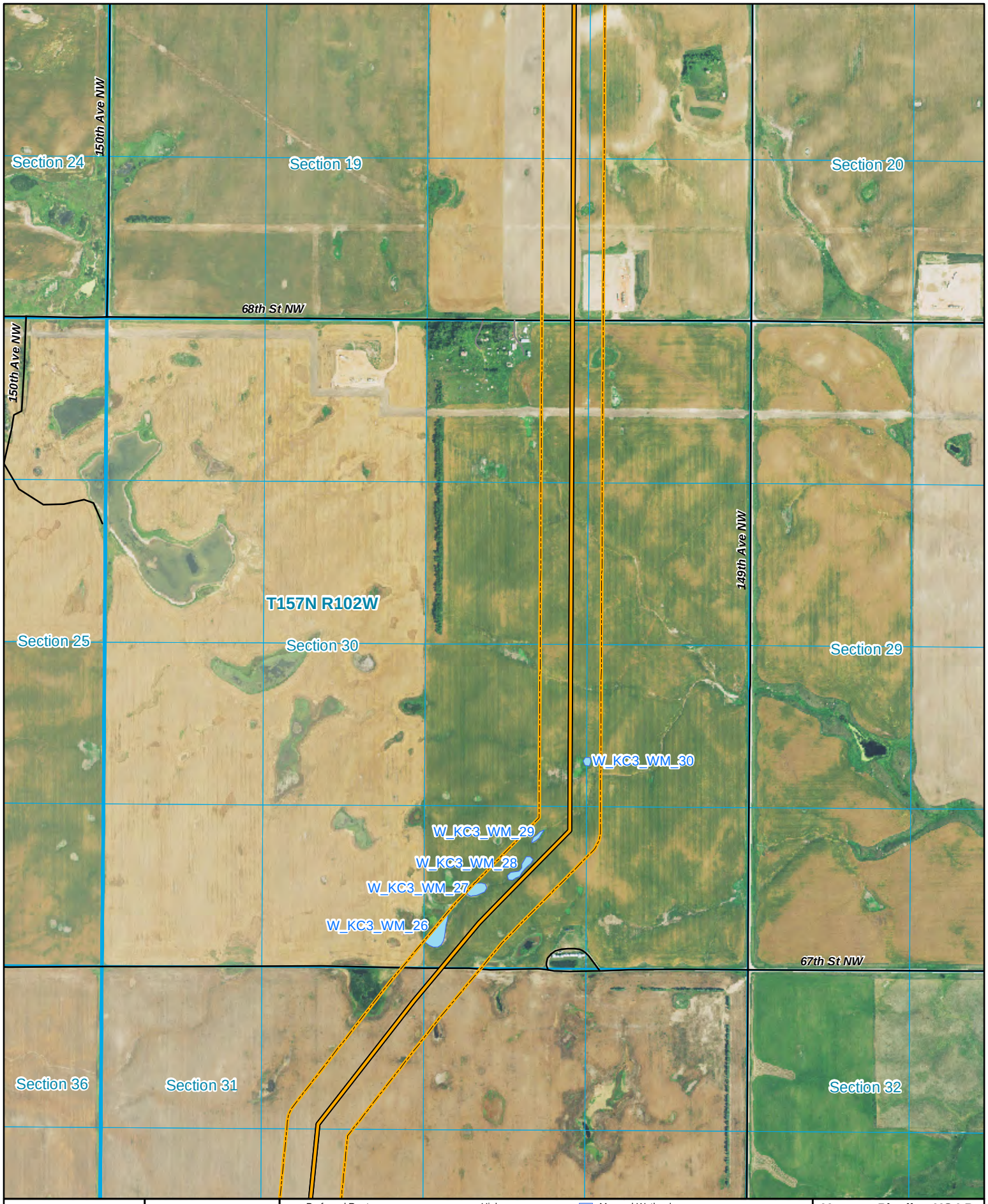

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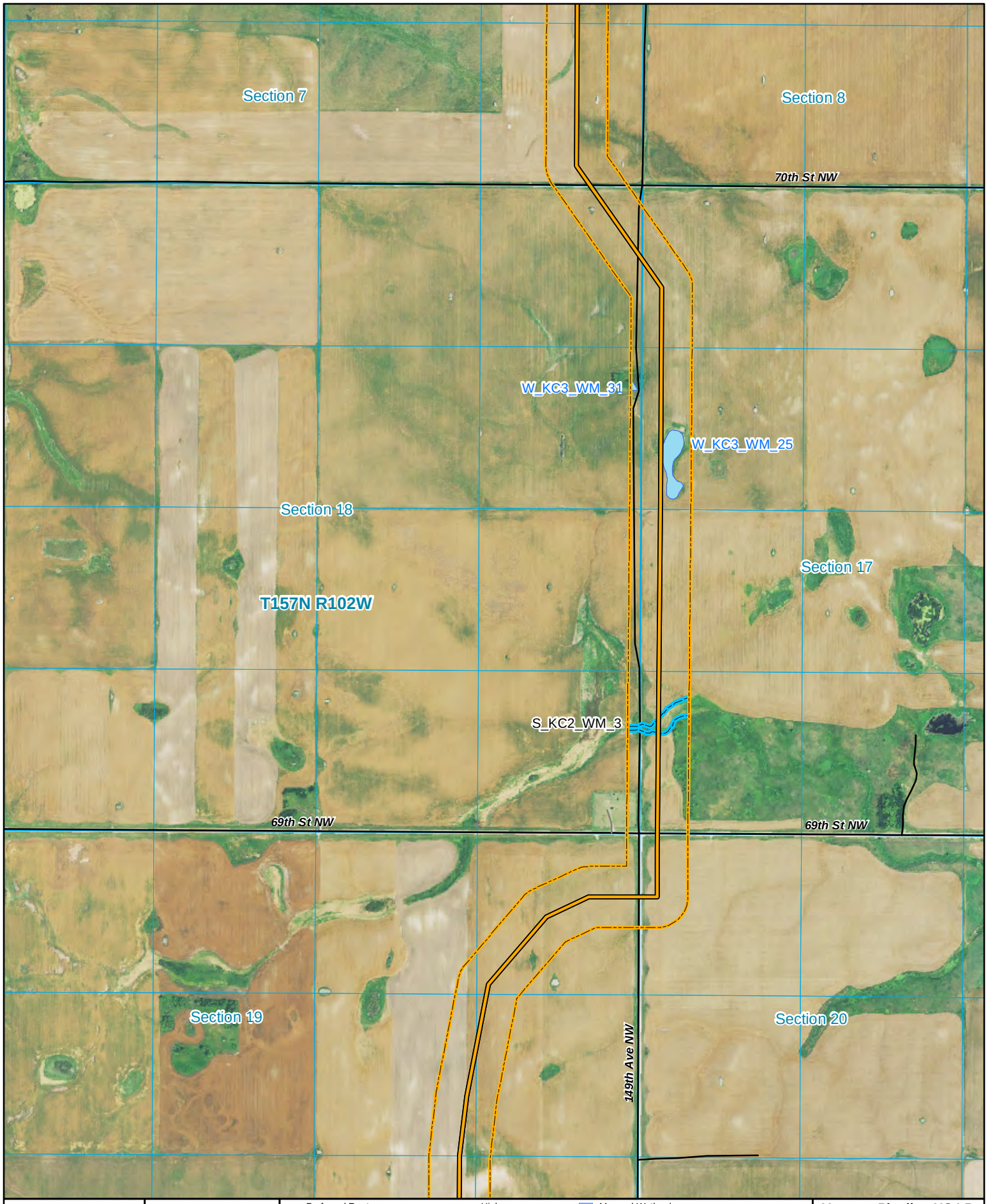

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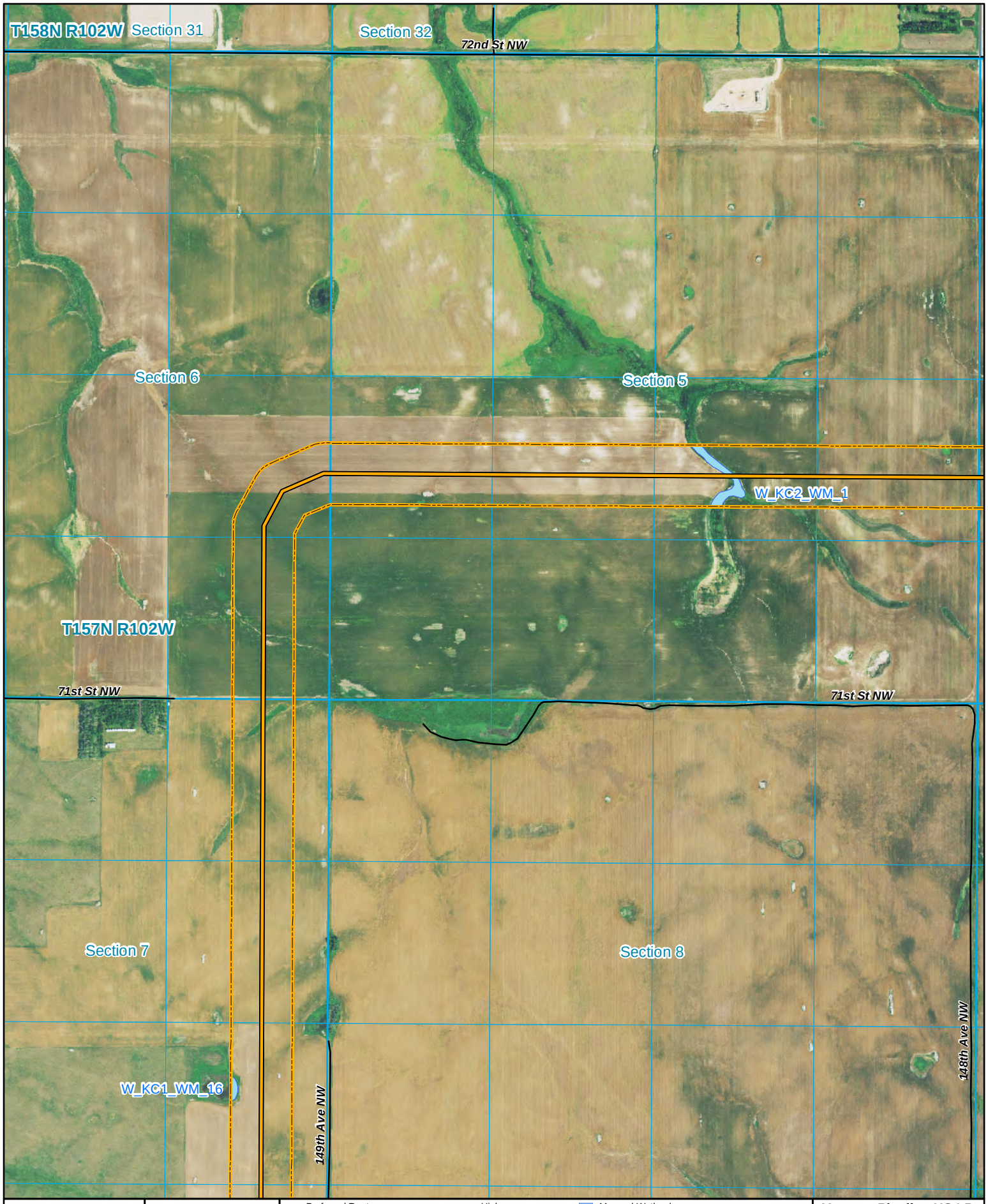

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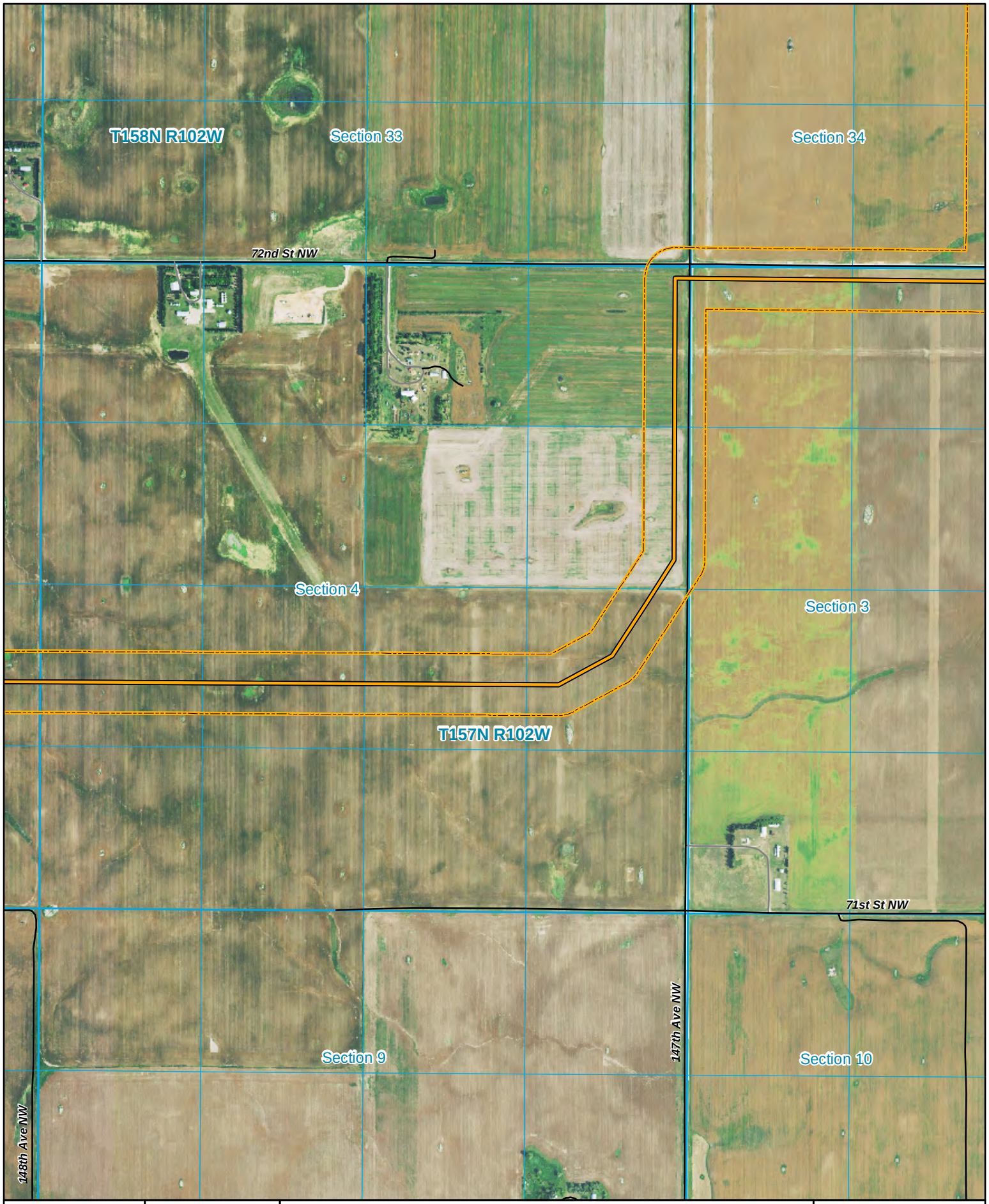

