DELINEATION OF WETLANDS AND OTHER WATERS OF THE UNITED STATES

CIMARRON WIND ENERGY PROJECT – PHASE 1
GRAY COUNTY, KANSAS

Prepared For:

CPV Cimarron Renewable Energy Company, LLC
50 Braintree Hill Office Park, Suite 300
Braintree, Massachusetts 02184

Prepared By:

Tetra Tech EC, Inc.
160 Federal Street, 3rd Floor
Boston, Massachusetts 02110

August 2011

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1
1.1 Project Description 1-1
1.2 Purpose and Regulatory Framework 1-1
1.2.1 Federal Jurisdiction 1-3
1.2.1.1 Clean Water Act 1-3
1.2.1.2 Executive Order 11990 Protection of Wetlands 1-4
1.2.2 State Jurisdiction 1-4
1.2.3 Regional Conditions and Requirements 1-5

2.0 SITE DESCRIPTION AND LOCATION 2-1
2.1 Project Area Climate 2-1
2.2 Regional Wetland Ecosystems 2-4

3.0 METHODS 3-1
3.1 Pre-field Survey Data Review 3-1
3.2 Field Analysis 3-1
3.3 Mapping 3-2

4.0 RESULTS AND DISCUSSION 4-1
4.1 Vegetation 4-1
4.2 Soils 4-2
4.3 Hydrology 4-4
4.4 Wetlands 4-4
4.5 Playas 4-7
4.6 Streams 4-7

5.0 DISCUSSION OF RECENT DRAFT REGULATIONS AND GUIDANCE BY FEDERAL AGENCIES 5-1
5.1 USACE Proposed Regulations 5-1
5.2 USEPA/USACE Proposed Guidance 5-1

6.0 WETLAND FUNCTIONS AND VALUES 6-1

7.0 CONCLUSIONS AND RECOMMENDATIONS 7-1

8.0 REFERENCES 8-1

TABLES

Table 1. Townships, Ranges, and Sections within the Project Area 2-1
Table 2. Daily Precipitation Summary for the Project Area 2-2
Table 3. Average Precipitation and Temperature for the Project Area 2-4
Table 4. Common Dominant and Subdominant Wetland and Upland Plant Species Observed within the Project Study Corridor 4-1
Table 5. NRCS Mapped Soil Units within the Project Study Corridor 4-3
Table 6. Wetlands Identified within or Proximal to the Project Study Corridor 4-5
Table 7. Non-wetland Playa Identified in the Project Study Corridor 4-7
Table 8. Stream Crossings within the Project Study Corridor 4-8

FIGURES

Figure 1. Project Vicinity
Figure 2. Project Area Waters Overview (Detail Figures 2-1 and 2-2)
Figure 3. Project Area Soils Overview (Detail Figures 3-1 and 3-2)
Figure 4. Delineation of Wetlands and Waters (Detail Figures 4-1 through 4-6)

APPENDICES

Appendix A. Wetland Data Forms
Appendix B. Site Photographs
Appendix C. Comparison of 2008 vs. 2011 USACE Guidance Defining Waters of the U.S. Protected under the CWA

ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CPV	CPV Cimarron Renewable Energy Company, LLC
CWA	Clean Water Act
EO	Executive Order
˚F	degrees Fahrenheit
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
GIS	geographic information system
GPS	global positioning system
KAR	Kansas Administrative Regulations
KAWS	Kansas Alliance for Wetlands and Streams
KDA	Kansas Department of Agriculture
KDHE	Kansas Department of Health and Environment
KDWP	Kansas Department of Wildlife and Parks
KGS	Kansas Geological Survey
KSA	Kansas Statutes Annotated
kV	kilovolt
met tower	meteorological tower
MW	megawatt
NCDC	National Climatic Data Center
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NI	no wetland indicator status
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWS	National Weather Service
NWP	Nationwide Permit
OBL	obligate wetland
O&M	operations and maintenance
OHWM	ordinary high water mark
PCN	pre-construction notification
PEM	palustrine emergent
PFO	palustrine forested
PPA	Power Purchase Agreement
Project	Cimarron Wind Energy Project – Phase 1
PSS	palustrine scrub-shrub
RPW	relatively permanent waters
Section 10	Section 10 of the Rivers and Harbors Act
SWANCC	Solid Waste Agency of Northern Cook County
T&E Species	Threatened or Endangered Species
TVA	Tennessee Valley Authority
Tetra Tech	Tetra Tech EC, Inc.
TNW	traditional navigable waters
UPL	upland
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

1.0 INTRODUCTION

CPV Cimarron Renewable Energy Company, LLC (CPV) is developing plans to build the Cimarron Wind Energy Project – Phase 1 (Project) near the City of Cimarron in Gray County, Kansas (Figure 1). The Project will generate up to 165.6 megawatts (MW) of renewable energy for sale to the Tennessee Valley Authority (TVA) through a Power Purchase Agreement (PPA).

Tetra Tech EC, Inc. (Tetra Tech) was contracted by CPV to conduct an on-site field verification and delineation of wetlands and other waters of the United States (U.S.) within the Project footprint and an adjacent buffer, referred to in this report as the Project study corridor. This delineation was performed to support TVA's requirements to review the Project under the National Environmental Policy Act (NEPA) and Executive Order (EO) 11990, Protection of Wetlands, as well as provide CPV with information regarding potential federal permits that may be required by the United States Army Corps of Engineers (USACE).

Tetra Tech performed the original delineations for the Project from September 22 through 28, 2009 with the purpose of guiding the Project design and layout to avoid and minimize impacts to federal jurisdictional resources. Upon further refinement of the Project layout, Tetra Tech conducted additional routine, on-site wetlands delineations from April 30 to May 7, 2011 as a supplemental study to the original survey (Tetra Tech 2010). This report includes a comprehensive discussion of the survey methods and results of these field delineations.

1.1 Project Description

The proposed Project will consist of up to approximately 165.6 MW of renewable wind energy capacity. The Project Area is defined as approximately 13,883 acres of private land under easement agreement with CPV for the construction and operation of the Project (Figure 1). Project facilities will likely include:

- up to 72 Siemens 2.3 MW wind turbines;
- new access roads and improvements to existing county roads;
- underground electrical collection lines;
- an operation and maintenance (O&M) building;
- interconnection substation facility; and
- a temporary batch plant area and staging/laydown area for the construction phase of the Project.

The Project will interconnect to the electrical grid via existing overhead transmission lines within the Project Area. The proposed Project and supporting facilities will be sited, constructed, and operated entirely within the 13,833-acre Project Area.

1.2 Purpose and Regulatory Framework

The purpose of this report is to document wetlands and other federal jurisdictional waters of the U.S. present in the Project study corridor and to provide a characterization of these resources. This assessment was conducted to ensure compliance with Section 10 of the Rivers and Harbors Act (Section 10) and Section 404 of the Clean Water Act (CWA). The USACE enforces Section 10 and Section 404 of the CWA, which regulates the discharge of dredged or fill material into all "waters of the U.S." including wetlands. Such waters are known as federal jurisdictional "waters of the U.S." and include not only obvious waterbodies such as rivers, lakes, harbors, and bays, but also less obvious bodies of water such as intermittent streams and wetlands. In addition to wetlands and other potentially regulated waters, non-wetland playas within and proximal to the Project study corridor were delineated. The playas were mapped for the purpose of impact avoidance and minimization where possible. Most wetland playas are isolated and have been unregulated by the USACE since the 2001 Supreme Court decision *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army of Corps of Engineers*. This ruling

eliminated federal regulation of impacts on isolated wetlands. Playas are not regulated by the state of Kansas; however, the state recognizes the value of playas to special status plant and wildlife species and coordinates playa conservation incentive programs through the Kansas Department of Wildlife and Parks (KDWP 2009).

Pursuant to Section 404 of the CWA, USACE defines wetlands in 33 Code of Federal Regulations (CFR) 328.3b in general terms as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The 1987 USACE Wetland Delineation Manual (USACE 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (USACE 2010a) identify technical criteria to establish whether or not a wetland meets the definition presented in 33 CFR 328.3b. Three essential characteristics form the technical criteria: (1) prevalence of hydrophytic vegetation; (2) hydric soils; and (3) wetland hydrology. For an area to be classified as a jurisdictional wetland under the federal guidelines all of the above criteria must be met and the wetland must have a significant nexus with a water of the U.S.

"Waters of the U.S." are defined in 40 CFR 230.3(s) as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purposes by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
6. The territorial sea;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

"Waters of the U.S." do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the United States Environmental Protection Agency (USEPA) Federal Jurisdiction.

1.2.1 Federal Jurisdiction

1.2.1.1 Clean Water Act

Under Section 404 of the CWA, the USACE and the USEPA regulate the discharge of dredge and fill material into "waters of the U.S." The jurisdictional status of wetlands and other waters is generally based on the USACE Jurisdictional Determination Form Instructional Guidebook (USACE 2007a) and USACE guidance resulting from Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States (USACE 2008a). In order for an aquatic feature to be considered a "water of the U.S.," it must be at least one of the following (USACE 2007a):

- A traditional navigable water (TNW)
- A wetland adjacent to a TNW
- A relatively permanent water (RPW), including tributaries that typically flow year-round or have a continuous flow at least seasonally (typically three consecutive months depending on the region)
- A wetland that directly abuts a RPW
- A wetland adjacent (proximal but not abutting) to a RPW, but only if it can be shown that the feature has a "significant nexus" with a TNW
- A non-RPW or wetland adjacent to a non-RPW if the feature has a "significant nexus" with a TNW

Adjacent is defined as "bordering, contiguous, or neighboring." Wetlands separated from other waters of the U.S. by barriers such as natural river berms, man-made dikes, and beach dunes may be considered adjacent wetlands. The 2008 ruling also requires that the agencies not generally assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies or small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

Recent agency guidance states that the agencies will apply the significant nexus standard as follows (USACE 2007b):

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream TNW; and
- Significant nexus includes consideration of hydrologic and ecologic factors.

In the absence of adjacent wetlands, lateral jurisdiction over nontidal waters extends to the ordinary high water mark (OHWM). The definition of the OHWM is "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (65 *Federal Register* 12823, 2000).

It is important to note that the USEPA and the USACE jointly issued Draft Guidance on April 27, 2011, clarifying how these agencies will identify "waters of the U.S." protected by the CWA. Notice of the Draft Guidance was published in the Federal Register on May 2, 2011. There is a 60-day public comment

period with comments due by July 1, 2011. Appendix C provides a comparison of the existing 2008 guidance, which is still in effect, and proposed 2011 guidance implementing the CWA.

1.2.1.2 Executive Order 11990 Protection of Wetlands

The purpose of EO 11990, Protection of Wetlands, is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." To meet these objectives, the EO requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The TVA, a federal agency, would purchase up to 165.6 MW of power from the Project. This federal action requires TVA to comply with EO 11990. In compliance with EO 11990 and to support TVA's role as lead federal agency, all wetlands present in the Project study corridor were delineated in the field to determine the types and extent of wetlands present, followed by micrositing to avoid impacts on wetlands to the extent practicable.

1.2.2 State Jurisdiction

State-regulated wetlands in Kansas are primarily regulated through Section 401 of the CWA water quality certification program. The Kansas Department of Health and Environment (KDHE), Division of Environment, Bureau of Water is the primary permitting agency for wetlands in Kansas under Section 401. The Kansas Department of Wildlife and Parks (KDWP) acts as a commenting agency on wetlands permitting through the Section 404 process when protected species are potentially involved.

Wetlands in Kansas are defined according to Kansas Administrative Regulations (KAR) 28-16-28b, as "wetlands, including water bodies meeting the technical definition for jurisdictional wetlands given in the 'Corps of Engineers Wetlands Delineation Manual,' as published in January 1987." "Surface waters of the state" are defined according to KAR Section 28-16-28b (ggg) as:

> ...all surface waters occurring within the borders of the state of Kansas or forming a part of the border between Kansas and one of the adjoining states.

The Kansas Department of Agriculture (KDA) Water Structures program regulates manmade activities affecting the flow and overflow of any stream by ensuring, within limits imposed by laws and courts, that such activities are properly planned, constructed, operated and maintained for their authorized purpose without adversely affecting the environment, public health and welfare, and public and private property (KDA 2009).

The KDA defines a stream as any watercourse that has a well-defined bed and well-defined banks and that has a watershed exceeding a certain number of acres (differing by county). In Gray County, the minimum drainage area to constitute a stream is 640 acres (KDA 2009). In accordance with The Stream Obstructions Act [Kansas Statutes Annotated (KSA) 82a-301(a)], a stream obstruction permit is required to:

> (1) Construct any dam or other water obstruction; (2) make, construct or permit to be made or constructed any change in any dam or other water obstruction; (3) make or permit to be made any change in or addition to any existing water obstruction; or (4) change or diminish the course, current, or cross section of any stream within this state.

Exceptions are made for minor stream obstructions including (KSA 82a-303a; implementing KSA 82a-303) [Kansas Administrative Rule 5-42-2]:

> ...weirs, causeways, low-water crossings, low-head dams, intake structures, boat launching ramps, pipeline crossings, outfall structures, marinas, boat docks, jetties and revetments.

1.2.3 Regional Conditions and Requirements

The USACE Kansas City District has regulatory authority over wetland impacts from development projects in Gray County, Kansas. The Kansas City District adopted the Nationwide Permits (NWP) issued on March 12, 2007 with amendments issued on May 8, 2007. These NWPs were authorized to protect the aquatic environment and the public interest while effectively authorizing activities that have minimal individual and cumulative adverse effects on the aquatic environment. These NWPs will expire on March 18, 2012.

The USACE Kansas District also authorized regional permit conditions to be applied with the NWPs for projects located in Kansas (USACE 2007c). These conditions include guidelines for solid waste disposal; equipment staging areas and project closure; disturbance of riparian areas; discharge of floatable materials; fuel, chemical, and materials storage; and spill response and reporting. These conditions would be applicable to the construction of the Project. Specific regional permit conditions and requirements include the following:

- NWP 12 (Utility Activities), a utility line constructed parallel to a stream and with multiple stream crossings would require pre-construction notification (PCN) to USACE, with a revegetation plan included for the impacted riparian areas. This condition would not apply to the Project as currently proposed.

- Jurisdictional playa wetland impacts would also require a PCN. However, this regional condition would not apply because all playa wetlands within the Project study corridor are isolated and therefore not currently jurisdictional.

- Culverts placed in an expected aquatic life use water or restricted aquatic life use water on the Kansas Water Register would require a PCN. No waters within the Project study corridor are listed for aquatic life use on the Kansas Water Register, so this regional permit condition does not apply.

- Impacts to special Kansas waters would also require a PCN. No waters defined as waters of extraordinary recreational or ecological significance or waters of remarkable quality or of significant recreational or ecological value occur within the Project study corridor, so this regional permit condition does not apply.

- Impacts to Kansas waters that are known habitat for threatened or endangered (T&E) species would require a PCN and are subject to NWP General Condition 17 (USACE 2007d) that prohibits impacts authorized under NWP that may affect a federally listed T&E species or its critical habitat. No Kansas waters containing known habitat for T&E species occur in the Project study corridor, so this regional permit condition does not apply.

As discussed, none of the specific regional permit conditions apply to the Project as currently proposed.

2.0 SITE DESCRIPTION AND LOCATION

The proposed Project is located in Gray County in southwestern Kansas in Natural Resources Conservation Service (NRCS) Region 5 (Central Plains). The regional topography is flat with many shallow (and often dry) stream channels and drainage ways; elevation ranges from about 2,700 to 2,800 feet within the Project Area. The Project Area is situated in 25 separate sections of land, as summarized in Table 1.

Table 1. Townships, Ranges, and Sections within the Project Area

Township	Range	Sections
25S	R27W	7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29
25S	R28W	12, 13, 24

The proposed Project is also located in NRCS Major Land Resource Areas 72 (Central High Tableland) and 73 (Rolling Plains and Breaks). All of Gray County lies within the Arkansas River Lowlands and High Plains Physiographic Provinces of Kansas (KGS 2008). The High Plains Physiographic Province is characterized by gently sloping topography, which is excellent for farming; the Arkansas River Lowlands province is defined by irregular hills and sand and gravel deposits seen mostly in the extreme southern portion of the Project Area.

Of the various soil types occurring in the Project study corridor, the majority are variations of loams, silty loams, clay loams, and silty clay loams. The underlying soil parent material is comprised of deposits of loess and silty and clayey alluvium. The South Fork of Buckner Creek drains to the northeast across the Project Area, and the Arkansas River is located approximately 3.25 miles south of the Project Area. The Ogallala/High Plains Aquifer underlies a large portion of western Kansas, including the Project Area.

Land use in the Project Area is characterized by farming and ranching. The Project Area is rural with a low population density and scattered residential areas. A few existing vertical structures are present, including the 345-kilovolt (kV) Sunflower Electric Power transmission line, overhead distribution lines, and temporary meteorological towers associated with this Project.

2.1 Project Area Climate

Precipitation data from the National Weather Service Center for Dodge City, Kansas (the closest center with archived data, located about 12 miles southeast of the Project Area) were examined from the initial wetland delineation in 2009 and the present delineation. (NWS 2009; NWS 2011). These data were compared to characterize the climate-sourced hydrology for the water resources examined during the survey periods. The Water Year in Kansas is the period measured from January 1 to December 31. Recent climate information is compared with normal, or average, climate information, based on records from the years 1971 to 2000 (NCDC 2000). Recent climate data available on-line for Dodge City are summarized as follows[1]:

- Normal Water-Year-to-Date:
  - through end of September: 19.12 inches
  - through end of April 2011: 5.37 inches
- Observed Water-Year-to-Date:

[1] Totals are based on precipitation (i.e., reported as rainfall) and do not include snow.

  - as of September 22, 2009: 20.63 inches
  - as of April 30, 2011: 2.34 inches
- Water-Year-to-Date departure from normal:
  - 2009: 1.51 inches above normal (or 8 percent above normal)
  - 2011: 3.03 inches below normal (or 56 percent below normal)
- Normal monthly precipitation:
  - September: 1.7 inches
  - April: 2.25 inches
- Observed Month-to-Date rainfall:
  - through September 22, 2009: 2.50 inches
  - through April 30, 2011: 1.01 inches
- Departure from normal precipitation:
  - September 2009: 0.8 inches above normal
  - April 2011: 1.24 inches below normal
- Normal average monthly temperature
  - September: 69.3 degrees Fahrenheit (˚F)
  - April: 53.9 ˚F
- Observed average monthly temperature:
  - September 2009: 65.9 ˚F
  - April 2011: 55.8 ˚F
- Departure from normal average monthly temperature:
  - September 2009: 3.4 ˚F below normal
  - April 2011: 1.9 ˚F above normal

Wetland hydrology observed in the Project Area during the 2011 survey period (a portion of April and May) was typical for the region. Daily temperature and precipitation amounts for the field investigation period and preceding days are provided in Table 2. Average monthly precipitation and average monthly temperatures for Gray County, as listed by the National Climatic Data Center (NCDC) for Dodge City, are presented in Table 3 (NCDC 2000). Precipitation year-to-date was approximately 8 percent above normal during the September 2009 field work and 56 percent below normal during the April 2011 field work. For the month of May 2011, Gray County was under a drought warning issued by the Kansas Water Office, with the county being under moderate to severe drought conditions as of May 3, 2011 (Kansas Water Office 2011). These drought conditions likely had an effect on the examination of hydrophytic vegetation indicators during the wetland delineation, discussed in Section 4.0.

Table 2. Daily Precipitation Summary for the Project Area[1]

Date	Temperature (°F)				Precipitation (inches)
	Maximum	Minimum	Average	Departure from Normal Average	
2009					
Sep-1	87	55	71	-3	0.00
Sep-2	86	59	73	-1	0.00
Sep-3	87	59	73	-1	Trace

Table 2. Daily Precipitation Summary for the Project Area[1]

Date	Temperature (°F)				Precipitation (inches)
	Maximum	Minimum	Average	Departure from Normal Average	
Sep-4	78	55	67	-6	Trace
Sep-5	80	58	69	-4	0.00
Sep-6	87	59	73	0	0.00
Sep-7	93	66	80	8	0.00
Sep-8	80	61	71	-1	2.24
Sep-9	78	61	70	-2	Trace
Sep-10	77	61	69	-2	0.00
Sep-11	81	58	70	-1	0.00
Sep-12	70	60	65	-6	0.22
Sep-13	77	59	68	-2	0.00
Sep-14	73	54	64	-6	0.00
Sep-15	76	56	55	-4	0.00
Sep-16	77	55	66	-3	0.00
Sep-17	76	54	65	-4	0.00
Sep-18	73	54	64	-4	Trace
Sep-19	77	50	64	-4	0.00
Sep-20	87	59	73	5	0.00
Sep-21	71	51	61	-6	0.04
Sep-22	**62**	**45**	**54**	**-13**	**Trace**
Sep-23	**63**	**44**	**54**	**-13**	**Trace**
Sep-24	**65**	**42**	**54**	**-12**	**0.00**
Sep-25	**65**	**43**	**54**	**-12**	**Trace**
Sep-26	**83**	**45**	**64**	**-2**	**0.00**
Sep-27	**92**	**53**	**73**	**8**	**0.00**
Sep-28	**70**	**42**	**56**	**-9**	**0.00**
2011					
Apr-10	77	46	62	10	0.00
Apr-11	68	42	55	3	0.00
Apr-12	81	38	60	7	0.00
Apr-13	76	46	61	8	0.00
Apr-14	53	34	44	-9	0.31
Apr-15	54	33	44	-10	0.09
Apr-16	72	27	50	-4	0.00
Apr-17	83	46	65	11	0.00
Apr-18	75	46	61	6	0.00
Apr-19	63	39	51	-4	Trace
Apr-20	60	34	47	-8	0.00
Apr-21	71	37	54	-2	0.00
Apr-22	76	50	63	7	0.00
Apr-23	60	42	51	-5	0.00
Apr-24	63	41	52	-5	Trace
Apr-25	51	40	46	-11	0.19
Apr-26	61	34	48	-9	0.03

Table 2. Daily Precipitation Summary for the Project Area[1]

Date	Temperature (°F)				Precipitation (inches)
	Maximum	Minimum	Average	Departure from Normal Average	
Apr-27	57	40	49	-9	0.39
Apr-28	73	40	57	-1	0.00
Apr-29	88	48	68	10	0.00
Apr-30	**66**	**41**	**54**	**-4**	**0.00**
May-1	**58**	**42**	**50**	**-9**	**0.00**
May-2	**62**	**36**	**49**	**-10**	**Trace**
May-3	**72**	**35**	**54**	**-5**	**0.00**
May-4	**82**	**44**	**63**	**3**	**0.00**
May-5	**71**	**41**	**56**	**-4**	**0.00**
May-6	**88**	**44**	**66**	**6**	**0.00**
May-7	**87**	**47**	**67**	**6**	**0.00**

Source: NWS 2009; NWS 2011

[1] Bolded text indicates dates in which wetlands were delineated in the Project study corridor.

Table 3. Average Precipitation and Temperature for the Project Area

Month	Average Precipitation (Inches)	Average Monthly Temperatures
January	0.62	30°F
February	0.66	36°F
March	1.84	44°F
April	2.25	54°F
May	3.00	64°F
June	3.15	74°F
July	3.17	80°F
August	2.73	78°F
September	1.70	69°F
October	1.45	57°F
November	1.01	42°F
December	0.77	33°F

Source: NCDC 2000

2.2 Regional Wetland Ecosystems

The Great Plains Region of North America generally extends east from the Rocky Mountains foothills to the Mississippi River, where increased moisture allows for greater plant diversity. Annual precipitation is generally less than evapotranspiration. Groundwater recharge and discharge therefore occurs frequently in depressions, with water tables much shallower beneath depressions as compared to the surrounding landscape. Wetlands generally behave as groundwater discharge systems (USACE 2010a).