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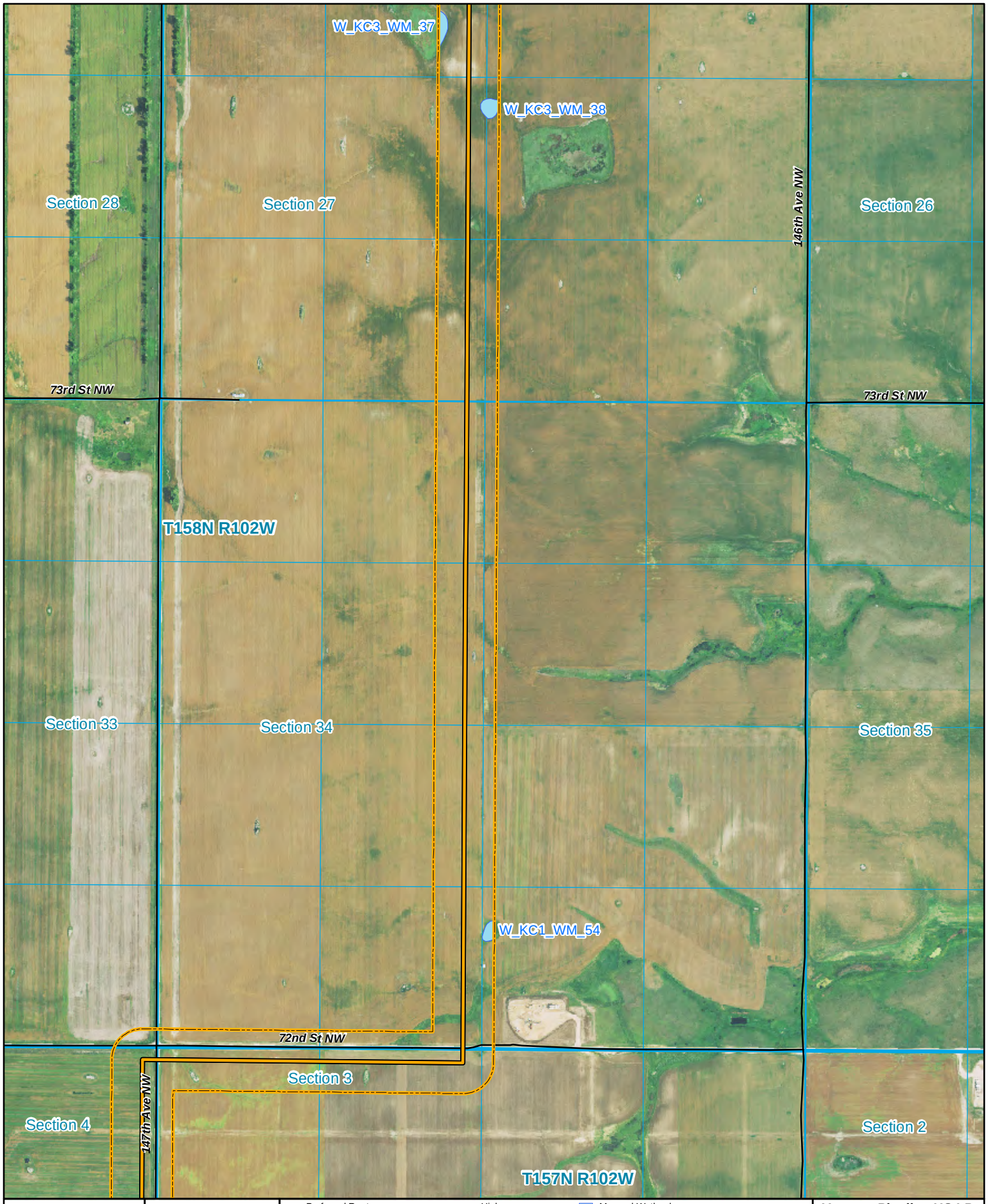

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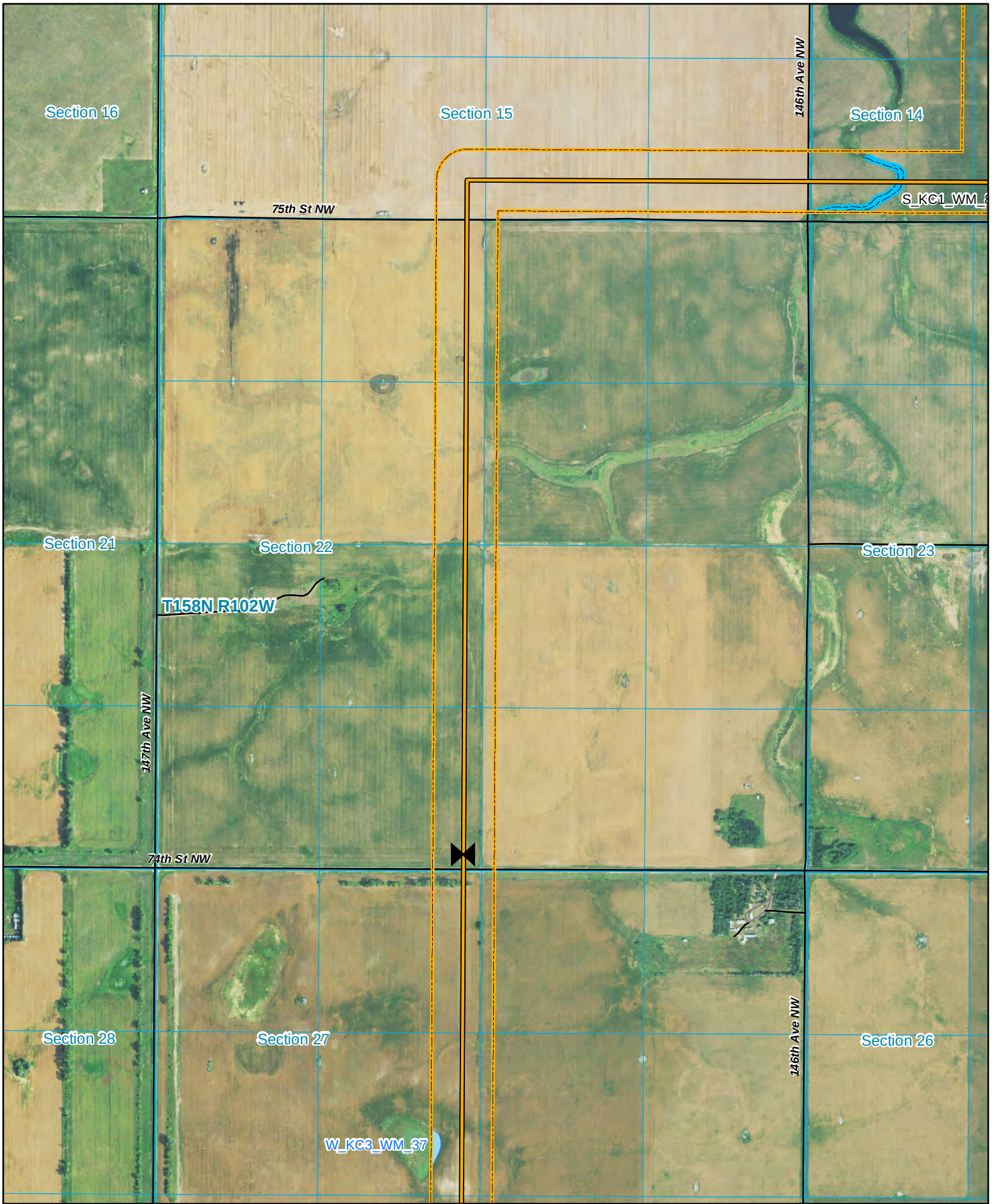

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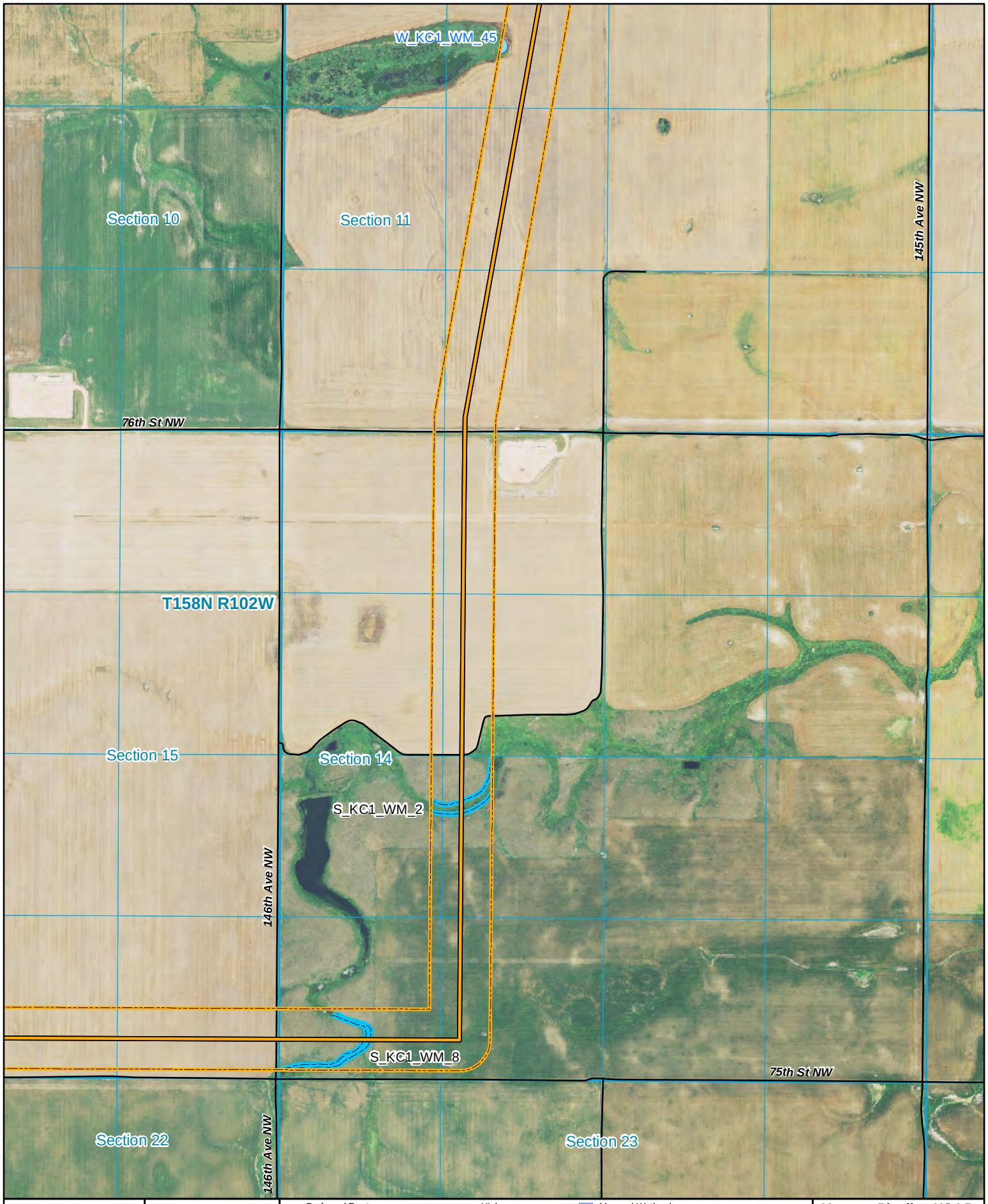

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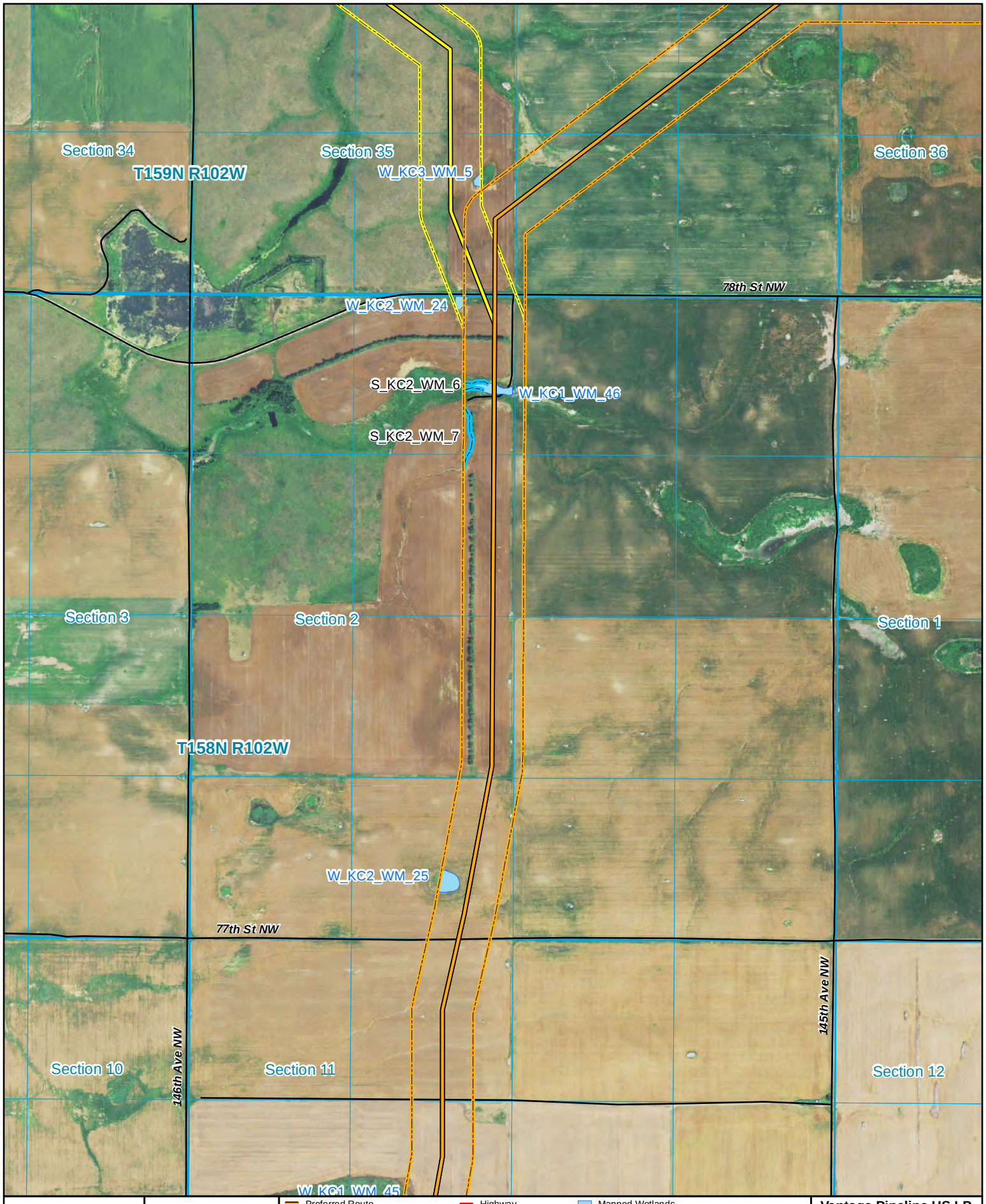