The Project is located in the playa lakes region, which contains numerous depressional wetlands formed by wind erosion and calcium carbonate dissolution. Playa lakes are usually underlain by clay soils, which entrench moisture, forming ephemeral ponds and emergent wetlands. Surface water eventually leaves via

evapotranspiration in the soil above the clay layer. Characteristic vegetation in playas are grasses, smartweeds (*Polygonum*), and cattails (*Typha*) that grow quickly shortly after playas are filled with water during significant periods of rainfall (NatureServe 2006; USACE 2010a).

3.0 METHODS

3.1 Pre-field Survey Data Review

Prior to conducting on-site field surveys, desktop analysis for the Project study corridor was conducted using data sets such as 2009 aerial imagery (NAIP 2009), National Wetlands Inventory (NWI) maps (USFWS 2009a), the National Hydrography Dataset (NHD) (USGS 2010), Playa Lakes Geographic Information System (GIS) Data (KGS 2004), and the NRCS soil survey (SSURGO 2009). Immediately prior to field work, aerial photography for the Project Area was studied and a conservative estimate was made of those wetlands and water resources that should be delineated (Figure 2). This estimate was based on either the clear placement of the Project study corridor within a likely wetland or water of the U.S., or the the Project study corridor in close proximity to wetlands or other waters of the U.S.

3.2 Field Analysis

The Project study corridor was defined as the Project construction footprint plus an adjacent conservative buffer which was established as follows:

- 250-foot radius around turbines;
- 100-foot-wide corridor centered over new access roads;
- 40-foot-wide corridor centered over existing county roads to be improved;
- 40-foot-wide corridor centered over crane crawl paths;
- 20-foot-wide corridor centered over new spur roads to the permanent meteorological towers;
- 30-foot-wide corridor centered over buried electrical collection line locations when co-located within an access road or existing roadway;
- and 50-foot-wide corridor centered over homerun collection line locations.

Additional Project facilities covered during field surveys in the Project study area included:

- O&M building and equipment staging area (10 acres);
- two proposed permanent meteorological towers (1 acre each);
- interconnection substation facility (10 acres);
- turning radii at the intersections of access roads and county roads (8 acres); and
- temporary batch plant (5 acres).

All wetlands were delineated according to the routine methodology set forth in the USACE *Wetlands Delineation Manual* (USACE 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (USACE 2010a). Vegetation analysis involved evaluation of each vegetation stratum (herbaceous, shrub, tree, and vine). The percent cover by species was determined using a 5-foot radius for the herbaceous layer, a 15-foot radius for the shrub layer, and 30-foot radii for tree and vine strata. The wetland indicator status was determined for each dominant plant species based on the *Region 5: Central Plains* addendum to Reed's *1988 National List of Plant Species that Occur in Wetlands* (USACE 2010b). Hydrophytic vegetation, or plants that are indicators of wetlands, include those designated obligate (OBL), facultative wetland (FACW), or facultative (FAC). As a general rule, hydrophytes dominate a sample plot when greater than 50 percent of the evaluated species

are OBL, FACW, or FAC. Upland plants include those listed with facultative upland (FACU) or no indicator (NI) status.

Pairs of soil test pits were dug at each of the sample plots to a maximum depth of 20 inches. One soil pit was placed in areas of readily discernable wetland plant communities, and a companion soil pit was placed nearby in upland sites. A soil auger and shovel was then used to establish the boundary between wetland and upland soils. Soils were inspected for the presence of hydric soil indicators as described in the new Great Plains Regional Supplement. The soil hue, value, and chroma were examined and defined using the *Munsell Soil Color Charts* (Macbeth 1994).

Hydrology was analyzed for primary and secondary wetland indicators at each wetland. Primary wetland indicators include visible inundation, soil saturation, water marks, drift lines, sediment deposits, and drainage patterns in wetlands. Secondary wetland indicators of hydrology include oxidized root channels associated with living roots, water-stained leaves, and local soil survey data. The soil pits were left open a sufficient amount of time to allow for the stabilization of the apparent high water table, if present. All data were recorded on the Wetland Determination Data Forms (Appendix A). Sample plots that exhibited qualifying characteristics of hydrophytic vegetation, hydric soils, and wetland hydrology were identified as wetlands.

The Cowardin classification system categorizes wetlands by vegetative community and hydrologic regime (Cowardin et al. 1979). The Cowardin classification of the wetlands within the Project study corridor are palustrine (i.e., freshwater) emergent (non-woody plants rooted in soils that are saturated at least part of the time with most of the plant emerged above the surface) (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO) types. The vast majority of wetlands in the Project study corridor were documented as PEM wetlands.

Playas within the Project study corridor were delineated and labeled as wetland playas when a playa met wetland hydrology, soils and vegetation criteria as well as playa characteristics (i.e., flat-bottomed shallow depressions either isolated or part of a playa complex). When sample plot characteristics in a playa did not meet wetland criteria, the feature was mapped as a non-wetland playa. Such dry playas may have functioned as wetlands in the past but often have diminished function due to plowing and cropping. Plowing and cropping can result in changes to the clay surface soils, increases in evaporation from periods of exposed ground, filling in from sedimentation of the playa depression from surrounding exposed soils, and contour smoothing that reduces the depth of the depression. The result of this very gradual drying of playas is a change in soil characteristics (mostly from sedimentation) and a reduction in the number of dominant hydrophytes in the playa.

The field investigation also included an examination of NWI- and United States Geological Survey (USGS)-mapped streams ("blue lines"), as well as other drainages that were not mapped by the NWI or USGS. The USACE regulates streams that have a surface water connection with navigable waters.

Tetra Tech evaluated wetlands and surface waters in the Project study corridor following guidance provided in the USACE Jurisdictional Determination Form Instruction Guidebook and joint USEPA and USACE guidance regarding CWA jurisdiction after Rapanos (USEPA and USACE 2007).

3.3 Mapping

The boundaries of wetlands within the Project study corridor, as well as some features that were visible just outside of the Project study corridor but within the Project Area, were recorded using a Geo® XH™ Global Positioning System (GPS) in the field. The Geo®XH™ unit provides an estimated 3-foot (1 meter) survey accuracy (post-processing) for open areas with little or no canopy cover, such as the open areas characterizing most of the Project Area. The field-collected data were plotted as a map layer using GIS software and are displayed in Figure 4 (Detail Figures 4-1 through 4-4). Some wetlands

extended well beyond the Project study corridor and were therefore not mapped in the field in their entirety. However, where these wetland boundaries were clearly visible on current aerial photography, these boundaries were digitized from that source using ArcInfo.

Supporting information for the delineation—wetland forms and site photographs—are presented in Appendices A and B, respectively.

4.0 RESULTS AND DISCUSSION

4.1 Vegetation

Although the drought conditions described in Section 2.1 may have affected plant vigor or diversity during the 2011 survey period, a variety of plant species were observed in both wetland and upland areas. Additionally, cues from aerial imagery, hydric soils, and topographical changes observed within the landscape adequately enabled the field team to delineate wetlands from upland features.

The majority of land in the region is used for crop cultivation (e.g., winter wheat and sorghum), with patches of native grassland. This region of Kansas is mixed grass prairie. The commonly observed native grassland species include: buffalo grass (*Bouteloua dactyloides*) and blue grama (*Bouteloua gracilis*) being most common. Other species in the area are: big bluestem (*Andropogron gerardii*), switchgrass (*Panicum virgatum*), sideoats grama (*Bouteloua airoides*), little bluestem (*Schizachyrium scoparium*), western wheatgrass (*Agropyron smithii*) and bluegrass (*Poa sp.*). Introduced plant species include cheatgrass (*Bromus tectorum*) and smooth brome (*Bromus arvensis*) and forbs such as field bindweed (*Convolvulus arvensis*) and curly dock (*Rumex crispus*).

Some of the regional plants listed in the previous section are dominants within the Project study corridor. Table 4 provides a more complete listing of wetland plant species observed.

Table 4. Common Dominant and Subdominant Wetland and Upland Plant Species Observed within the Project Study Corridor

Type	Scientific Name	Common Name (USDA, NRCS 2010)	Indicator Status[1]
Wetland	*Agrostis stolonifera*	Creeping bentgrass	NI
	Ambrosia grayi	Woollyleaf bur ragweed	FAC
	Bromus tectorum	Cheatgrass	NI
	Convolvulus arvensis	Field bindweed	NI
	Cyperus acuminatus	Tapertip flatsedge	OBL
	Festuca sp.	Fescue	FAC (assumed)
	Lythrum californicum	California loosestrife	OBL
	Marsilea vestita	Hairy waterclover	OBL
	Poa sp.	Bluegrass	FAC (assumed)
	Polygonum lapathifolium	Curlytop knotweed	OBL
	Polygonum pensylvanicum	Pink smartweed	FACW+
	Rorippa sinuata	Spreading yellow cress	FACW
	Rumex crispus	Curly dock	FACW
	Sorghum bicolor	Sorghum (crop)	NI
	Triticum aestivum.	Winter wheat (crop)	NI
Upland	*Agropyron smithii*	Western wheatgrass	NI
	Achillea millefolium	Common yarrow	FACU
	Amaranthus albus	Prostrate pigweed	FACU
	Ambrosia artemisiifolia	Common ragweed	FACU
	Chenopodium album	Lambsquarters	FAC+
	Conyza canadensis	Horseweed	UPL
	Helianthus annuus	Common sunflower	FACU
	Juniperus virginiana	Eastern red cedar	FACU-

Table 4. Common Dominant and Subdominant Wetland and Upland Plant Species Observed within the Project Study Corridor

Type	Scientific Name	Common Name (USDA, NRCS 2010)	Indicator Status[1]
	Kochia scoparia	Kochia	FACU
	Opuntia macrorhiza	Plains prickly pear	NI
	Proboscidea louisianica	Devils claw	FACU
	Salsoa iberica	Russian thistle	FACU
	Sisymbrium altissimum	Tumbling mustard	FACU
	Sorghum bicolor	Sorghum (crop)	NI
	Triticum aestivum.	Winter wheat (crop)	NI
	Xanthium strumarium	Cocklebur	FAC
	Yucca glauca	Soapweed yucca	NI

USDA = United States Department of Agriculture

[1] Indicator Status is defined as follows (USACE 2010b):

Code	Indicator Status	Occurrence
OBL	Obligate Wetland	Occurs almost always (estimated probability 99%) under natural conditions in wetlands.
FACW	Facultative Wetland	Usually occurs in wetlands (estimated probability 67%-99%), but occasionally found in non-wetlands.
FAC	Facultative	Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).
FACU	Facultative Upland	Usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found on wetlands (estimated probability 1%-33%).
UPL	Obligate Upland	May occur in wetlands in another region, but occurs almost always (estimated probability 99%) under natural conditions in non-wetlands in the regions specified.
NI	No indicator	Insufficient information available to determine an indicator status.

4.2 Soils

A total of 11 soil units mapped by the NRCS occur within the Project study corridor and are described in Table 5. Seven of these soil units are designated by the NRCS as hydric (NRCS 2011). Hydric soils are defined as soils that are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (*Federal Register* 1994). The hydric criteria for soils in the Great Plains Region have been updated in the Great Plains Supplement (USACE 2010a). Some soil characteristics previously defining upland soils are now considered by the USACE to be hydric soil characteristics. Although hydrophytic vegetation and wetland hydrology indicators must be confirmed before a wetland determination can be made, hydric soils information is useful in determining the potential presence of wetlands. In particular, if vegetation is removed by farming and wetlands are delineated in the drier seasons, soil characteristics become especially important indicators of the wetland-upland boundary.

Table 5. NRCS Mapped Soil Units within the Project Study Corridor

NRCS Map Unit	NRCS Soil Series Description
1124 – Bridgeport silt loam, channeled	Slopes are 0 to 2 percent; on flood plains of river valleys; is well-drained; derived from silty alluvium. This soil is frequently flooded but not ponded; lacks zone of water saturation within a 72-inch depth. Typical profile: 10YR 3/2 silt loam to 12-inch depth and 10YR 4/2 silt loam at 12 to 22 inches. NRCS-listed as hydric.
2612- Harney silt loam, 0 to 1 percent slopes	On hillslopes on tablelands; is well drained. Loess parent material. Not flooded or ponded; lacks water saturation zone within a 72-inch depth. Typical profile: 10YR 3/2 silt loam to 12-inch depth and 10YR 4/2 silty clay loam at 12-to-18 inch depth. NRCS-listed as hydric.
2714 – Ness clay	Slopes are 0 to 1 percent; typically on depressions on uplands (playas); is poorly drained. Clayey alluvium and/or eolian parent material. This soil is not flooded but is frequently ponded. A seasonal zone of water saturation is at the surface during March to June. Typical profile: 2.5Y 3/1 or 4/1 silty clay to 20-inch depth. NRCS-listed as hydric.
2750 – Penden clay loam, 7 to 15 percent slopes	Well drained soils occurring on hilllslopes, with parent material from Tertiary, calcareous, loamy alluvium. This soil is not flooded or ponded. Not listed as hydric by NRCS.
1761 – Richfield silt loam, 0 to 1 percent slopes	On plains on tablelands; well drained. Loess parent material. This soil is not flooded or ponded; lacks water saturation zone within a 72-inch depth. Typical profile: 10YR 3/2 silt loam to 6 inches. 10YR silty clay loam to 16 inches. NRCS-listed as hydric.
1762 – Richfield silt loam, 1 to 3 percent slopes	Same soil characteristics as Richfield silt loam, 0 to 1 percent slopes; however this soil occurs on 1 to 3 percent slopes. NRCS-listed as hydric.
2800 –Spearville complex, 1 to 3 percent slopes, eroded	Same soil characteristics as Spearville silty clay loam, 0 to 1 percent slopes; however this soil occurs on 1 to 3 percent slopes and is not listed as hydric by NRCS.
2801 –Spearville silty clay loam, 0 to 1 percent slopes	On plains on tablelands; deep well drained and moderately well drained uplands. Loess parent material. Not flooded or ponded; lacks water saturation zone within a 72-inch depth. Typical profile: A horizon to 7-inch depth is 10YR 2/2; silty clay loam. Bt1 horizon to 12-inch depth differs only in having a silty clay texture. Typical Bt2 layer is 10YR 3/2 silty clay to 20-inch depth. NRCS-listed as hydric.
2822 – Uly-Coly silt loams, 3 to 6 percent slopes, eroded	The Uly, eroded component makes up 70 percent of the map unit. Occurs on plains on tablelands; is well drained. Loess parent material. This soil is not flooded or ponded and there is no zone of water saturation within a 72-inch depth. Typical profile for Uly component: 10R 2/2 silt loam to 10-inch depth; 10YR 3/2 silt loam to 15-inch depth; 10YR 4/2 silt loam 15- to 21-inch depth. The Coly component is a very deep, well- and somewhat excessively drained, silt soils on uplands. Not listed as hydric by NRCS.
2815 – Uly silt loam, 1 to 3 percent slopes	Same soil characteristics as Uly silt loam, 0 to 1 percent slopes; however this soil occurs on 1 to 3 percent slopes. NRCS-listed as hydric.
1859 – Ulysses silt loam, 3 to 6 percent slopes	Very deep, well drained; calcareous loess parent material. This soil is not flooded or ponded and there is no zone of water saturation within a 72-inch depth. Typical profile: 10YR 3/2 silt loam to 10-inch depth; 10YR 4/2 silt loam from 10- to 18-inch depth. Not listed as hydric by NRCS.

Overall, the soils within the Project study corridor matched the loams, silt loams, clay, and clay loams mapped by the NRCS for the area. The soils were generally dark brown to black (10YR 2/1) or very dark grayish brown (7.5YR 3/1). Soils across the Project are typically mollisols, a productive agricultural soil common to grasslands and savannas characterized by a dark surface layer of mineral soil high in organic matter with a low chroma (1 or 2) matrix in both upland and wetland soils. Often, soils with low value and low chroma are considered hydric; nearly all the soils that supported upland plants within the Project study corridor exhibited low value and low chroma. This soil type can have any moisture regime. Wetland soils frequently met the criteria for hydric soil indicator F6: Redox Dark Surface or indicator F3: Depleted matrix. It is important to note that although hydric soils were prevalent throughout the Project study corridor, the presence of hydric soils alone is not enough to qualify an area as a wetland. Detailed information from NRCS descriptions of each mapped soil unit within the Project study corridor is presented in Table 6 and Figure 3.

4.3 Hydrology

Review of topographic maps and hydrography data indicates that surface water flows from southwest to northeast across the Project Area, and that most streams occur in the east and northeast sections of the Project Area. The Project Area is entirely bounded within the Buckner watershed (Kansas Hydrologic Unit Code 11030006), which flows to the Arkansas River. The South Fork Buckner Creek occurs inside the Project study corridor, and Buckner Creek is located to the north. No perennial flowing streams were observed within the Project study corridor; the South Fork Buckner Creek in the Project study corridor was observed as an ephemeral stream feature at the time of the survey. A total of two, dry ephemeral streams are crossed by the Project study corridor at five crossing sites and are described in detail in Section 4.6. Each of these streams, although dry much of the year, have eventual downstream connections with flowing perennial streams. However, because all of the streams are ephemeral and lack a significant nexus, they are not considered "waters of the U.S." Additionally, most of the streams originally identified by Tetra Tech in previous analyses (Tetra Tech 2010) were found to lack channels and can be characterized as swales or erosional features.

4.4 Wetlands

The Cowardin classification system categorizes wetlands by vegetative community and hydrologic regime (Cowardin et al. 1979). The Cowardin classification of the wetlands within the Project study corridor are predominantly palustrine (i.e., freshwater) emergent (non-woody plants rooted in soils that are saturated at least part of the time) wetlands (see Table 6). These PEM wetlands are located mostly within or adjacent to playa lake features throughout the Project study corridor. According to the Cowardin classification system, lakes with surface acreage of 8 hectares (20 acres) or more, and that lack trees, shrubs or persistent emergent vegetation are lacustrine ("lake") systems. Furthermore, lakes that are less than 8 hectares in area, but that are more than 6.6 feet deep at low water, may be considered lacustrine systems. Tetra Tech evaluated all surfaces waters that would be crossed by the Project. Table 6 lists the 20 wetlands identified in or proximate to the Project study corridor.

Table 6. Wetlands Identified within or Proximal to the Project Study Corridor

Wetland ID	Figure No.	Cowardin Class	Size within Study Corridor (acre)	Estimated Temporary Impacts (acre)	Estimated Permanent Impacts (acre)	Project Component with Impact to Wetland	NRCS Mapped Soil Type (majority of polygon)	Hydric (Yes / No)
Wetlands Identified within the Project Study Corridor								
II	4-2	PEM	1.93	1.40	0.30	Turbine, access road	Spearville silty clay loam, 0 to 1 percent slopes	Yes
KK	4-3	PEM	0.09	0.05	0	Homerun collection line (Alt)	Spearville silty clay loam, 0 to 1 percent slopes	Yes
MM	4-2	PEM	0.79	0.40	0	Homerun collection line (Alt)	Ness clay	Yes
NN	4-1	PEM	0.14	0.07	0	Homerun collection line (Alt)	Ness clay	Yes
QQ	4-5	PEM	0.05	0.04	0	Crane path	Spearville silty clay loam, 0 to 1 percent slopes	Yes
SS	4-5	PEM	<0.01	0	0	NA	Spearville silty clay loam, 0 to 1 percent slopes	Yes
TT	4-1	PEM	2.21	1.80	0	Homerun collection line	Ness clay	Yes
UU	4-1	PEM	0.55	0.50	0	Homerun collection line	Ness clay	Yes
VV	4-1	PEM	0.10	0.08	0	Homerun collection line	Ness clay	Yes
WW	4-1	PEM	0.20	0.08	0	Homerun collection line, substation	Ness clay	Yes
W	4-5	PEM	0.01	0	0	NA	Harney silt loam, 0 to 1 percent slopes	Yes
XX	4-1	PEM	0.12	0.07	0	Homerun collection line (Alt)	Ness clay	Yes
XX-1	4-1	PEM	0.11	0.07	0	Homerun collection line	Ness clay	Yes
ZZ	4-5	PEM	0.33	0	0	NA	Harney silt loam, 0 to 1 percent slopes	Yes
Wetlands Proximal to Project Study Corridor								
JJ	4	PEM	0.00	0	0	NA	Spearville silty clay loam, 0 to 1 percent slopes	Yes
LL	4	PEM	0.00	0	0	NA	Spearville silty clay loam, 0 to 1 percent slopes	Yes
OO	4	PEM	0.00	0	0	NA	Spearville silty clay loam, 0 to 1 percent slopes	Yes
PP	4	PEM	0.00	0	0	NA	Spearville silty clay loam, 0 to 1 percent slopes	Yes

Wetland ID	Figure No.	Cowardin Class	Size within Study Corridor (acre)	Estimated Temporary Impacts (acre)	Estimated Permanent Impacts (acre)	Project Component with Impact to Wetland	NRCS Mapped Soil Type (majority of polygon)	Hydric (Yes / No)
Wetlands Identified within the Project Study Corridor								
RR	4	PEM	0.00	0	0	NA	Spearville silty clay loam, 0 to 1 percent slopes	Yes
YY	4	PEM	0.00	0	0	NA	Harney silt loam, 0 to 1 percent slopes	Yes
			Total	**4.56**	**0.3**			

Notes:
(1) Appendix B contains photographs of the following wetlands: II, KK, MM, NN, QQ, SS, TT, UU, VV, WW, W, XX, XX-1, YY, and ZZ.
(2) Wetland W was delineated during 2009 by Tetra Tech.
(3) Wetland XX-1 is a man-made pond.
(4) Wetlands JJ, LL, OO, PP, RR, and YY occur beyond the Project Study Corridor.
(5) Temporary (construction) and permanent (operation) footprint estimates assume Project layout v3.

The Project footprint as currently designed would affect 4.56 acres of isolated, non-jurisdictional wetlands during construction, and 0.30 acre of isolated, non-jurisdictional wetlands during operation (Table 6).

All wetland boundaries within the Project study corridor were delineated in the field with a GPS. Some portions of wetlands that extended well beyond the boundaries of the Project study corridor were delineated based on aerial maps using ArcGIS software to allow for micrositing of Project features while keeping on-the-ground field surveys within the rights-of-way approved by landowners for site access. Desktop efforts conducted in this manner were consistent with the offsite methods described in the Corps of Engineers Wetland Delineation Manual (USACE 1987).

4.5 Playas

All wetlands delineated within the Project study corridor were playa wetlands with the exception of Wetland XX-1 (an excavated farm pond). Playas across the site vary in their development of hydrophytic vegetation community and hydric soils and thus may be classified as either dry (non-wetland) playas or wetland playas (Tables 6 and 7). The wetland playas are inundated periodically and for variable durations. Wetland playas within the Project study corridor contain FACW and OBL plant species that represent more than 50 percent of the dominant plant species in the wetland. In addition, their soils exhibit hydric characteristics. The non-wetland playas are shallow depressions with both dominant upland and hydrophytic plant species but with non-hydric soils and weak wetland hydrology indicators. Only one non-wetland playa was identified in the Project corridor.