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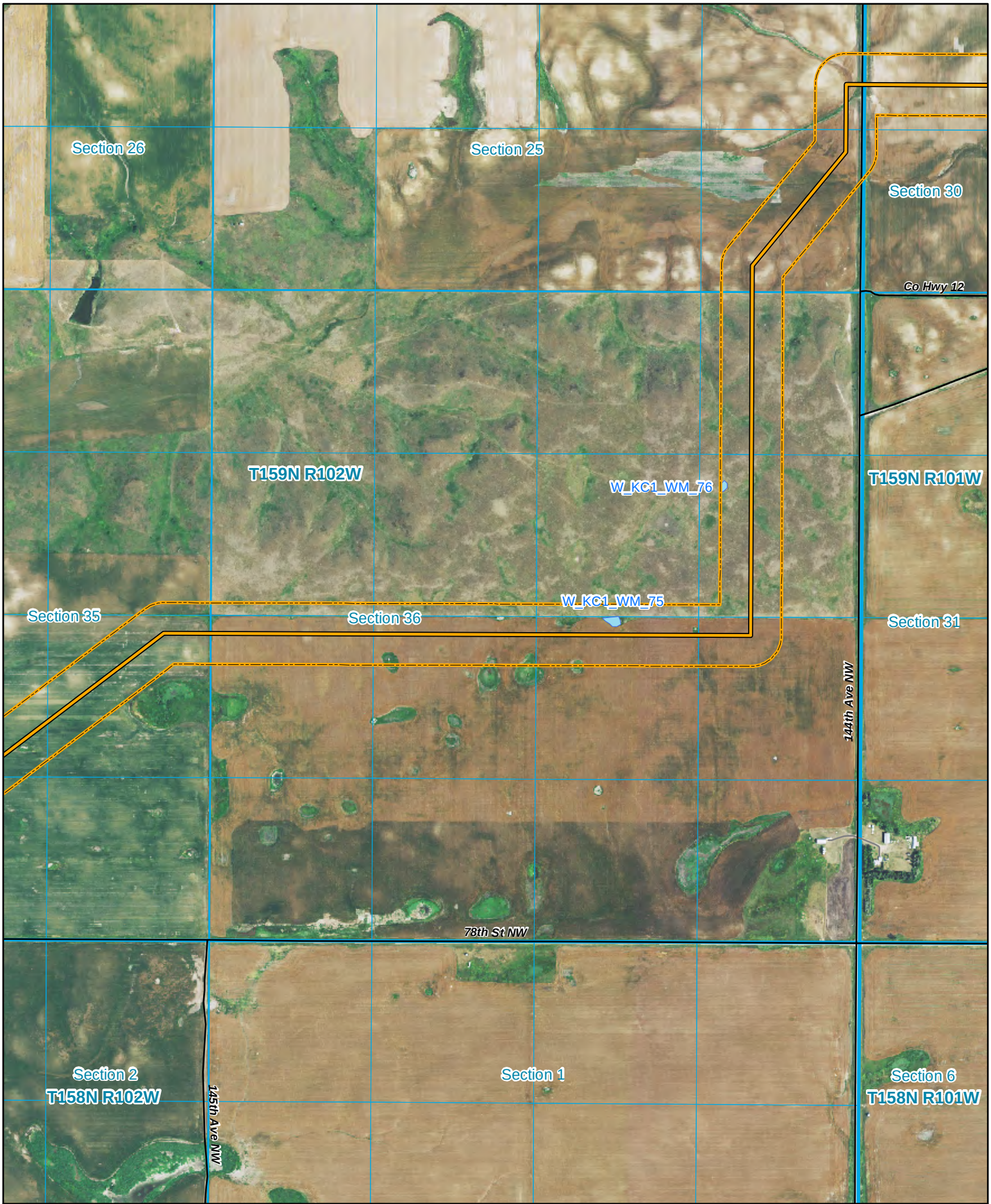

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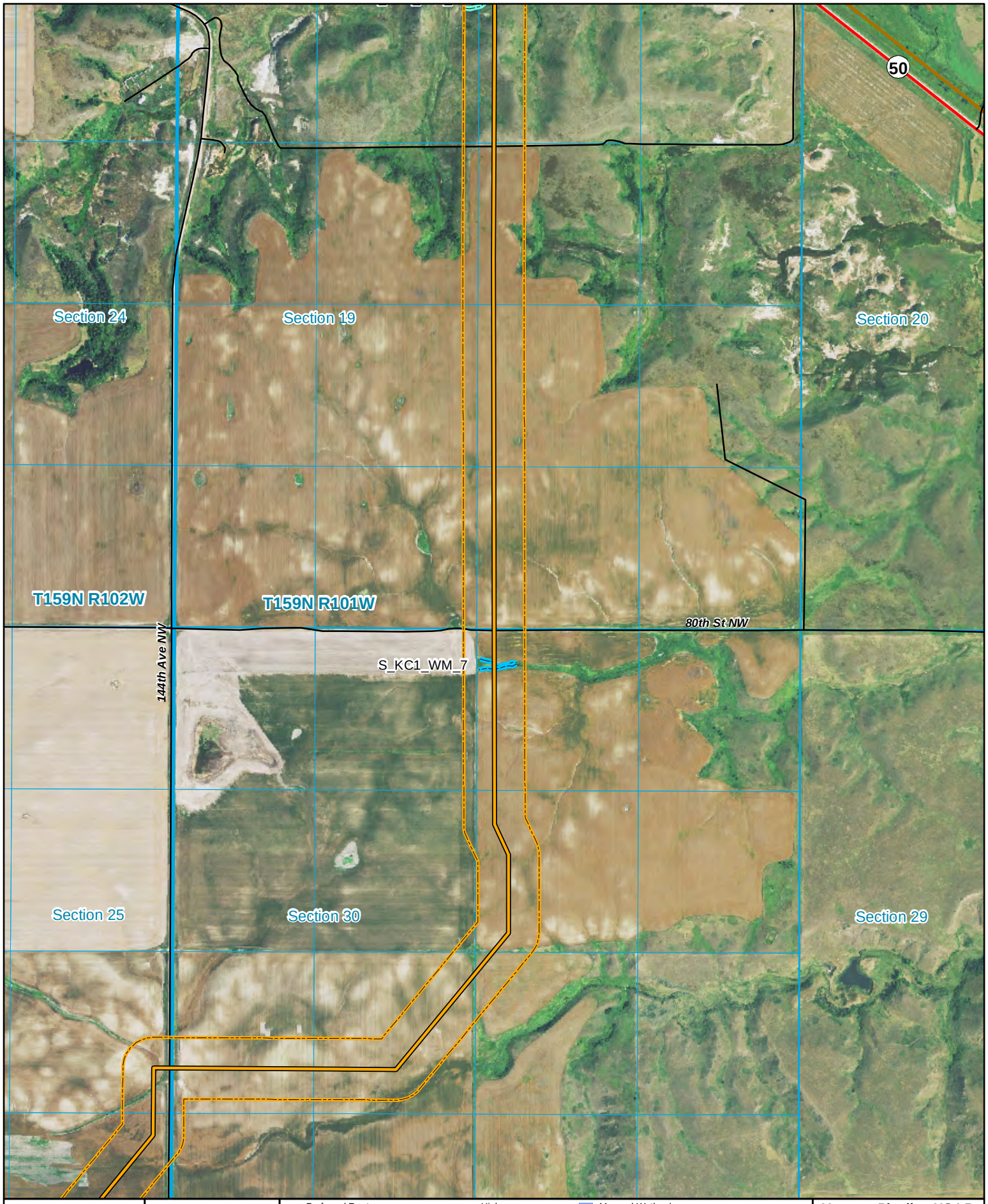

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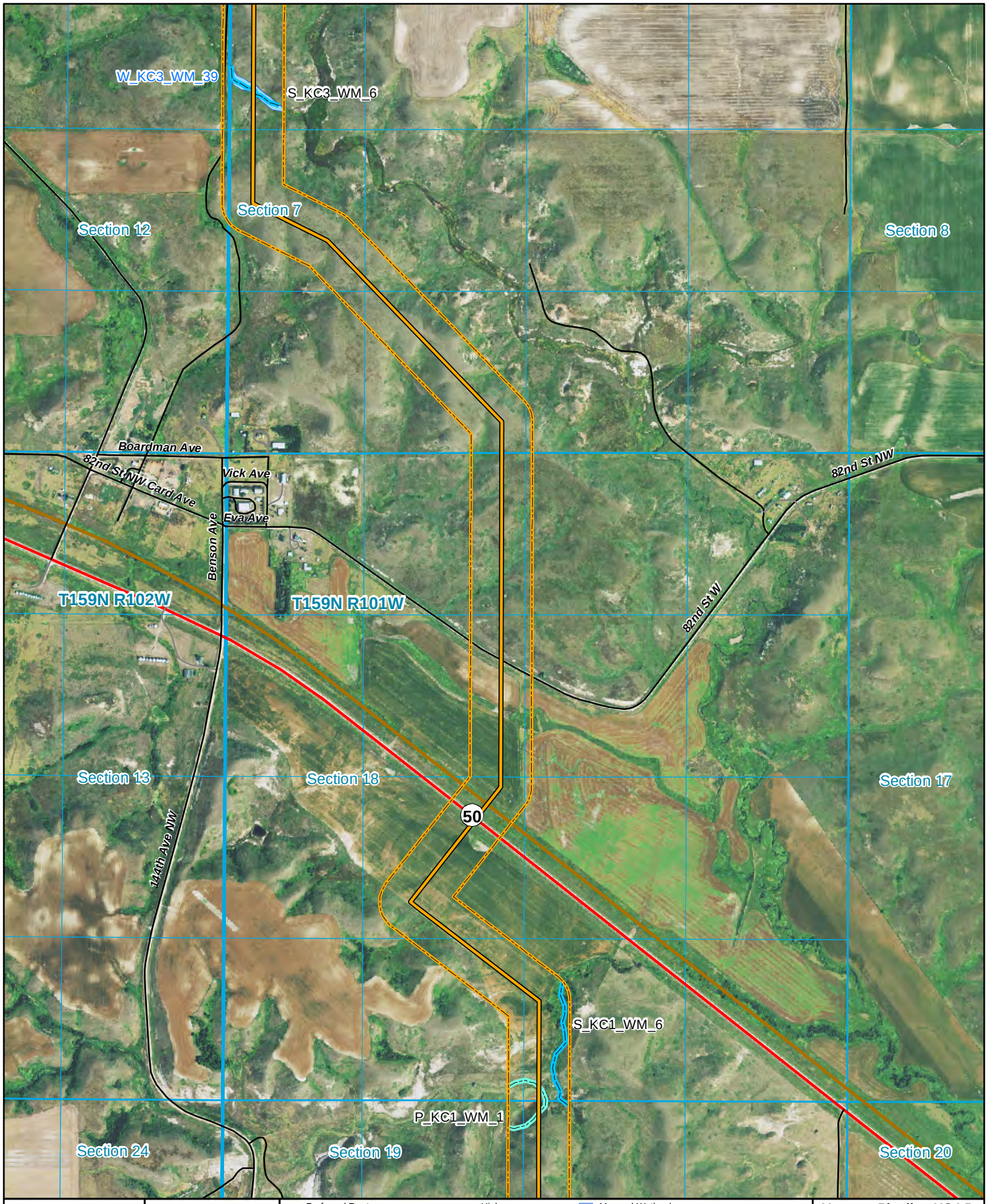