Table 7. Non-wetland Playa Identified in the Project Study Corridor

Playa ID	Figure No.	Playa Size (acres)	Characteristics
D	4-5	0.49 (0.01 acre are within Project study corridor)	Although this playa contains *A. grayi* (FACW) and small amounts of *P. pensylvanicum* (FACW), it includes large amounts of *K. scoparia* (FACU) and *H. annuus* (FACU). Lacks hydric soil indicators consistent with nearby wetland soil indicators.

The occurrence of playas is more prevalent in the western portions of the Project study corridor. Mapped wetland playa occurrence is consistent with the distribution of the mapped hydric soil unit Ness clay (Figure 3, Detail Figures 3-1 and 3-2), although not all playas are underlain by Ness clay soils. Few playas are directly connected by groundwater exchange and the ephemeral nature of the water they hold is a result of precipitation events within an arid or semi-arid climate with high regional evapotranspiration rates (Bolen et al. 1989) and seepage at the basin margins (USACE 2010a). Smartweed and barnyard grass are common in the wetland playas with rushes and nut sedges common in the wetter playas.

4.6 Streams

All mapped “blue lines” on the USGS NHD (USGS 2010) and the NWI were examined during the April-May 2011 field effort within the Project study corridor. The drainages crossed by the Project study corridor are ephemeral features and do not meet USACE criteria for waters of the U.S. Each of the drainages listed in Table 8 lacks a continuous defined channel; however, these drainages exhibit channel characteristics (bed and bank) for stretches of several yards beyond which, the channel features disappear into a barely defined erosional features or swales. Although these unnamed drainages are marginal in terms of meeting the characteristics of a state-regulated stream, they are prominent drainages within this generally flat sub-basin and drain more than 640 acres each, and so they are deemed likely jurisdictional by the KDA. Additionally, many USGS mapped blue line streams were found to be “non-stream” features, or relict streams, where stream features had been lost by decades of plowing, cropping, and contour-smoothing. These relict drainages typically lacked any indication that flow is concentrated for more than a few yards; rather precipitation directly infiltrates or is conveyed to lower areas by sheet flow.

Some of the relict drainages exhibit swale-like morphology but lack a surface water connection with other waters. Five stream crossings were observed in the Project study corridor as described in Table 8.

Table 8. Stream Crossings within the Project Study Corridor

ID	Figure No.	Drainage	Linear Feet within Project Study Corridor	Average Channel Width (feet)	Observed Channel Depth	Channel Characteristics
B	4-4	South Fork Buckner Creek	33.88	2-3	Dry	Between Turbines C41 and C42A. Ephemeral stream with some areas exhibiting weak channel characteristics. Top of bank is 1 to 2 feet in those locations. No wetland indicators encountered during visit. Meets KDA criteria for stream (has channel features and drains more than 640 acres).
C	4-6	South Fork Buckner Creek	74.85	3-4	Dry	Between turbines A8A and A9 at access road crossing. Ephemeral stream; slow, low slope and volume. Interruptions in channel (i.e., channel becomes undefined for stream reach then is defined further downslope). The top of bank, where seldom evident, averages 1 to 2 feet from stream bed. Upland herbaceous plants such as clover observed. Stream overwidened by livestock in certain locations. Meets KDA criteria for stream (has channel features and drains more than 640 acres).
F	4-4	South Fork Buckner Creek	115.60	3-4	Dry	Between turbines D37A and D38 at access road crossing. Dry, ephemeral channel. Highly eroded. Top of bank varies from 1 to 2 feet from stream bed where bed and bank were evident. Becomes choked with grasses and loses channel in places. Meets KDA criteria for stream (has channel features and drains more than 640 acres).
G	4-2	Unnamed Tributary of South Fork Buckner Creek	33.38	1-2	Dry	Adjacent to paved county road on southwest and northeast heading collector line. Ephemeral stream with weak channel characteristics. Upland vegetation common within stream channel. Top of bank is generally 6 inches to 2 feet where bed and bank characteristics were evident. This tributary branch does not meet KDA criteria for regulated stream (i.e., drains less than 640 acres).

ID	Figure No.	Drainage	Linear Feet within Project Study Corridor	Average Channel Width (feet)	Observed Channel Depth	Channel Characteristics
H	4-6	South Fork Buckner Creek	125.50	3-4	Dry	Crosses access road between turbines B19A and B20. Ephemeral stream; slow, low slope and volume; many meanders. Many interruptions in channel (i.e., channel becomes undefined for a stream reach then is defined further downslope). Top of bank varies from 1 to 2 feet from stream bed where evident. No wetland indicators in channel and was dry during site visit. Livestock have entered stream channel in certain locations. Meets KDA criteria for stream (has channel features and drains more than 640 acres).

5.0 DISCUSSION OF RECENT DRAFT REGULATIONS AND GUIDANCE BY FEDERAL AGENCIES

Two proposed actions by the USACE and USEPA may have bearing on the Project. The USACE recently announced its draft reissuance of the 2012 NWPs, and the USEPA recently announced proposed guidance on isolated waters relative to the CWA.

5.1 USACE Proposed Regulations

On February 16, 2011, the USACE published in the *Federal Register* its proposal to reissue 48 of its existing NWPs and issue two new NWPs. One of the new NWPs (NWP A) is for land-based renewable energy generation facilities. The NWP A requires notification for all projects regardless of the level of project impacts (i.e., there is no minimum acreage threshold for notification). In conjunction with the *Federal Register* notice, USACE districts will seek public comment on proposed regional conditions for these NWPs. The final NWPs will go into effect on or before March 19, 2012. Permits issued by the USACE under the authority of Section 404 of the CWA may not be issued until the state certifies, under Section 401 of the Act, that the discharge will comply with the water quality standards of the state. Tetra Tech assumes the Project can be permitted under the USACE's NWP program. Generally, compliance with the NWPs does not require formal jurisdictional determinations or the submission of a formal permit application to the USACE. However, it does require confirmation that permit General Conditions, Special Conditions, and Regional Conditions can be complied with before, during, and after construction of the wind project.

5.2 USEPA/USACE Proposed Guidance

On May 2, 2011, the USEPA and USACE jointly issued a Notice of Availability of Guidance Regarding Identification of Waters Protected by the CWA (*Federal Register*/Vol. 76, No. 84/Monday, May 2, 2011/Notices pp. 24479-24480). The agencies will accept comments on the draft guidance for 60 days, ending on July 1, 2011. After that time, they will address substantive comments and then finalize the guidance. Until the final guidance is issued, the USEPA and USACE guidance documents from 2003 and 2008 remain in effect. If the draft guidance is finalized as written, the agencies would assert jurisdiction over isolated, intrastate, non-navigable waters and wetlands, even if they are not directly connected, physically abut, or are close to other jurisdictional waters, provided there is a significant nexus to a TNW or interstate water (see Appendix C). As a result, isolated waters, such as vernal pools, prairie potholes, natural ponds and playa lakes, may become subject to federal regulation under the CWA. If the Project goes to construction prior to issuance of the final guidance, then no changes to the Section 404 permitting would be required.

6.0 WETLAND FUNCTIONS AND VALUES

In compliance with EO 11990 and to support TVA's role as lead federal agency, all wetlands present in the Project study corridor were delineated in the field to determine the types and extent of wetlands present. This section presents functions and values associated with the Project Area in support of TVA's EO 11990 compliance.

The Project is located in the Playa Lakes wetlands region of the U.S. Playa Lakes are unique wetlands features, providing ephemeral reservoirs of water in parts of the southern Great Plains that are primarily active cropland and that can receive less than 20 inches of rain a year (USEPA 2009). All wetlands delineated in the Project study corridor were playas with the exception of one excavated farm pond. Playa lake wetlands have many unique functions and values:

- **Wildlife and Vegetation Values** – Playa lake wetlands provide essential floral and faunal habitat. Two million waterfowl commonly winter in the Playa Lakes region, along with a variety of small mammals, amphibians, and macroinvertebrates. A significant rainfall event in a playa lake attracts not only wildlife, but new vegetative growth, such as aquatic plants, that can be seen for weeks afterwards. Playa lakes are very important to maintaining biodiversity in the region, as without the wetlands areas, only a few species adapted to living in the agricultural environment would likely thrive in the region (USEPA 2009).

- **Recreational Values** – The high biodiversity in playa lakes makes them "hot spots" for waterfowl hunting and wildlife viewing (NRCS 2008). In Kansas, the type and quality of available habitat greatly influence migration timing, species composition, and abundance of ducks. Conservation efforts to preserve habitats, such as playa lakes, are important for maintaining duck hunting opportunities in Kansas (KDWP 2011).

- **Groundwater Recharge Values** – The playa lakes recharge aquifers, especially the Ogallala Aquifer basin. The Ogallala Aquifer provides water for a variety of purposes to the region, including municipal drinking water, industrial uses, and irrigation. The Ogallala Aquifer is primarily recharged by playa lakes in the region, where moisture retained by the clay soils underlaying the playa lakes slowly percolates down to the water table (KAWS 2011).

- **Flood Mitigation** – Playa lake wetlands help to retain water during and after storm events and during spring runoff. This retention of water mitigates the flooding impacts to surrounding uplands (e.g., soil erosion).

- **Sediment and Chemical Filtration** – Playa lakes slow down water flow over the land and allow excess sediment and chemicals such as agricultural byproducts (e.g., fertilizers and pesticides) to filter down through the wetland subsoils. Chemical and sediment concentrations are thereby reduced when they reach the receiving watershed (TPWD 2007).

During surveys of the site, many species of wildlife were observed using playas or are generally known to benefit by this wetland habitat. Several bird species observed during 2010 avian surveys for the Project are known to use playa lake wetlands, including red-winged blackbird (*Agelaius phoeniceus*), western meadowlark (*Sturnella neglecta*), sandhill crane (*Grus canadensis*), and Canada goose (*Branta canadensis*), and raptors such as Swainson's hawk (*Buteo swainsoni*) and Northern harrier (*Circus cyaneus*). Finally, two reptile observations were made during the wetland survey, including the prairie rattlesnake (*Crotalus viridus*) and plains garter snake (*Thamnophis radix*). These species observations demonstrate the wildlife functions and recreational values that playa habitats provide.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Twenty wetlands and one non-wetland playa were observed and evaluated during the field assessment. A total of 14 wetlands were delineated within the designated Project study corridor, which includes the Project construction footprint. An additional 6 wetlands (Wetlands JJ, LL, OO, PP, RR, and YY) were delineated in areas proximal to, but outside of, the Project study corridor and within the Project Area.

Based on careful examination in the field, none of the delineated wetlands appear to have a hydrologic connection (i.e., significant nexus) to TNW. For this reason, Tetra Tech has concluded that based on current USACE and USEPA guidance, none of the 20 wetlands in the Project study corridor is federally jurisdictional. Five stream crossings were observed in the Project study corridor; however none meet USACE criteria for waters of the U.S. Four of the stream crossings, however, are likely to be KDA-jurisdictional because they drain more than 640 acres. At a Project meeting with CPV and Tetra Tech in July 2009, KDA outlined the Stream Obstruction Permit application requirements which must include a plan profile/cross-section for each individual crossing, hydrological analysis, and fee structure (approximately 4-page application). At that meeting, KDA expected to be able to issue CPV the necessary permits assuming good industry construction crossing practices were employed. CPV should plan to submit these applications once the final Project design is completed and at least 3 months prior to construction to ensure appropriate review time for issuance of the permits.

Tetra Tech concludes that no USACE-jurisdictional wetlands or waters of the U.S are present in the Project study corridor, according to current USACE and USEPA guidance. Futhermore, Tetra Tech has reviewed the current USACE regional permit conditions on its NWPs and has concluded that none of the conditions would be prohibitive to construction or operation of the Project. The current Kansas NWP Regional Conditions establish guidelines for: notification if jurisdictional playa lake, bog, fen, and/or forested wetlands may be impacted; solid waste disposal; equipment staging areas and project closure; disturbance of riparian areas; discharge of floatable materials; fuel, chemical, and materials storage; spill response and reporting; and impacts to drinking water intakes (USACE 2007c, USACE 2007d).

In keeping with the intent of EO 11990, CPV has committed to avoiding and minimizing impacts to all wetlands to the extent practicable. As the Project is presently designed, wetland and stream features crossed by the Project construction footprint will have minimal temporary and permanent impacts to non-jurisdictional wetlands and to drainages regulated by the KDA.

8.0 REFERENCES

Bolen, E.G., L.M. Smith, and H.L. Schramm, Jr. 1989. Playa lakes: prairie wetlands of the Southern High Plains. BioScience 39:615-623.

Cowardin, L.M., et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior/USFWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Haddock, M. J. 2005. Wildflowers & Grasses of Kansas. University Press of Kansas, Lawrence, KS, USA.

Haukos, D. A. and L. M. Smith. 1997. Common flora of the playa lakes. Texas Tech University Press, Lubbock, TX, USA.

Kansas Alliance for Wetlands and Streams. 2011. Playa Lakes in Kansas. Available at [url] http://www.kaws.org/playa-lakes-Kansas

KDA (Kansas Department of Agriculture). 2009. Stream obstructions, dams and channel changes. Water Structure Program. Available: http://www.ksda.gov/structures/content/197

KDWP (Kansas Department of Wildlife and Parks). 2009. Landowner Incentive Program. Available: http://www.kdwp.state.ks.us/news/Other-Services/Private-Landowner-Assistance/Wildlife/Technical-Assistance/State-Programs/KDWP-Conservation-Programs/Landowner-Incentive-Program

KDWP. 2011. Hunting>Migratory Birds>Ducks. Available at [url] http://kdwp.state.ks.us/news/Hunting/Migratory-Birds/Ducks.

Kansas Geological Survey. 2008. Physiographic Provinces of Kansas. Available at [url] ftp://ftp-fc.sc.egov.usda.gov/KS/Outgoing/Web_Files/About_Us/profiles/ks_physiography.pdf

KGS (Kansas Geological Survey). 2004. Kansas Data Access and Support Center. University of Kansas. Lawrence. KS. Playa Lakes GIS Data. Available: http://gisdasc.kgs.ukans.edu/kgcc/kgcc.cfm

Kansas Water Office. 2011. Kansas Drought and Climate Survey May 2011. Available at [url] http://www.kwo.org/reports%20&%20publications/drought/Rpt_2011_May_draft_DroughtRpt_052311_dc.pdf

Macbeth. 1994. Munsell® Soil Color Charts. New Windsor, NY.

Murkin, H.R. 1998. Freshwater Functions and Values of Prairie Wetlands. Great Plains Research 8:3-15. Available online at [url] http://digitalcommons.unl.edu/cgi/viewcontent.cgi? article=1360&c ontext=greatplainsresearch. Last accessed June 9, 2010.

NAIP (National Agriculture Imagery Program). 2009. USDA-FSA Aerial Photography Office, Salt Lake City, UT. Available at [url] http://datagateway.nrcs.usda.gov/

NatureServe. 2006. NatureServe Explorer: An online encyclopedia of life [web application], Version 4.7. Arlington, VA: NatureServe. Available at [url] http://www.natureserve.org/explorer.

NCDC (National Climatic Data Center). 2000. Climatography of the United States No. 20, 1971-2000, Station: Dodge City Regional Airport, Kansas. Available at [url] http://hurricane.ncdc.noaa.gov/climatenormals/clim20/ks/142164.pdf.

NRCS (Natural Resources Conservation Service). 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. Agriculture Handbook 296. Available at [url] http://soils .usda.gov/survey/geography/mlra/index.html

NRCS. 2008. Western Kansas Wetlands: Playa Lakes. Available at [url] http://www.ks.nrcs.usda.gov/news/coneds09/PlayaLakes.html.

NRCS. 2011. National Hydric Soils List by State. February. Available at [url] http://soils.usda.gov/use/hydric/.

NWS (National Weather Service). 2009. Preliminary Monthly Climate Data (CF6), Dodge City, KS, September 2009. Available at [url] http://www.weather.gov/climate/index.php?%20wfo=ddc

NWS. 2011. Preliminary Monthly Climate Data (CF6), Dodge City, KS, April-May 2011. Available at [url] http://www.weather.gov/climate/index.php?%20wfo=ddc.

SSURGO (Soil Survey Geographic). 2009. Web Soil Survey and Official Soil Series Description. Available: http://SoilDataMart.nrcs.usda.gov/

Tetra Tech. 2010. Delineation of Wetlands and Other Waters, Cimarron Wind Energy Project, Gray County, Kansas. Prepared for CPV Cimarron Renewable Energy Company, LLC, by Tetra Tech EC, Inc. February 2010.

TPWD (Texas Parks and Wildlife Department). 2007. Playa Lakes in Texas. Accessed at [url] http://www.tpwd.state.tx.us/landwater/land/habitats/high_plains/wetlands/playa.phtml

USACE (United States Army Corps of Engineers). 1987. Corps of Engineers Wetland Delineation Manual. Department of the Army. Technical Report Y-87-1. U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS. 99 pp plus appendices.

USACE. 2007a. U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook. Prepared jointly with U.S. Environmental Protection Agency. Available online at [url] http://www.usace.army.mil/CECW/Pages/cwa_guide.aspx

USACE. 2007b. Regulatory Guidance Letter 07-01. Practices for Documenting Jurisdiction under Sections 9 & 10 of the Rivers and Harbors Act (RHA) of 1899 and Section 404 of the Clean Water Act (CWA). Available: http://www.usace.army.mil/CECW/Documents/cecwo/reg/rgls/rgl07-01.pdf

USACE 2007c. US. Army Corps of Engineers Kansas City District Regional Conditions. Available at [url] http://www.nwk.usace.army.mil/regulatory/NWP_2007/KS/KS_RegCond.pdf..

USACE 2007d. U.S. Army Corps of Engineers Nationwide Permits, Conditions, Further Information, and Definitions. Available at [url] http://www.usace.army.mil/CECW/ Documents/cecwo/ reg/nwp/nwp2007_gen_conditions_def.pdf

USACE. 2008a. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States and Carabell v. United States. Memorandum December 2. Available: http://www.usace.army.mil/cw/cecwo/reg/cwa_guide/cwa_juris_2dec08.pdf

USACE. 2010a. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region, (Version 2.0). ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 2010b. National list of plant species that occur in wetlands: Region 4 - North Plains. www.usace.army.mil/CECW/Documents/cecwo/reg/plants/region4.txt. Accessed June 2010.

USDA (United States Department of Agriculture), NRCS. 2010. The PLANTS Database (http://plants.usda.gov, 9 September 2010). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USACE (United States Environmental Protection Agency and United States Army Corps of Engineers). 2008. Revised Guidance on Clean Water Act Jurisdiction Following the Supreme Court Decision

in Rapanos v. U.S. and Carabell v. U.S. Available online at [url] http://www.usace.army.mil/CECW/Documents/cecwo/reg/cwa_guide/cwa_juris_2dec08.pdf

USEPA. 2009. Playa Lakes. Available at [url] http://water.USEPA.gov/type/wetlands/playa.cfm

USEPA and USACE (United States Environmental Protection Agency and United States Army Corps of Engineers). 2007. Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States. Issued June 5, 2007. Available online at [url] http://www.usace.army.mil/CECW/Documents/cecwo/reg/cwa_guide/rapanos_guide_memo.pdf

USFWS (United States Fish and Wildlife Service). 2009a. National Wetlands Inventory. Available: http://www.fws.gov/wetlands/

USGS (United States Geological Survey). 2010. National Hydrography Dataset (NHD). Available at [url] http://nhd.usgs.gov/data.html

FIGURES

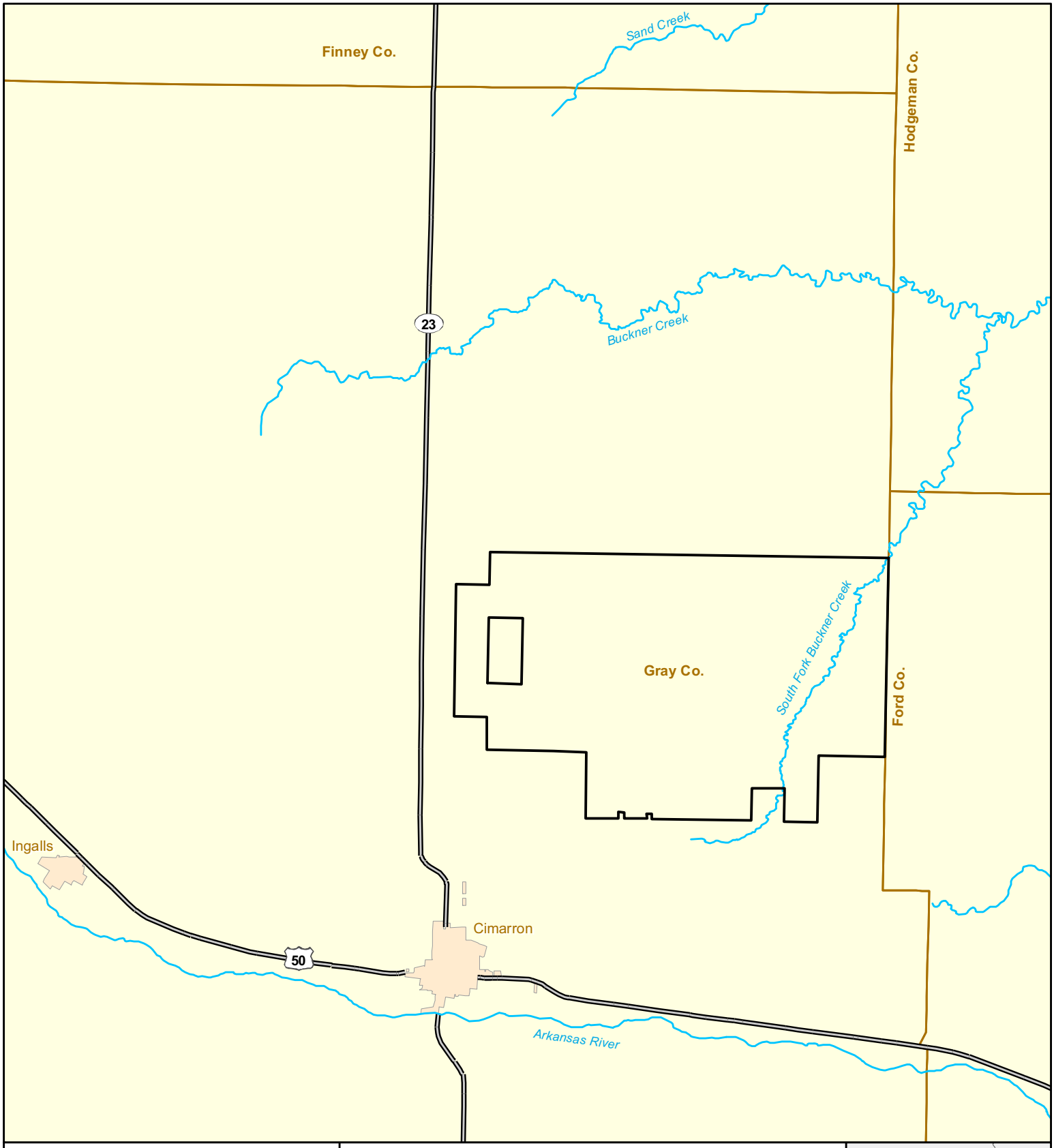


Figure 1
Project Vicinity

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
County Boundary
City
Major Road

N

0 1 2 Miles

Source:USGS 100k Quad, 1985.