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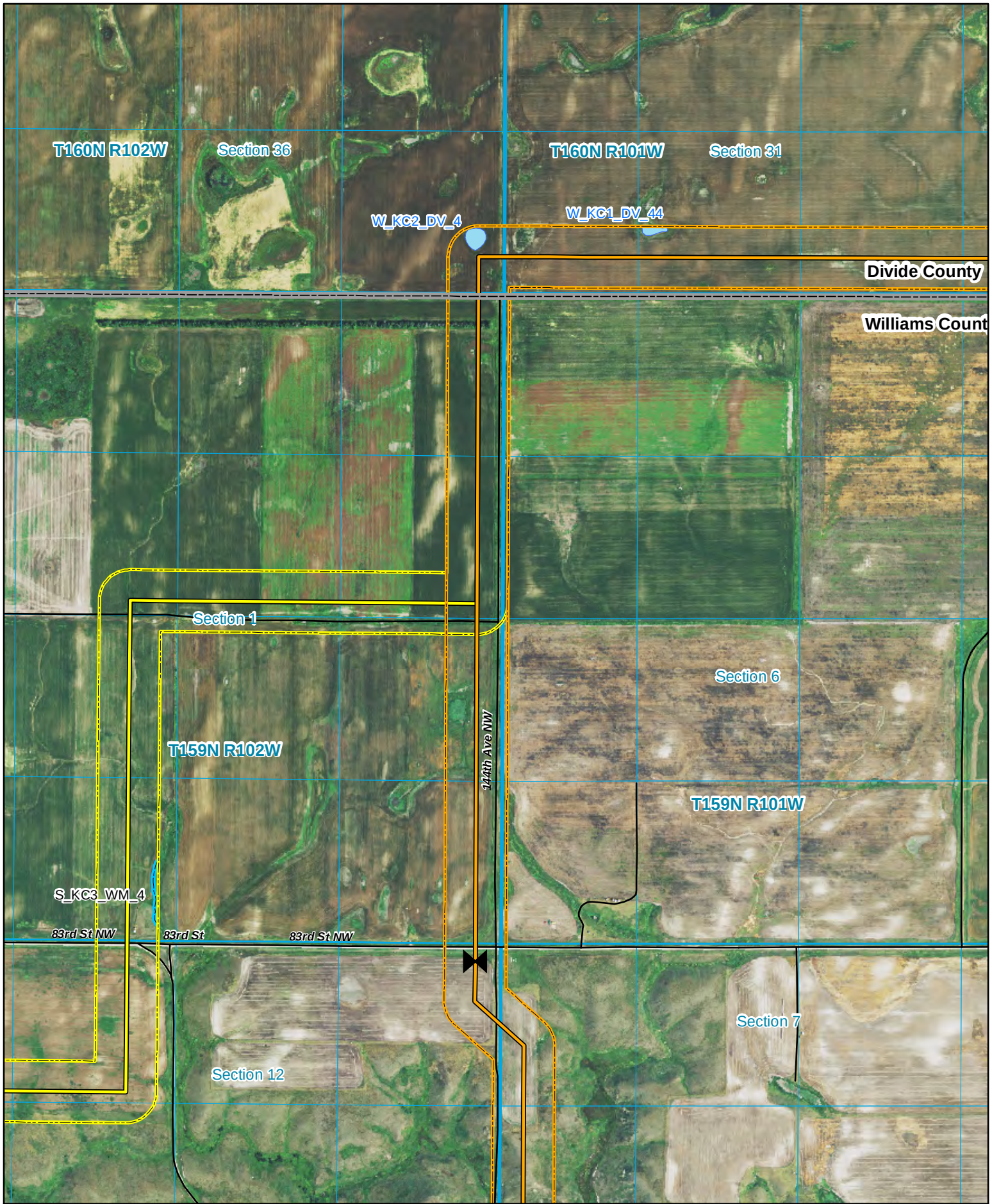

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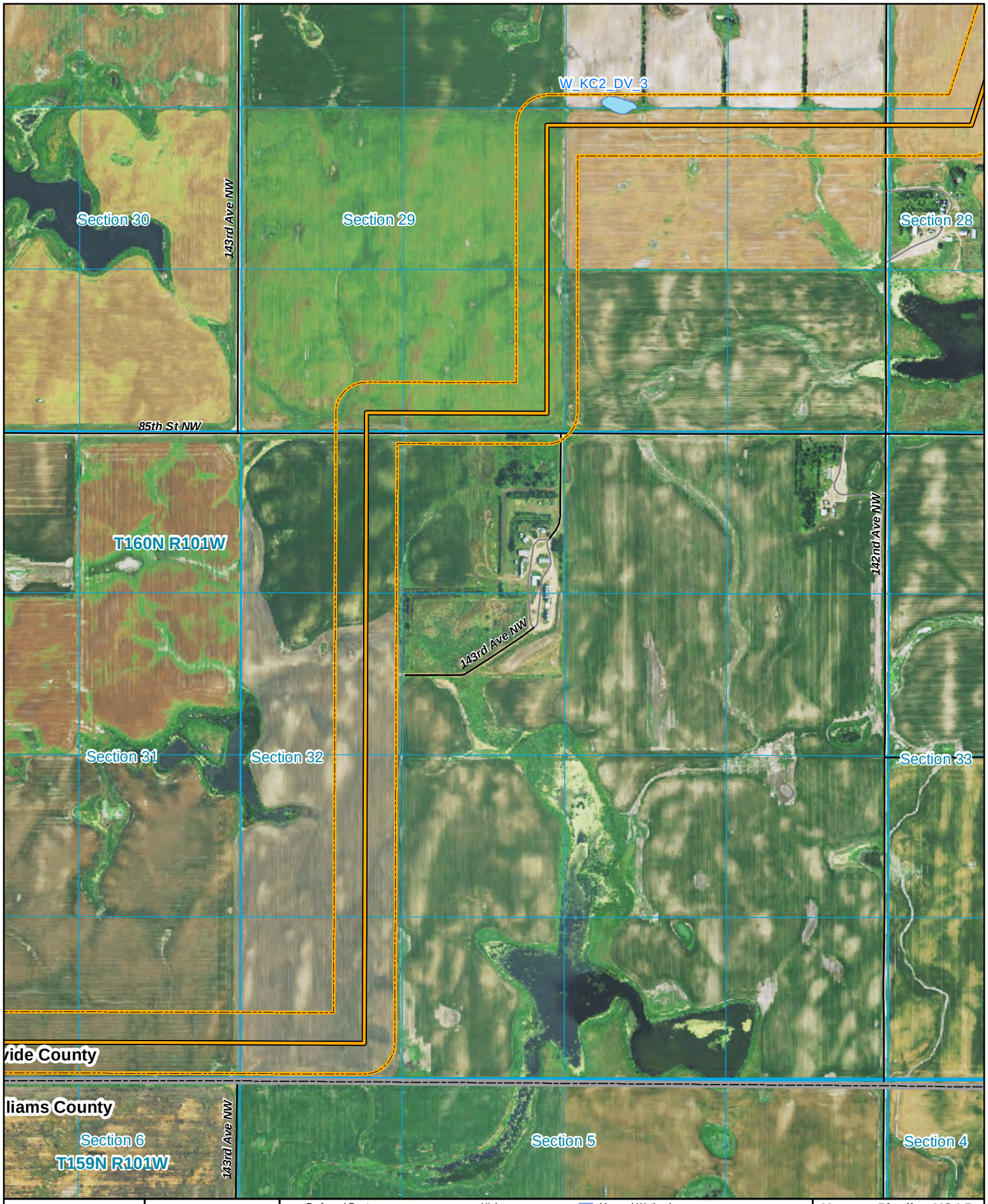

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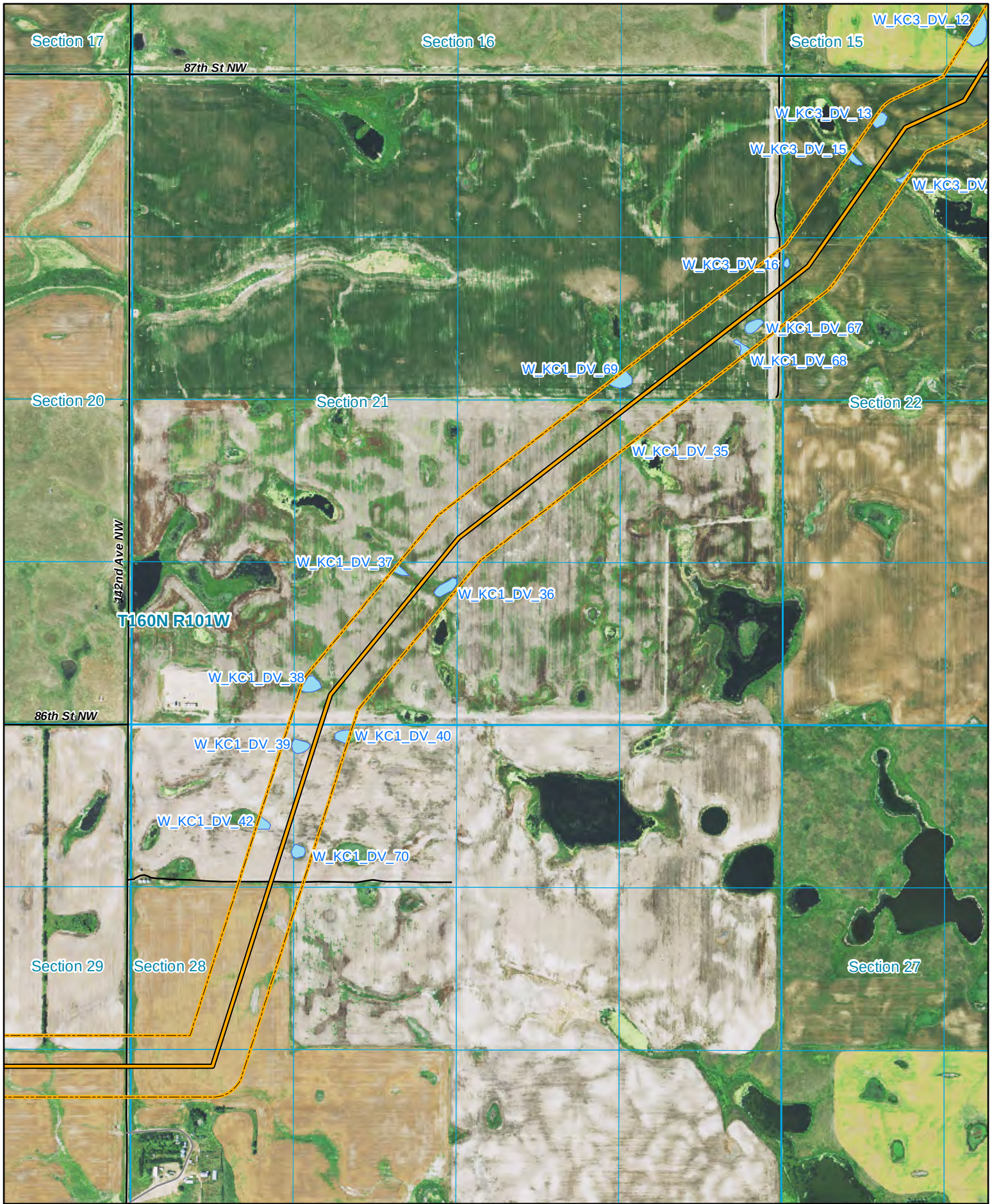

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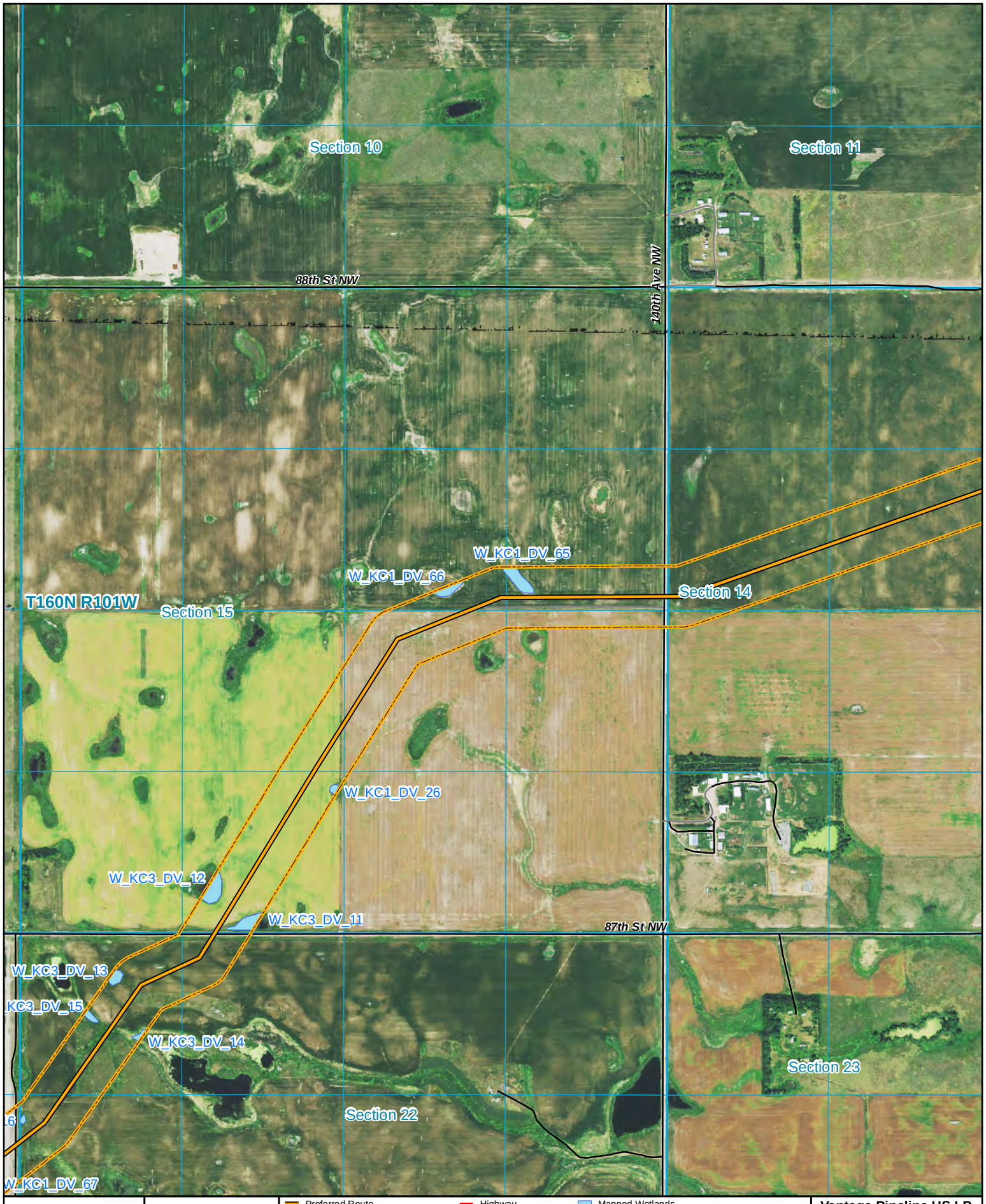

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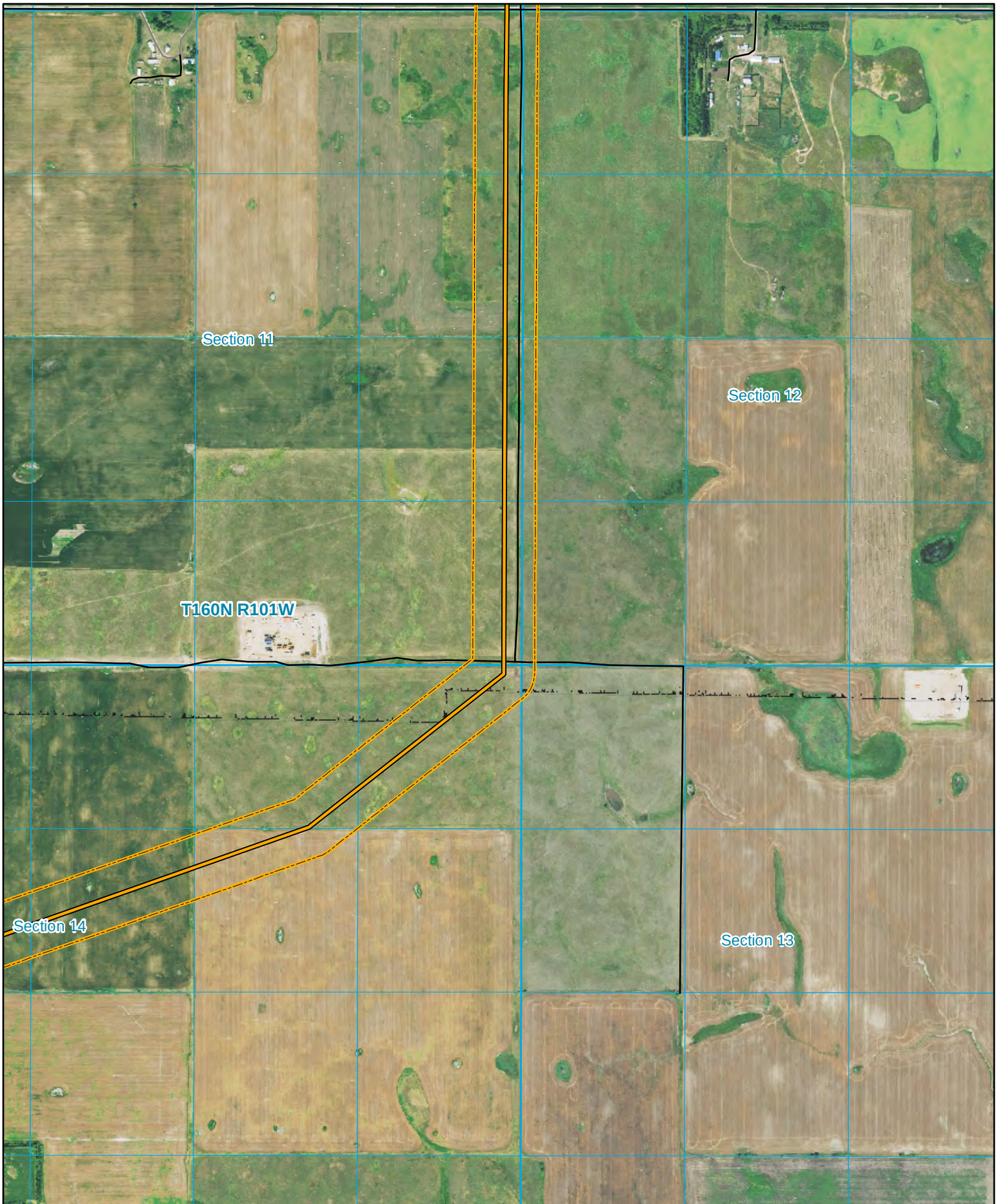

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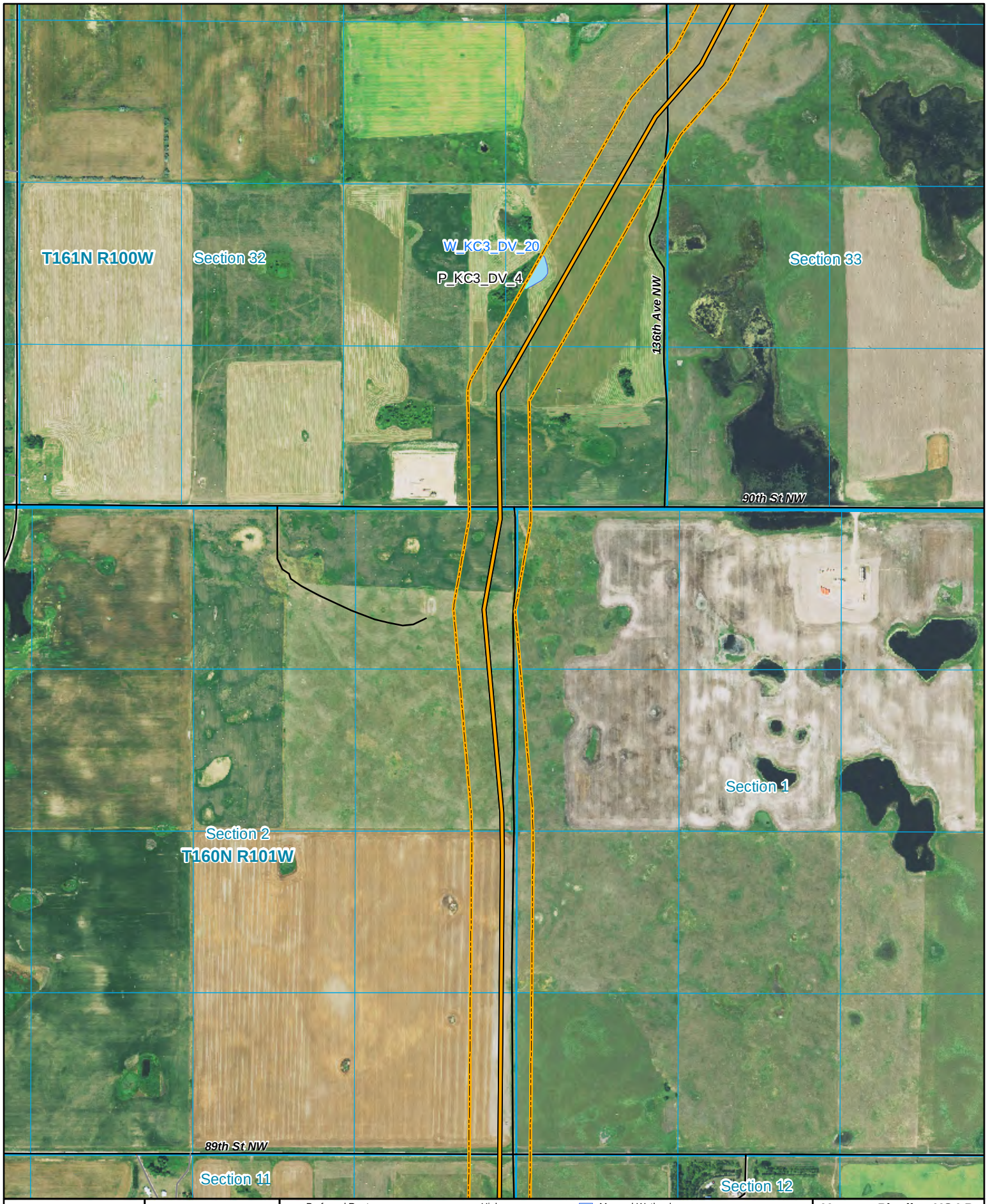

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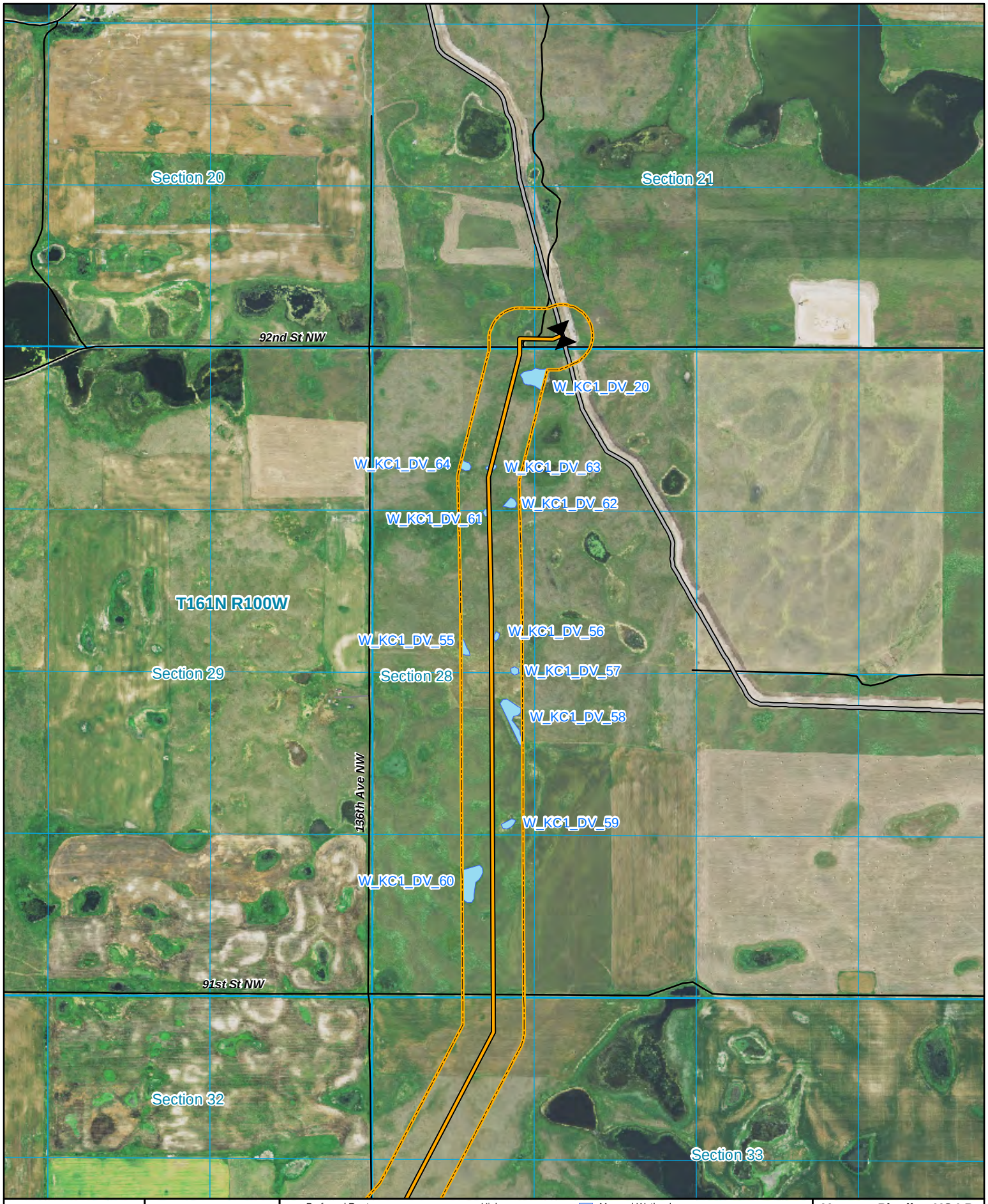

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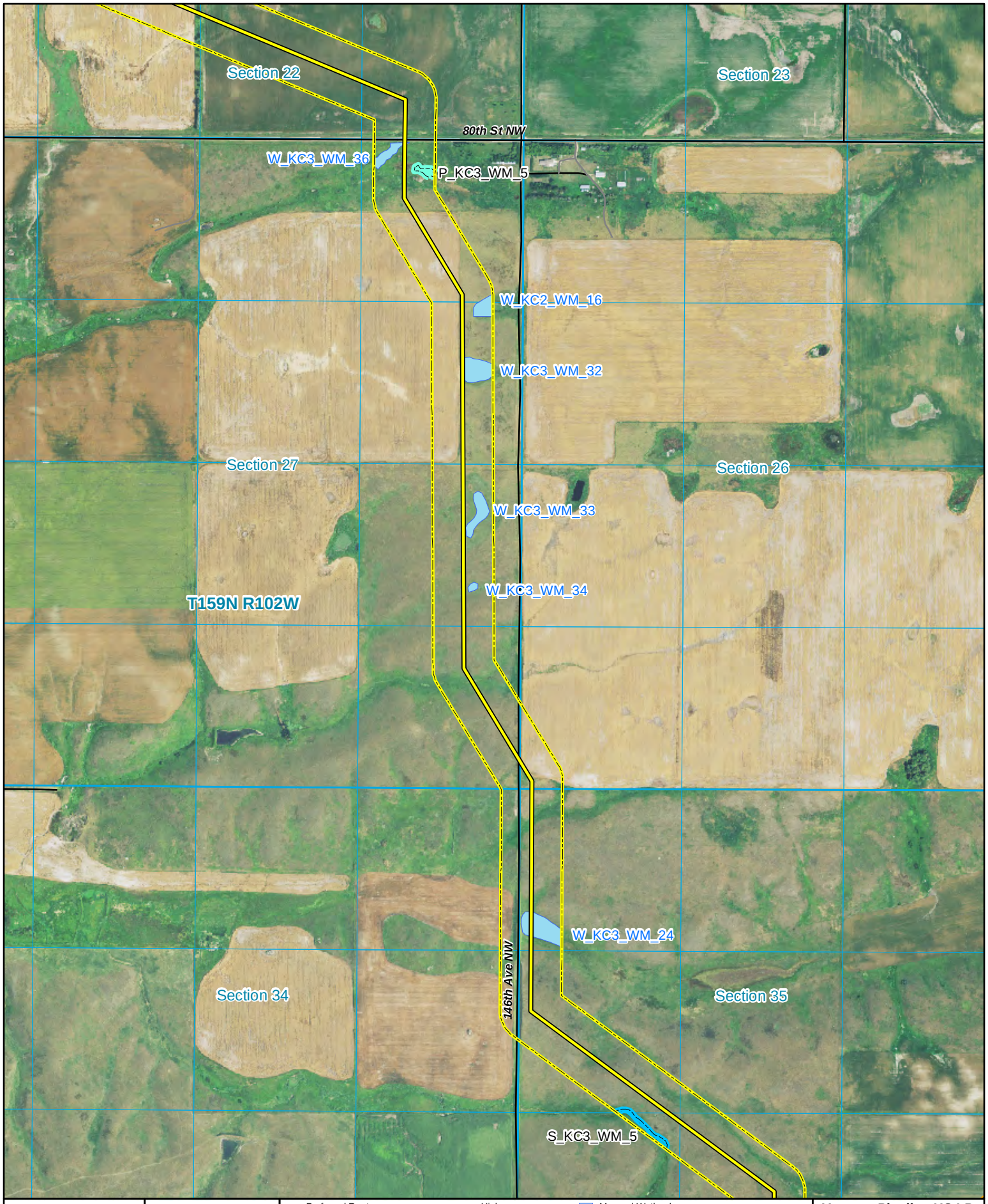