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase1\Figure1_Project_Vicinity.mxd

Figure 2
Project Area Waters Overview

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
Major Road
NHD Stream
NHD Waterbody
NWI Wetlands
Playa Lake

N

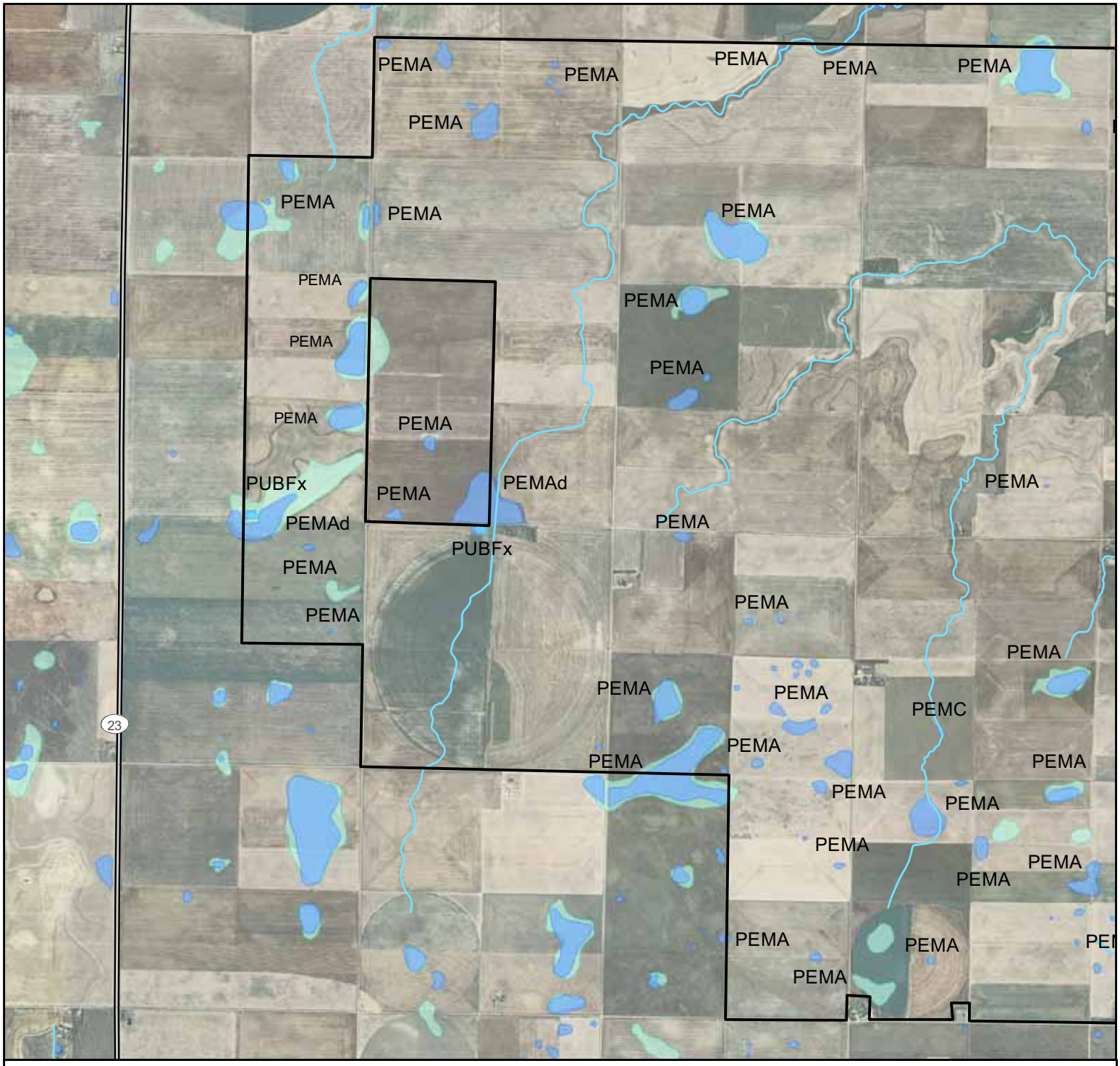
0 0.5 1 Miles

Sources: ESRI, NHD, NWI, KSGIS.

KANSAS

Project Location

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase1\Figure2_Waters_Overview.mxd



NWI Wetland Units within Project Area

PABFh: Freshwater Pond
PEMA: Palustrine emergent temporary
PEMAd: Palustrine emergent temporary partially drained-ditched
PEMC: Palustrine emergent seasonal
PUBFx: Palustrine unconsolidated bottom semipermanent excavated
PUSAh: Palustrine unconsolidated shore temporary diked/impounded
PUSAx: Palustrine unconsolidated shore temporary excavated
PUSCh: Palustrine unconsolidated shore seasonal diked/impounded

Figure 2-1
Project Area Waters Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC
TETRA TECH EC, INC.

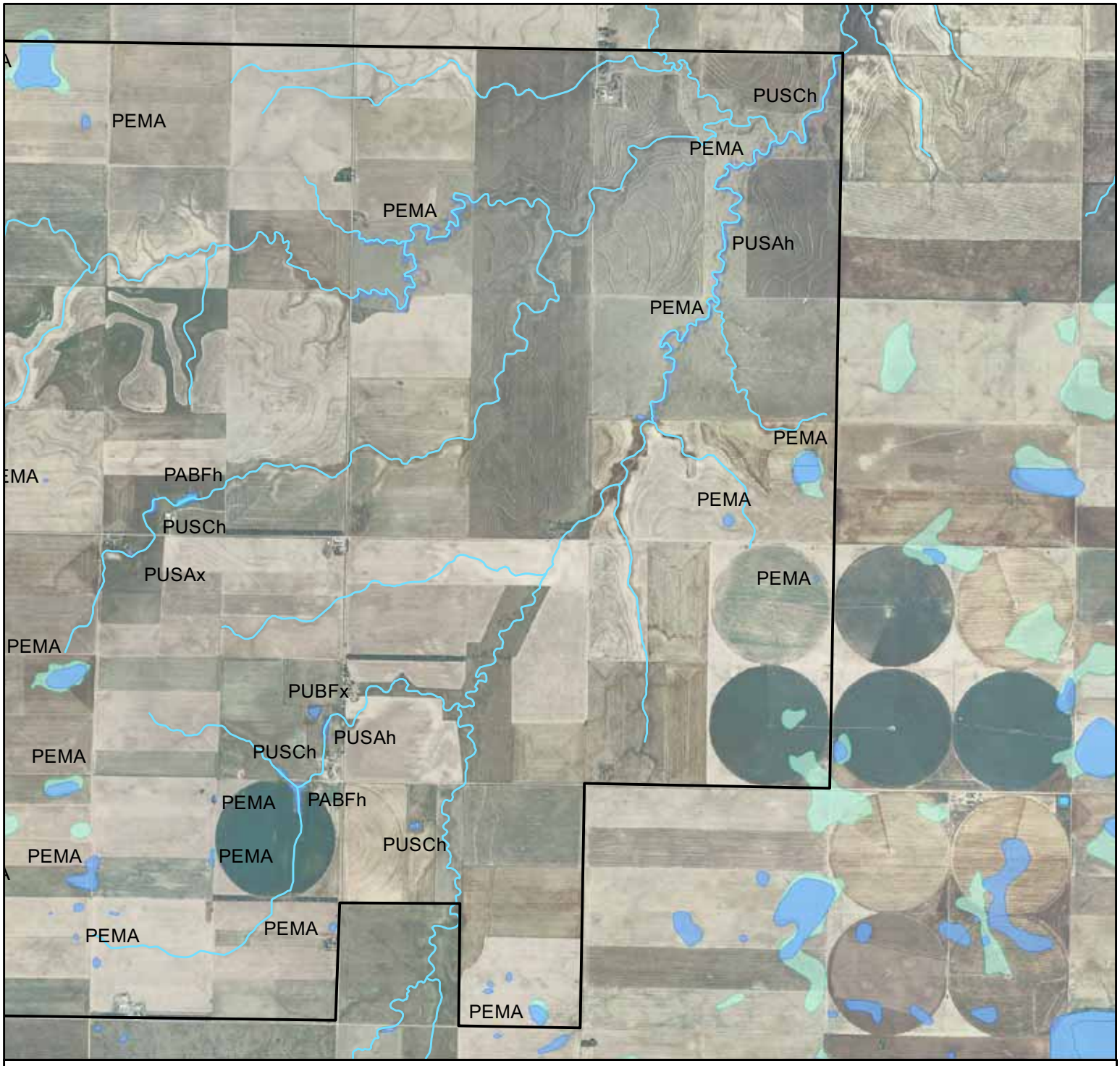
Project Area
Major Road
NHD Stream
NHD Waterbody
NWI Wetlands
Playa Lake

N
0 0.5 1 Miles

Sources: ESRI, NHD, NWI, KSGIS.

Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase1\Figure2_Waters_Overview.mxd



NWI Wetland Units within Project Area

PABFh: Freshwater Pond
PEMA: Palustrine emergent temporary
PEMAd: Palustrine emergent temporary partially drained-ditched
PEMC: Palustrine emergent seasonal
PUBFx: Palustrine unconsolidated bottom semipermanent excavated
PUSAh: Palustrine unconsolidated shore temporary diked/impounded
PUSAx: Palustrine unconsolidated shore temporary excavated
PUSCh: Palustrine unconsolidated shore seasonal diked/impounded

Figure 2-2
Project Area Waters Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
Major Road
NHD Stream
NHD Waterbody
NWI Wetlands
Playa Lake

N

0 0.5 1 Miles

Sources: ESRI, NHD, NWI, KSGIS.

Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase1\Figure2_Waters_Overview.mxd