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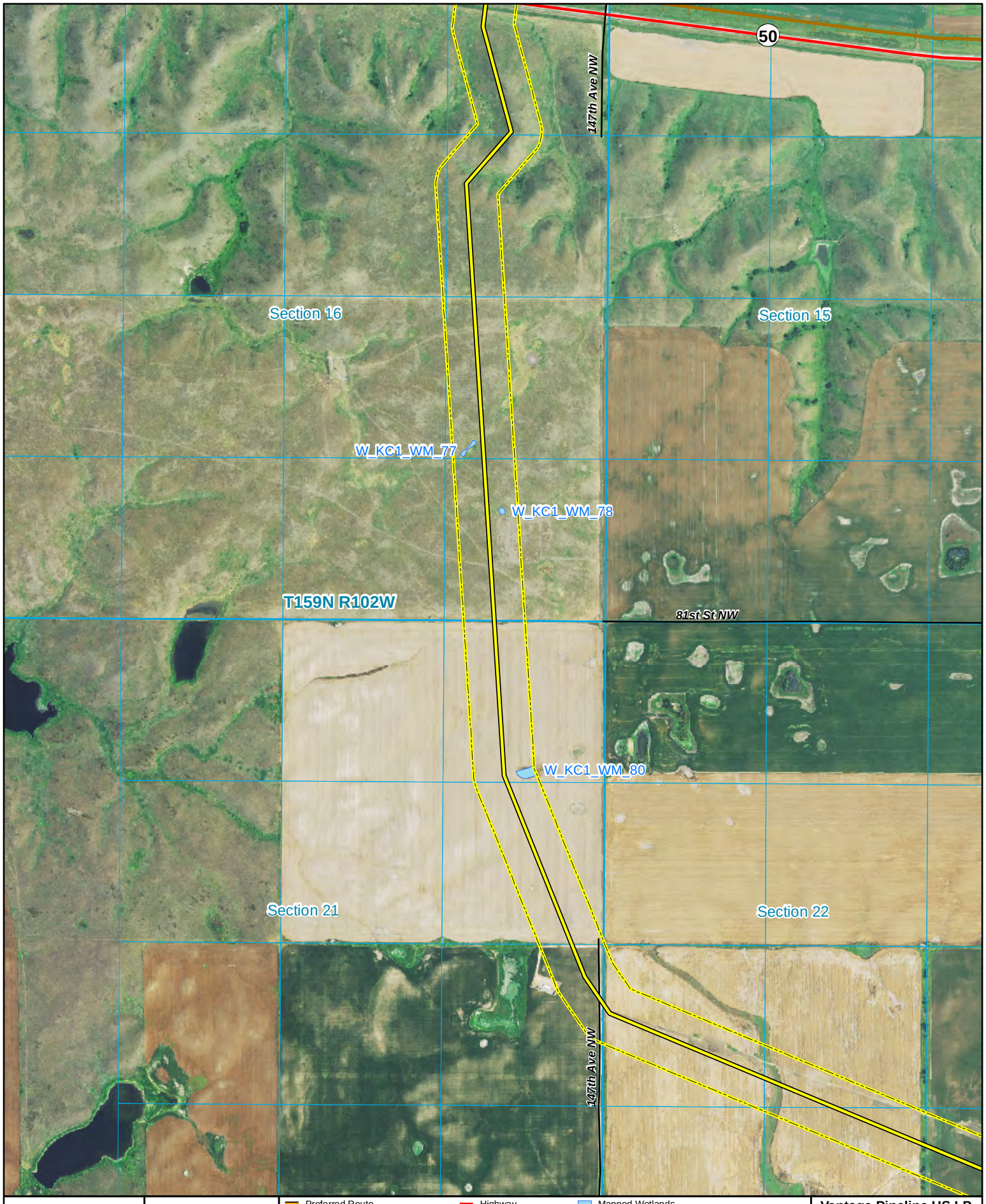

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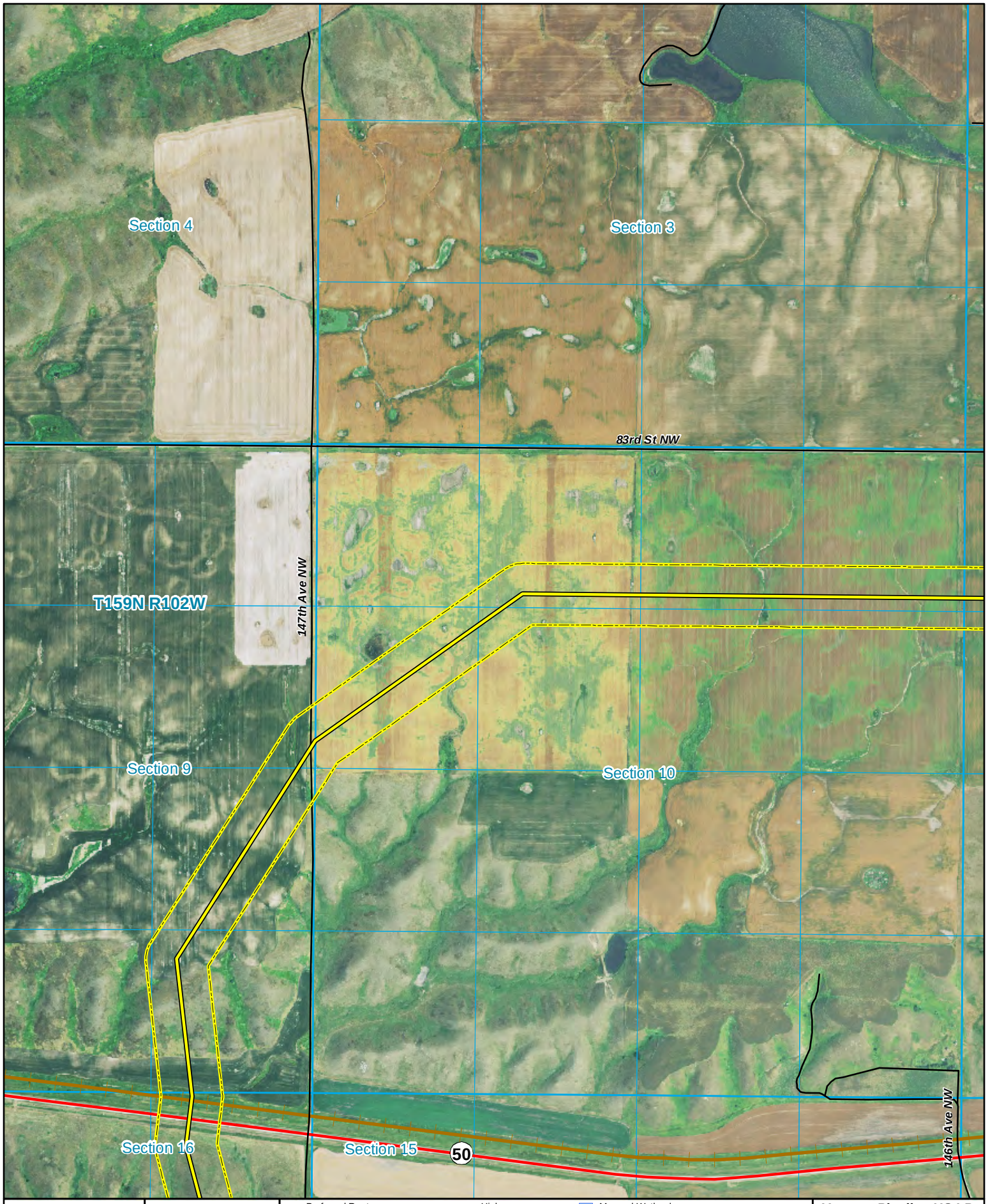

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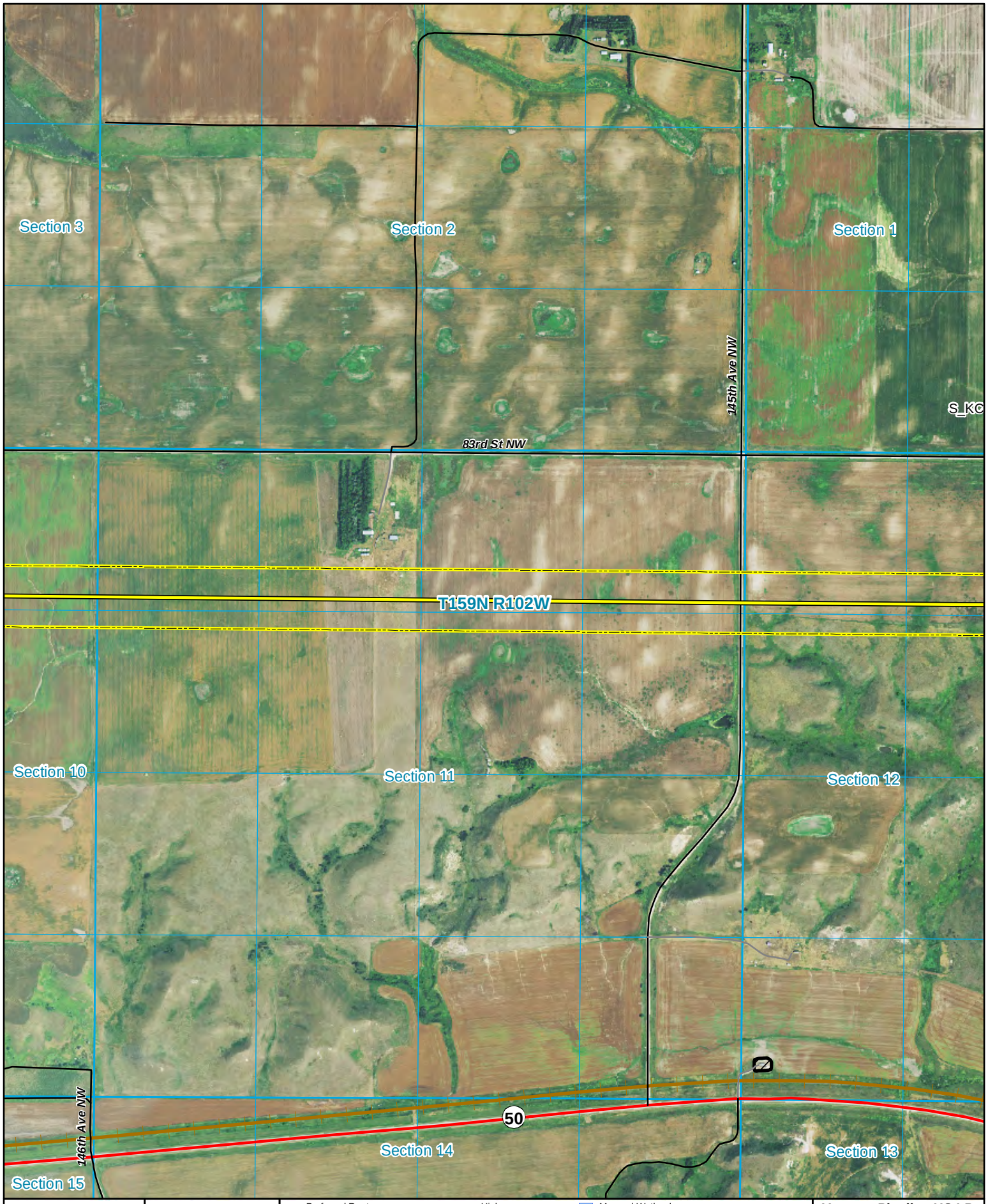

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Exhibit F.5: Delineation Data Sheets

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Feature Type: W Unique ID: 22

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 10/3/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC1_Divide_22

Investigator(s): KC1 Section, Township, Range: S 29 T 161 N R 100 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Northern Great Plains Lat: 48.744517 Long: -103.6917096 Datum: NAD 83

Soil Map Unit Name: Zahl-Williams-Zahill complex, 6 to 9 percent slopes NWI classification: Freshwater Emergent Wetland

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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:
Associated wetland W_KC1_DV_21 had open water. Others are dry.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. elepal	30	Yes	OBL
2. pollap	60	Yes	OBL
3. phaaru	5	No	FACW
4. horjub	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x 1 =	____
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 = NaN

Hydrophytic Vegetation Indicators:

- X 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:
Associated wetland W_KC1_DV_25 and W_KC1_DV_26 also have typlat and becsyz. W_KC1_DV_29 has sparse vegetation with polpen and horjub. W_KC1_DV_31 has polpen and phaaru.

SOIL

Sampling Point: W_KC1_Divide_2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					SL	
8-16	10YR 4/1	90	10YR 5/8	10	C	M	SL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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:

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_DV_20	4	W_KC1_DV_24	7	W_KC1_DV_27
2	W_KC1_DV_21	5	W_KC1_DV_25	8	W_KC1_DV_29
3	W_KC1_DV_23	6	W_KC1_DV_26	9	1_DV_62,W_KC1_DV_63,W_KC1_D

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 22

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 10/3/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC1_Divide_22

Investigator(s): KC1 Section, Township, Range: S 29 T 161 N R 100 W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.74451194 Long: -103.6915399 Datum: NAD 83

Soil Map Unit Name: Zahl-Williams-Zahill complex, 6 to 9 percent slopes NWI classification:

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

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
No surface hydrology or wetland vegetation observed. Only place to take upland point is in a wheat field. No natural vegetation. Did not dig soil pit.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. wheat	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = NaN

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:

SOIL

Sampling Point: WU_KC1_Divide_

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:
No soil pit because only upland vegetation was present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:
No surface hydrology.

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_DV_20	4	W_KC1_DV_24	7	W_KC1_DV_27
2	W_KC1_DV_21	5	W_KC1_DV_25	8	W_KC1_DV_29
3	W_KC1_DV_23	6	W_KC1_DV_26	9	W_KC1_DV_31 / W_KC1_DV_33

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 28

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 10/3/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC1_Divide_28

Investigator(s): KC1 Section, Township, Range: S 22 T 160 N R 101 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Northern Great Plains Lat: 48.6741872 Long: -103.7230724 Datum: NAD 83

Soil Map Unit Name: Zahl-Williams loams, 6 to 9 percent slopes NWI classification: Freshwater Emergent Wetland

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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:
Area is a large wetland with cattails in the drainage. There is no distinctive bed and bank so we called it a wetland, but water does flow down drainage as well. Associated wetlands W_KC1_DV_28 and W_KC1_DV_30 flow into other wetlands. W_KC1_DV_32, W_KC1_DV_34, and W_KC1_DV_35 are isolated. W_KC1_DV_35, W_KC1_DV_36, W_KC1_DV_38, and W_KC1_DV_44 have standing water and little veg except typlat and becsyz.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. typlat	50	Yes	OBL
2. horjub	10	Yes	FACW
3. becsyz	10	Yes	OBL
4. elepal	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 25

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 = ____	
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 = NaN

Hydrophytic Vegetation Indicators:

X 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:
Bare ground present. Sharp boundary with upland vegetation. These wetlands flow into other wet areas or depressions but may not be connected with RPW or TNW. W_KC1_DV_32 and W_KC1_DV_39 have has polpec.

SOIL

Sampling Point: W_KC1_Divide_2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10 yr 2/1	100					L	
12+	10 yr 3/1	80	10 yr 7/8	20	C	M	SL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: cobble

Depth (inches): 12

Hydric Soil Present? Yes X No ___

Remarks:
We can see the depleted layer but cannot get too deep into it due to cobble. Other areas where we dug pits we could see thick dark surface and depleted below dark surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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:
Associated wetlands W_KC1_DV_34 thru W_KC1_DV_37 have standing water. Most of these are in fallow fields, and have standing water after recent rain.

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_DV_30	4	W_KC1_DV_35	7	W_KC1_DV_38
2	W_KC1_DV_32	5	W_KC1_DV_36	8	W_KC1_DV_39
3	W_KC1_DV_34	6	W_KC1_DV_37	9	1_DV_68,W_KC1_DV_67,W_KC1_D

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 28

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 10/3/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC1_Divide_28

Investigator(s): KC1 Section, Township, Range: S 22 T 160 N R 101 W

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 10

Subregion (LRR): Northern Great Plains Lat: 48.67403475 Long: -103.7231139 Datum: NAD 83

Soil Map Unit Name: Zahl-Williams loams, 6 to 9 percent slopes NWI classification:

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
Grassland area surrounding wetland. No surface hydrology or wetland vegetation present at upland site. Did not dig soil pit.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 10 ft)			
1. symocc	2	No	UPL
2.			
3.			
4.			
5.			
	2 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. poapra	98	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	98 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = NaN

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:

SOIL

Sampling Point: WU_KC1_Divide_

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:
No wetland vegetation, so did not dig soil pit.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:
No surface hydrology.

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_DV_30	4	W_KC1_DV_35	7	W_KC1_DV_38
2	W_KC1_DV_32	5	W_KC1_DV_36	8	W_KC1_DV_39, 43, and 44
3	W_KC1_DV_34	6	W_KC1_DV_37	9	W_KC1_DV_40, 41, and 42

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 1

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/1/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC1_Williams_1

Investigator(s): KC1 Section, Township, Range: S 16 T 155 N R 103 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Northern Great Plains Lat: 48.2460838 Long: -103.9389094 Datum: NAD 83

Soil Map Unit Name: Dooley fine sandy loam, 0 to 6 percent slopes NWI classification: Freshwater Emergent Wetland

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

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

Are Vegetation No, Soil No, or Hydrology No 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:
Low area in farm field. Water most likely runs to the low point and ponds.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. typlat	10	Yes	OBL
2. schtab	5	No	OBL
3. becsyz	70	Yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 15

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
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 = NaN

Hydrophytic Vegetation Indicators:

X 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:
W_KC1_WM_4 has cottonwood and willow. W_KC1_WM_5 and W_KC1_WM_6 are connected in a drainage. Mix of wetland and upland vegetation. Polygonum present in some of the wetlands.

SOIL

Sampling Point: W_KC1_Williams_

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10 yr 2/1	100					SL	
7-18	10yr 4/1	80	10 yr 4/8	20	C	M	SL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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:

Evidence of standing water during part of the growing season.

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM_2	4	W_KC1_WM_5	7	
2	W_KC1_WM_3	5	W_KC1_WM_6	8	
3	W_KC1_WM_4	6	W_KC1_WM_7	9	

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 1

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/1/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC1_Williams_1

Investigator(s): KC1 Section, Township, Range: S 16 T 155 N R 103 W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Convex Slope (%): 4

Subregion (LRR): Northern Great Plains Lat: 48.24621202 Long: -103.9389041 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification:

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

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?**	**Yes ____ No X**
Hydric Soil Present?	Yes ____	No ____		
Wetland Hydrology Present?	Yes ____	No ____		

Remarks:
Area is farmed upland. No natural vegetation. It is currently a fallow field that has been sprayed. No vegetation. Usually planted to wheat.
Did not dig soil pit due to no wetland vegetation. No surface hydrology.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. wheat	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x 1 =	____
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 = NaN

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:
Wheat field is the only area in which to do an upland point.

SOIL

Sampling Point: WU_KC1_William

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:
Did not dig soil pit due to no wetland vegetation or surface hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:
No surface hydrology.

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM_2	4	W_KC1_WM_5	7	
2	W_KC1_WM_3	5	W_KC1_WM_6	8	
3	W _KC1_WM_4	6	W_KC1_WM_7	9	

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 8

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/1/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC1_Williams_8

Investigator(s): KC1 Section, Township, Range: S 33 T 156 N R 103 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): Northern Great Plains Lat: 48.29346321 Long: -103.9301786 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 0 to 3 percent slopes NWI classification: Freshwater Emergent Wetland

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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 is within a wheat field, but hydrology and vegetation are not disturbed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. pollap	15	Yes	OBL
2. becsyz	1	No	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	16 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 84

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
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 = NaN

Hydrophytic Vegetation Indicators:

X 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:
Lots of bare soil. Wetland surrounded by more dense becsyz.

SOIL

Sampling Point: W_KC1_Williams_

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10yr 2/1	100					SL	
7-18	10yr 4/1	80	10yr 5/8	20	C	M	SL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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:

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM_9	4	W_KC1_WM_48	7	
2	W_KC3_WM_6	5	W_KC1_WM_49	8	
3	W_KC1_WM_47	6		9	

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 8

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/1/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC1_Williams_8

Investigator(s): KC1 Section, Township, Range: S 33 T 156 N R 103 W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 2

Subregion (LRR): Northern Great Plains Lat: 48.29366871 Long: -103.9301962 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification:

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

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
Only place for upland is in a farmed wheat field. No upland or wetland vegetation. No surface hydrology. Did not dig soil pit.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. wheat	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = NaN

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:

SOIL

Sampling Point: WU_KC1_William

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:
No wetland vegetation or surface hydrology observed. Did not dig soil pit.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:
No surface hydrology.

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM_9	4	7
2		5	8
3		6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 12

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/1/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC1_Williams_12

Investigator(s): KC1 Section, Township, Range: S 36 T 115 N R 103 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Northern Great Plains Lat: 48.3744385 Long: -103.9494199 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification: Freshwater Emergent Wetland

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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:
Associated wetland W_KC1_WM_14 has rocks piled in the wetland, and W_KC1_WM_15 has rocks piled on the edge.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. pollap	80	Yes	OBL
2. typlat	10	Yes	OBL
3. elepal	10	Yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x 1 =	____
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 = NaN

Hydrophytic Vegetation Indicators:

X 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:
Wetlands in the area vary in amount of spapec and becsyz, polpen and typlat. No shrubs observed.

SOIL

Sampling Point: W_KC1_Williams_

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10yr 2/1						SL	
7-18	10 yr 3/1	80	10yr 5/8	20	C	M	SL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:
Distinct wetland soils; uniform from wetland to wetland.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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:
All of these wetlands are currently dry. There is evidence of water present for part of the growing season.

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM_10	4	W_KC1_WM_14	7	W_KC3_WM_2
2	W_KC1_WM_11	5	W_KC1_WM_15	8	W_KC3_WM_3
3	W_KC1_WM_13	6	W_KC3_WM_1	9	W_KC1_WM_53, W_KC3_WM_8, W

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 12

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/1/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC1_Williams_1

Investigator(s): KC1 Section, Township, Range: S 36 T 157 N R 103 W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.3745692 Long: -103.9491517 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification:

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

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
The area surrounding the wetland is a farmed field that is currently growing wheat. Due to lack of natural vegetation in the immediate area, the upland point was taken in the wheat field. No wetland vegetation or surface hydrology was present. Did not dig a soil pit.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. wheat	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = NaN

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:

SOIL

Sampling Point: WU_KC1_William

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:
Did not dig a soil pit due to the absence of surface hydrology and wetland vegetation.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:
No surface hydrology.

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM_10	4	W_KC1_WM_14	7	W_KC3_WM_2
2	W_KC1_WM_11	5	W_KC1_WM_15	8	W_KC3_WM_3
3	W_KC1_WM_13	6	W_KC3_WM_1	9	W_KC3_WM_4 / W_KC3_WM_5

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 16

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/2/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC1_Williams_16

Investigator(s): KC1 Section, Township, Range: S 7 T 157 N R 102 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Northern Great Plains Lat: 48.4366355 Long: -103.9102362 Datum: NAD 83

Soil Map Unit Name: Hamerly-Tonka complex, 0 to 3 percent slopes NWI classification: Freshwater Emergent Wetland

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. pollap	1	No	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	1 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 99

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x 1 =	____
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 = NaN

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)

X 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:
Wetland is bare of vegetation in the center, with a ring of phaaru.

SOIL

Sampling Point: W_KC1_Williams_

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10 yr 2/1	100					SL	
16-20	10 yr 6/1	70	10yr 5/8	30	C	M	SL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- X Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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:

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC3_WM_25	4	7
2	W_KC3_WM_31	5	8
3		6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 16

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/2/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC1_Williams_1

Investigator(s): KC1 Section, Township, Range: S 7 T 157 N R 102 W

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 6

Subregion (LRR): Northern Great Plains Lat: 48.43653599 Long: -103.9098707 Datum: NAD 83

Soil Map Unit Name: Williams-Zahl loams, 6 to 9 percent slopes NWI classification:

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

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?**	**Yes** ____	**No** X
Hydric Soil Present?	Yes ____	No ____			
Wetland Hydrology Present?	Yes ____	No ____			

Remarks:
Pea field was the only area for an upland point. No wetland vegetation or surface hydrology observed. Did not dig a soil pit.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. peas	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = NaN

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:
Pea field.

SOIL

Sampling Point: WU_KC1_William

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:
No wetland vegetation; did not dig soil pit.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:
Did not dig soil pit due to lack of surface hydrology, or wetland vegetation - did not fully access hydrology.

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	4	7
2	5	8
3	6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 18

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/2/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC1_Williams_18

Investigator(s): KC1 Section, Township, Range: S 34 T 158 N R 102 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): Northern Great Plains Lat: 48.4728993823 Long: -103.8347093 Datum: NAD 83

Soil Map Unit Name: Williams-Zahl loams, 6 to 9 percent slopes NWI classification: Freshwater Emergent Wetland

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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:
Not marked as NWI wetlands. Headwaters of creek system. Appears to be seeps and then wetlands continue down drainages. Associated wetland W_KC1_WM_19 has areas of ponded water.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. aloaru	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = NaN

Hydrophytic Vegetation Indicators:

- X 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:
Dominant species on associated wetland W_KC1_WM_19 are spapec, horjub, carex,, and aloaru.

SOIL

Sampling Point: W_KC1_Williams

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	gley1 2.5/N	100						muck, black greasey
6-18	10yr 2/1	98	10yr3/3	2	C	M		almost all om and a little lighter brown.
								starting to streak with lighter brown when e

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- X 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:
Difficult to determine soil layers because soil was saturated slop.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X 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)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 0

Water Table Present? Yes X No ____ Depth (inches): 0

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:

Cowardin Classification: PEM

Waterway Name (If Named): Blacktail Creek Drainage Headw

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
X	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
X	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM_17	4	7
2	W_KC1_WM_19	5	8
3	W_KC1_WM_54	6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 18

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/2/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC1_Williams_1

Investigator(s): KC1 Section, Township, Range: S 34 T 158 N R 102 W

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Convex Slope (%): 15

Subregion (LRR): Northern Great Plains Lat: 48.47294608 Long: -103.834536 Datum: NAD 83

Soil Map Unit Name: Williams-Zahl loams, 6 to 9 percent slopes NWI classification:

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
No wetland vegetation. Did not dig soil pit. No surface hydrology.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. poapra	30	Yes	FACU
2. passmi	30	Yes	FACU
3. liatris sp.	10	Yes	UPL
4. Spirea sp.	20	Yes	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x 1 =	____
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 = NaN

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:
Unknown Liatris sp.; assumed UPL. Unknown Spirea sp.; assumed FACU

SOIL

Sampling Point: WU_KC1_William

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

No surface hydrology or wetland vegetation. Did not dig pit to see hydrology at depth.

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM _17	4	7
2	W_KC1_WM_19	5	8
3		6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 73

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 3/18/2015

Applicant/Owner: Mistral State: ND Sampling Point: W_KC1_WM_73

Investigator(s): KC1 Section, Township, Range: S 23 T 158 N R 102 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): Northern Great Plains Lat: 48.4962776302 Long: -103.838871978 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 0 to 3 percent slopes NWI classification:

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. horjub	90	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = NaN

Hydrophytic Vegetation Indicators:

X 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:

SOIL

Sampling Point: W_KC1_WM_73

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10yr 2\2	100					SiCL	
6-12	10yr2\2	60	10yr6\4	40	D	M	SiCL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:
Could only dig to 12 inches due to frozen soils

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ 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)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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): 1

Wetland Hydrology Present? **Yes** X **No** _____

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

Remarks:

Cowardin Classification: PEM

Waterway Name (If Named): none

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM_74	4	W_KC3_WM_39	7	
2	W_KC3_WM_37	5		8	
3	W_KC3_WM_38	6		9	

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 75

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 3/18/2015

Applicant/Owner: Mistral State: ND Sampling Point: W_KC1_WM_75

Investigator(s): KC1 Section, Township, Range: S 36 T 159 N R 102 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): Northern Great Plains Lat: 48.5539812877 Long: -103.805966557 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 0 to 3 percent slopes NWI classification: Freshwater Emergent Wetland

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. pollap	20	Yes	OBL
2. carex sp.	20	Yes	FAC
3. symlan	20	Yes	FAC
4. helann	20	Yes	FACU
5. horjub	10	Yes	FACW
6.			FACW
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = NaN

Hydrophytic Vegetation Indicators:

X 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:
more carex and horjub in W77.. W78 has almost no veg except horjub and probably dries to mud cracks. w 80 is pollap and horjub

SOIL

Sampling Point: W_KC1_WM_75

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	10 yr2/1	100						
6.12	10 yr 2/1	80	10yr 5/8	20	C	M	SCL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:
partly frozen

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ 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)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 0

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

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:
seasonally flooded but low cover wetland veg. all are season flooded due to spring runoff and snow.

Cowardin Classification: pem

Waterway Name (If Named): na

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC1_WM_76	4	W_KC1_WM_79	7	
2	W_KC1_WM_77	5	W_KC1_WM_80	8	
3	W_KC1_WM_78	6	W_KC3_WM_40	9	

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 2

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 10/3/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC2_Divide_2

Investigator(s): KC2 Section, Township, Range: S 12 T 160 N R 101 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.69798535 Long: -103.6947298 Datum: NAD 83

Soil Map Unit Name: Williams-Niobell loams, 0 to 3 percent slopes NWI classification: Freshwater Emergent Wetland

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

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

Are Vegetation No, Soil No, or Hydrology No 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. pollap	70	Yes	OBL
2. spapec	30	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
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 = NaN

Hydrophytic Vegetation Indicators:

X 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:
Highly disturbed at wetland in field. Rock pile. Spapec present.

SOIL

Sampling Point: W_KC2_Divide_2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-14	7.5yr2.5/1	100					C	
14-20	10yr 5/2	80	10yr5/8	20	C	M	SCL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

Highly disturbed. Definite depleted low chroma layer between 14 inches/poor soil core quality.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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:

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

X	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC2_DV_3	4	7
2		5	8
3		6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 2

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 10/3/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC2_Divide_2

Investigator(s): KC2 Section, Township, Range: S 12 T 160 N R 101 W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 1

Subregion (LRR): Northern Great Plains Lat: 48.69780465 Long: -103.6947175 Datum: NAD 83

Soil Map Unit Name: Williams-Niobell loams, 0 to 3 percent slopes NWI classification:

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

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
No wetland vegetation or surface hydrology observed. Did not dig soil pit.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. wheat	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = ____

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:

SOIL

Sampling Point: WU_KC2_Divide_

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC2_DV_3	4	7
2		5	8
3		6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 5

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 10/4/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC2_Divide_5

Investigator(s): KC2 Section, Township, Range: S 36 T 160 N R 102 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.63378966 Long: -103.8028327 Datum: NAD 83

Soil Map Unit Name: Williams-Zahl loams, 3 to 6 percent slopes NWI classification: Freshwater Emergent Wetland

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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:
Located in cropped field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. becsyz	55	Yes	OBL
2. pollap	10	Yes	OBL
3. elepal	10	Yes	OBL
4. bidens sp,	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding 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 ____	x 1 = ____	
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 = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 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:
Bidens sp. unknown - assume OBL.

SOIL

Sampling Point: W_KC2_Divide_5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10yr3/1	95	7.5yr4/4	5	C	PL	SL	
7-14	7.5yr2.5/1	85	7.5yr3/3	15	RM	M	SL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- X Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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): 16

Wetland Hydrology Present? **Yes** X **No** _____

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

Remarks:

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC2_DV_4	4	W_KC2_DV_8	7	W_KC2_WM_11
2	W_KC2_DV_6	5	W_KC2_WM_9	8	W_KC1_WM_71
3	W_KC2_DV_7	6	W_KC2_WM_10	9	3_DV_17,W_KC3_DV_18,W_KC3_D

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 1

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/2/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC2_Williams_1

Investigator(s): KC2 Section, Township, Range: S 5 T 157 N R 102 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.45043339 Long: -103.8933474 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 0 to 3 percent slopes NWI classification: Freshwater Emergent Wetland

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

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

Are Vegetation No, Soil No, or Hydrology No 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. typlat	30	Yes	OBL
2. phaaru	65	Yes	FACW
3. aloaru	5	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	70	x 2 =	140
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		170 (B)

Prevalence Index = B/A = 1.7

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 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:

SOIL

Sampling Point: W_KC2_Williams_

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
1-9	7.5yr2.5/1	70	7.5yr3/3	30	C	M	CL	
9-14	7.5yr4/1	60	5yr4/4	40	C	M	LS	
14-18	7.5yr2/1	100					SL	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ 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)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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): 14

Wetland Hydrology Present? Yes X No ____

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

Remarks:

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	4	7
2	5	8
3	6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 5

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 10/4/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC2_Divide_5

Investigator(s): KC2 Section, Township, Range: S 36 T 160 N R 102 W

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.63369196 Long: -103.8036252 Datum: NAD 83

Soil Map Unit Name: Williams-Zahl loams, 3 to 6 percent slopes NWI classification:

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

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
Cropped field. No wetland vegetation or surface hydrology observed. Did not dig soil pit.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. wheat	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	0 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 100

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	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 = NaN

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:

SOIL

Sampling Point: WU_KC2_Divide_

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC2_DV_4	4	W_KC2_DV_8	7	W_KC2_DV_11
2	W_KC2_DV_6	5	W_KC2_DV_9	8	
3	W_KC2_DV_7	6	W_KC2_DV_10	9	

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 1

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/2/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC2_Williams_1

Investigator(s): KC2 Section, Township, Range: S 5 T 157 N R 102 W

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): Northern Great Plains Lat: 48.450445 Long: -103.8934573 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification:

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
No wetland vegetation or surface hydrology observed. Did not dig soil pit.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5ft)			
1. broine	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = NaN

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:

SOIL

Sampling Point: WU_KC2_William

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	4	7
2	5	8
3	6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 12

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/5/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC2_Williams_12

Investigator(s): KC2 Section, Township, Range: S 14 T 159 N R 102 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.59124247 Long: -103.8239176 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification: Freshwater Emergent Wetland

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. typlat	70	Yes	OBL
2. elepal	15	Yes	OBL
3. phaaru	15	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding 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	85	x 1 =	85
FACW species	15	x 2 =	30
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	100 (A)		115 (B)

Prevalence Index = B/A = 1.15

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:

SOIL

Sampling Point: W_KC2_Williams_

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5yr2/1	85	7.5yr3/3	15	C	PL	C	
6-18	10yr3/2	100					C	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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): _____

Wetland Hydrology Present? **Yes** X **No** _____

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

Remarks:

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC2_WM_13	4	W_KC2_WM_16	7	W_KC2_WM_19
2	W_KC2_WM_14	5	W_KC2_WM_17	8	W_KC2_WM_20
3	W_KC2_WM_15	6	W_KC2_WM_18	9	_WM_34, W_KC3_WM_35, W_KC3_

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 12

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/5/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC2_Williams_1

Investigator(s): KC2 Section, Township, Range: S 14 T 159 N R 102 W

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.59148137 Long: -103.8242646 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification:

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

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
Cropped field. No wetland vegetation, and no surface hydrology. Did not dig a soil pit.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. peas	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:
OBL species	0	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 = NaN

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:

SOIL

Sampling Point: WU_KC2_William

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC2_WM_13	4	W_KC2_WM_16	7	W_KC2_WM_19
2	W_KC2_WM_14	5	W_KC2_WM_17	8	W_KC2_WM_20
3	W_KC2_WM_15	6	W_KC2_WM_18	9	W_KC2_WM_21, 22, and 23

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 24

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/6/2014

Applicant/Owner: Mistral State: ND Sampling Point: W_KC2_Williams_24

Investigator(s): KC2 Section, Township, Range: S 2 T 158 N R 102 W

Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.54656767 Long: -103.8324693 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification: Freshwater Emergent Wetland

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

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

Are Vegetation No, Soil No, or Hydrology No 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 located at the edge of a farmed field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. pollap	75	Yes	OBL
2. spapec	25	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
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 = _____

Hydrophytic Vegetation Indicators:

X 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:

SOIL

Sampling Point: W_KC2_Williams

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
1-14	7.5YR 2.5/1	85	7.5YR 3/2	15	C	PL	SCL	
14-18	10YR 2/1	100					C	

[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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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): 14

Wetland Hydrology Present? **Yes** X **No** _____

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

Remarks:

Cowardin Classification: PEM

Waterway Name (If Named): n/a

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC2_WM_25	4	7
2	W_KC1_WM_45	5	8
3	W_KC1_WM_46	6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 24

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 10/6/2014

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC2_Williams_2

Investigator(s): KC2 Section, Township, Range: S 2 T 158 N R 102 W

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): Northern Great Plains Lat: 48.54641507 Long: -103.8327857 Datum: NAD 83

Soil Map Unit Name: Williams-Bowbells loams, 3 to 6 percent slopes NWI classification:

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

Are Vegetation Yes, Soil Yes, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:
No wetland vegetation or surface hydrology observed. Did not dig soil pit.
This is a paired upland point for associated wetlands listed on p. 3.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. peas	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
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 = ____

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:

SOIL

Sampling Point: WU_KC2_William

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

Cowardin Classification: n/a

Waterway Name (If Named): n/a

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC2_WM_25	4	7
2		5	8
3		6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 9

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 1/14/2015

Applicant/Owner: Mistral State: ND Sampling Point: W_KC3_Divide_9

Investigator(s): KC3 Section, Township, Range: S 32 T 161 N R 100 W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): Northern Great Plains Lat: 48.726587 Long: -103.684404 Datum: NAD 83

Soil Map Unit Name: Divide loam, 0 to 2 percent slopes NWI classification: Freshwater Emergent Wetland

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

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

Are Vegetation No, Soil No, or Hydrology No 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 _____	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Wetlan delineated using hydrophytic vegetation. Soils were not investigated due to frozen conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. SALINT	80		
2.			
3.			
4.			
5.			
	80 = Total Cover		
Herb Stratum (Plot size: _____)			
1. PHAARU	40		
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 60

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
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 = _____

Hydrophytic Vegetation Indicators:

X 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:

SOIL

Sampling Point: W_KC3_Divide_9

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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:

Water table and saturation not observed due to frozen conditions.

Cowardin Classification: PSS

Waterway Name (If Named): _____

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
X	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	W_KC3_DV_20	4	7
2		5	8
3		6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 9

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Divide Sampling Date: 1/14/2015

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC3_Divide_9

Investigator(s): KC3 Section, Township, Range: S 32 T 161 N R 100 W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Convex Slope (%): 0-5

Subregion (LRR): Northern Great Plains Lat: Long: Datum: NAD 83

Soil Map Unit Name: NWI classification:

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

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

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	

Remarks:
Sampled area is in upland haylands. Soils were not investigated as no hydrophytic vegetation was present.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. MEDSAT	50	Yes	UPL
2. BROINE	20	Yes	UPL
3. BOUGRA	10	Yes	UPL
4. POAPRA	20	Yes	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
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 =

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:

SOIL

Sampling Point: WU_KC3_Divide_

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:

Cowardin Classification:_____ Waterway Name (If Named):_____

Wetland Type:

	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
X	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	4	7
2	5	8
3	6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: W Unique ID: 7

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 1/13/2015

Applicant/Owner: Mistral State: ND Sampling Point: W_KC3_Williams_7

Investigator(s): KC3 Section, Township, Range: S 16 T 156 N R 103 W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): Northern Great Plains Lat: 48.336946 Long: -103.930694 Datum: NAD 83

Soil Map Unit Name: Arnegard-Shambo loams, 2 to 6 percent slopes NWI classification: Freshwater Forested/Shrub We

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

Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation No, Soil No, or Hydrology No 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 formed upstream of a dyke with large, old-growth trees around the perimeter of the wetland. Wetland was delineated using hydrophytic vegetation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. salix sp (tree)	20	Yes	FACW
2. POPDEL	10	Yes	FAC
3.			
4.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: ____)			
1. SCHACU	40	Yes	OBL
2. SPAPEC	30	Yes	FACW
3. BIDCER	25	Yes	OBL
4. AMARUD	4	No	FACW
5. RUMAQU	1	No	OBL
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
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 = ____

Hydrophytic Vegetation Indicators:

X 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:

SOIL

Sampling Point: W_KC3_Williams_

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:
Soils not investigated due to frozen conditions.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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:
Water table and saturation not observed due to frozen conditions.

Cowardin Classification: PFO

Waterway Name (If Named): _____

Wetland Type:

X	1	Seasonally flooded basins or floodplains (PEMA). Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season.
	2	Wet meadows. The soil is without standing water during most of the growing season, but is saturated below the surface. (PEMB)
	3	Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. (PEMC)
	4	Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. (PEMF)
	5	Open water wetlands including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation.
	6	Shrub swamps. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water.

Water Type:

	DELINEATE	Delineation only
	TNW	TNWs, including territorial seas (Rivers, Lakes with Public Boat Ramp)
	TNWW	Wetlands adjacent to TNWs
	RPW	Relatively Permanent Waters (RPWs) that flow directly or indirectly into TNWs (RPWs are perennial (continuous flow) and intermittent streams that flow at least seasonally typically 3 months a year)
	RPWWD	Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
	RPWWN	Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
	NRPW	Non-RPWs that flow directly or indirectly into TNWs (Non-RPWs are generally Ephemeral Streams)(Continuous bed & bank and/or continuous wetland)
	NRPWW	Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
X	ISOLATE	Isolated (interstate or intrastate) waters, including isolated wetlands
	UPLAND	Uplands
	TNWRPW	Tributary consisting of both RPWs and non-RPWs

Associated Wetland IDs:

1	4	7
2	5	8
3	6	9

KC HARVEY ENVIRONMENTAL, LLC

Feature Type: WU Unique ID: 7

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Vantage - West Spur City/County: Williams Sampling Date: 1/13/2015

Applicant/Owner: Mistral State: ND Sampling Point: WU_KC3_Williams_7

Investigator(s): KC3 Section, Township, Range: S 16 T 156 N R 103 W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Convex Slope (%): 0-3

Subregion (LRR): Northern Great Plains Lat: Long: Datum: NAD 83

Soil Map Unit Name: NWI classification:

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

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

Are Vegetation No, Soil No, or Hydrology No 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	**Is the Sampled Area within a Wetland?** Yes No X
Hydric Soil Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	

Remarks:
The sampled area is an agricultural field with a healthy crop and no hydrophytic vegetation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size:)			
1. WHEAT	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
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 =

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:

SOIL

Sampling Point: WU_KC3_William

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, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ 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 present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:
Soils not investigated because no hydrophytic vegetation present

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No _____

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

Remarks:
Soils not investigated because no hydrophytic vegetation present

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