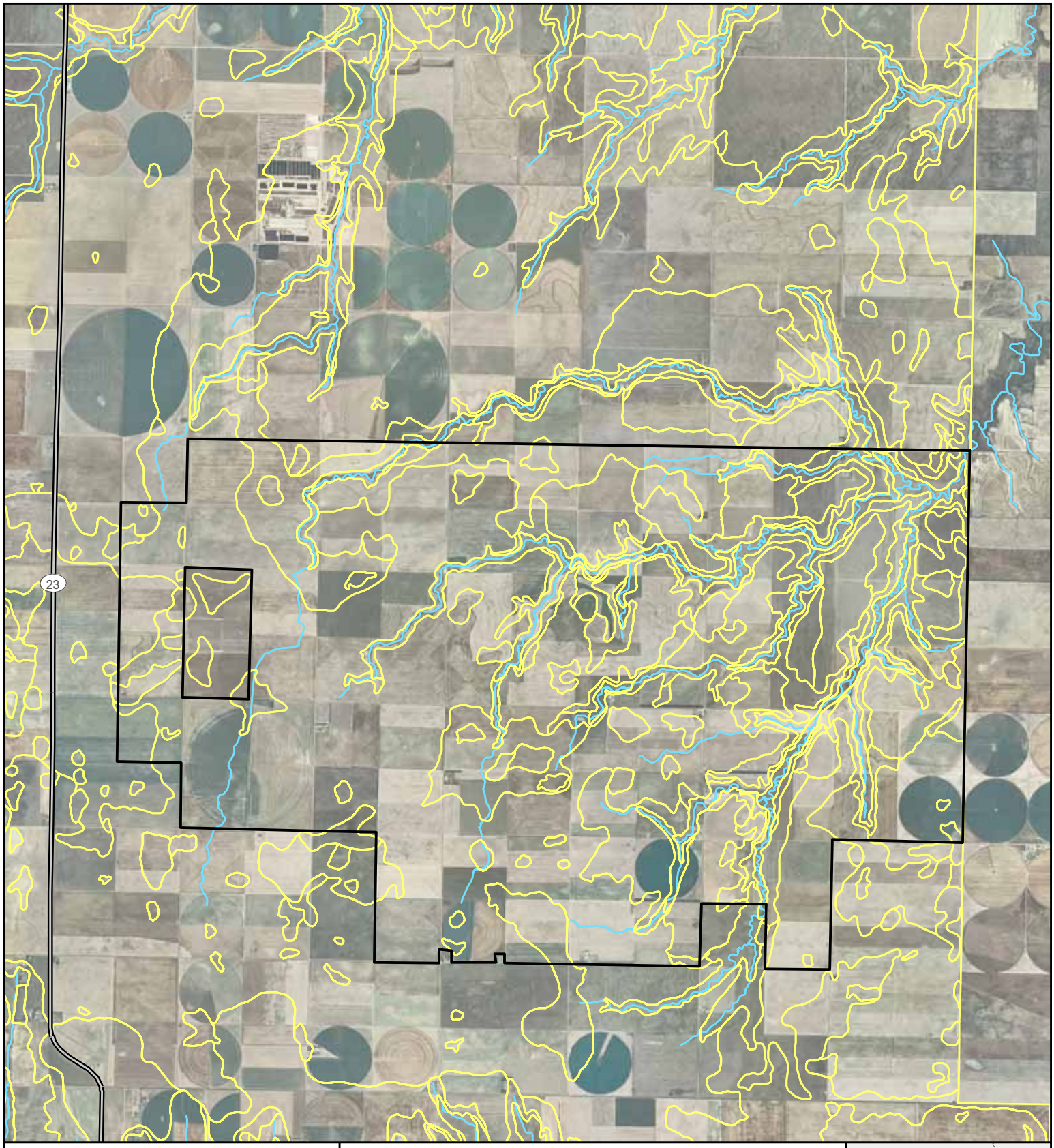


Figure 3
Project Area Soils Overview

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

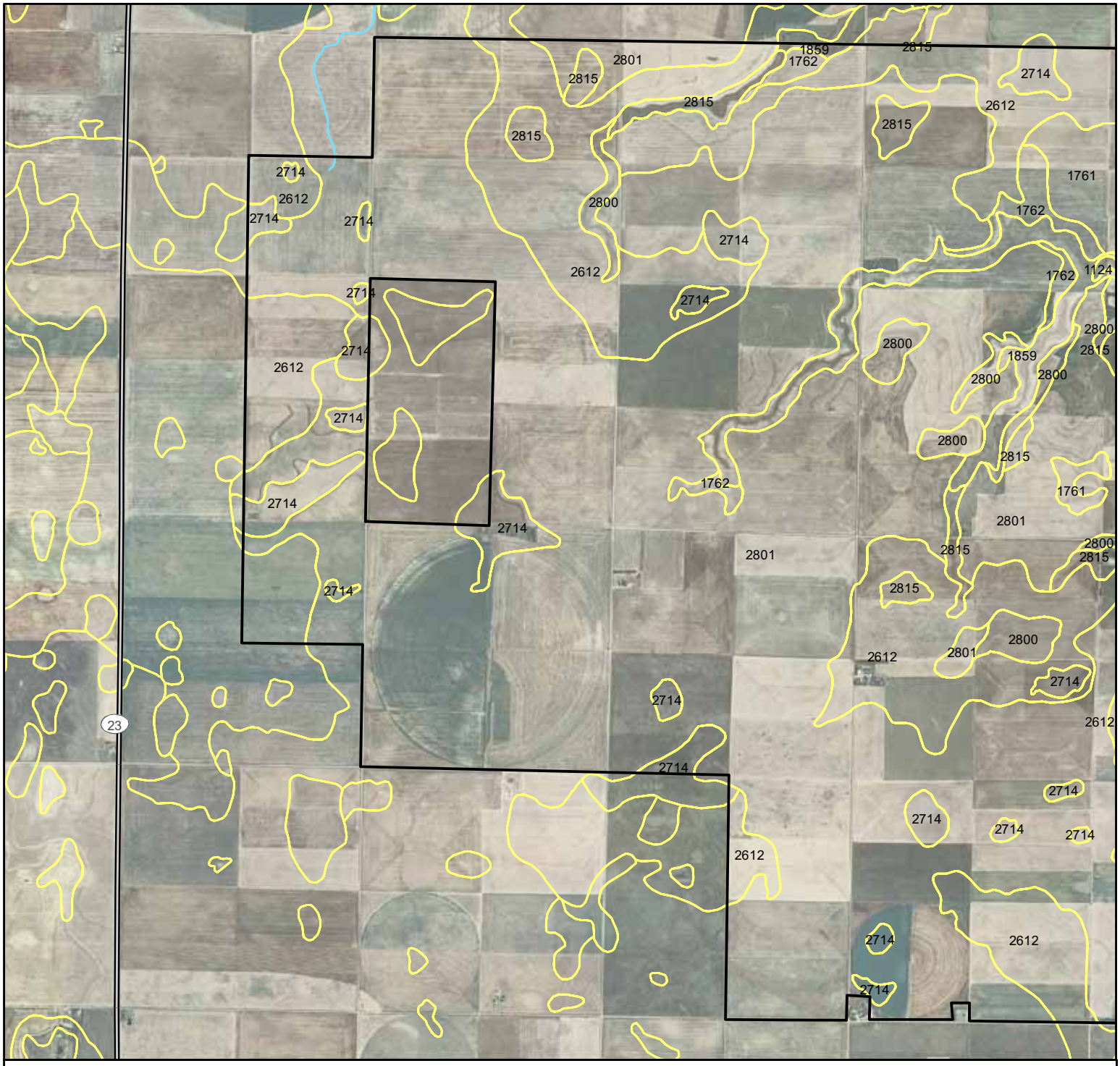
Project Area
Major Road
NHD Stream
Soil Unit Boundary

N

0 0.5 1 Miles

Sources: ESRI, NHD, NRCS.

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase1\Figure3_Soils_Overview.mxd



NRCS Soil Units within Project Area

1124: Bridgeport silt loam, channeled
1761: Richfield silt loam, 0 to 1 percent slopes
1762: Richfield silt loam, 1 to 3 percent slopes
1859: Ulysses silt loam, 3 to 6 percent slopes
2612: Harney silt loam, 0 to 1 percent slopes
2714: Ness clay
2750: Penden clay loam, 7 to 15 percent slopes
2800: Spearville complex, 1 to 3 percent slopes, eroded
2801: Spearville silty clay loam, 0 to 1 percent slopes
2815: Uly silt loam, 1 to 3 percent slopes
2822: Uly-Coly silt loams, 3 to 6 percent slopes, eroded

Figure 3-1
Project Area Soils Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

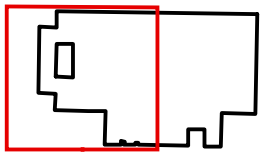
TETRA TECH EC, INC.

Project Area
Major Road
NHD Stream
Soil Unit Boundary

N

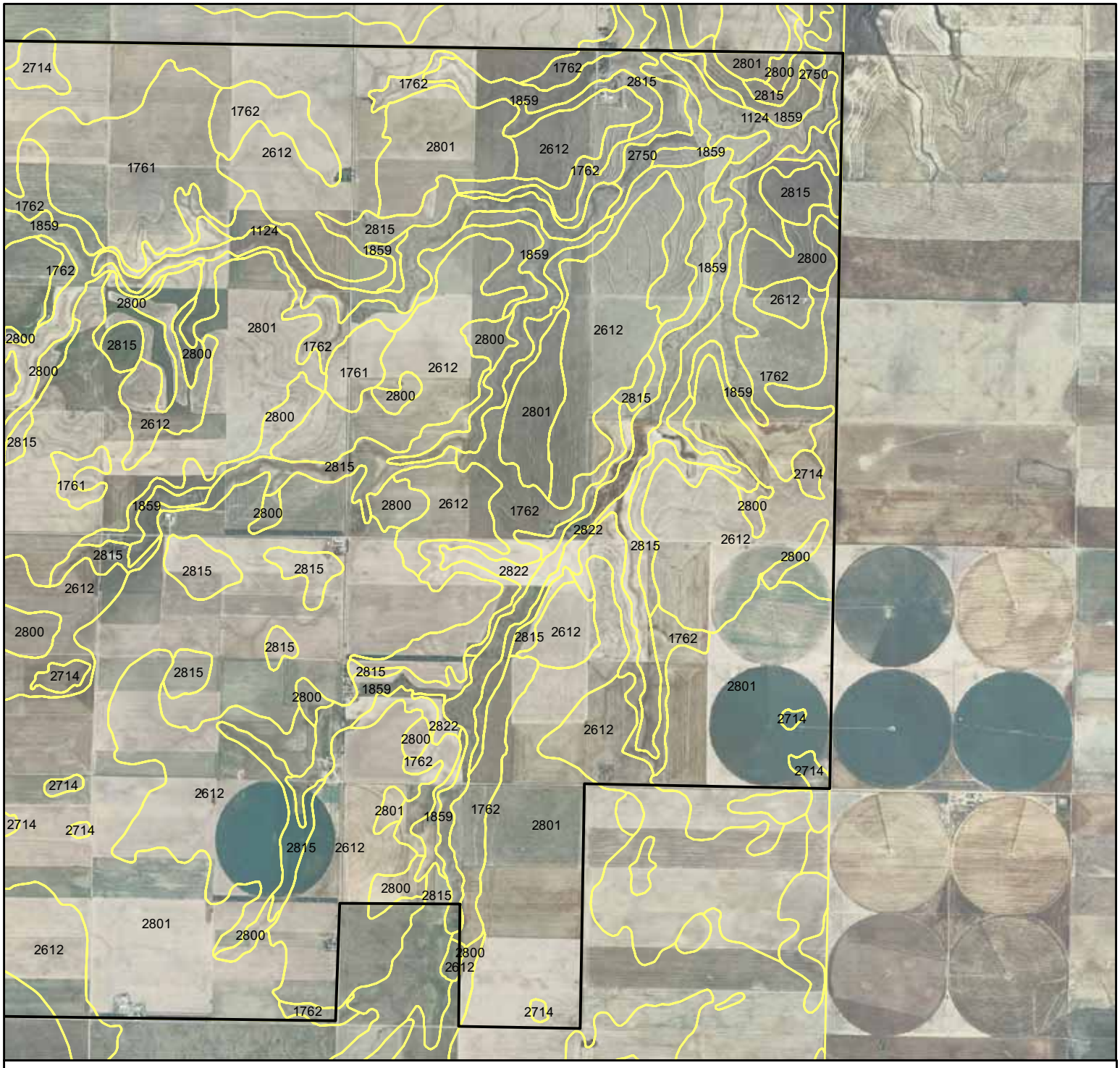
0 0.25 0.5 Miles

Sources: ESRI, NHD, NRCS.



Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase1\Figure3_Soils_Details.mxd



NRCS Soil Units within Project Area

1124: Bridgeport silt loam, channeled
1761: Richfield silt loam, 0 to 1 percent slopes
1762: Richfield silt loam, 1 to 3 percent slopes
1859: Ulysses silt loam, 3 to 6 percent slopes
2612: Harney silt loam, 0 to 1 percent slopes
2714: Ness clay
2750: Penden clay loam, 7 to 15 percent slopes
2800: Spearville complex, 1 to 3 percent slopes, eroded
2801: Spearville silty clay loam, 0 to 1 percent slopes
2815: Uly silt loam, 1 to 3 percent slopes
2822: Uly-Coly silt loams, 3 to 6 percent slopes, eroded

Figure 3-2
Project Area Soils Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

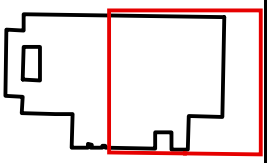
TETRA TECH EC, INC.

Project Area
Major Road
NHD Stream
Soil Unit Boundary

N

0 0.25 0.5 Miles

Sources: ESRI, NHD, NRCS.



Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase1\Figure3_Soils_Details.mxd

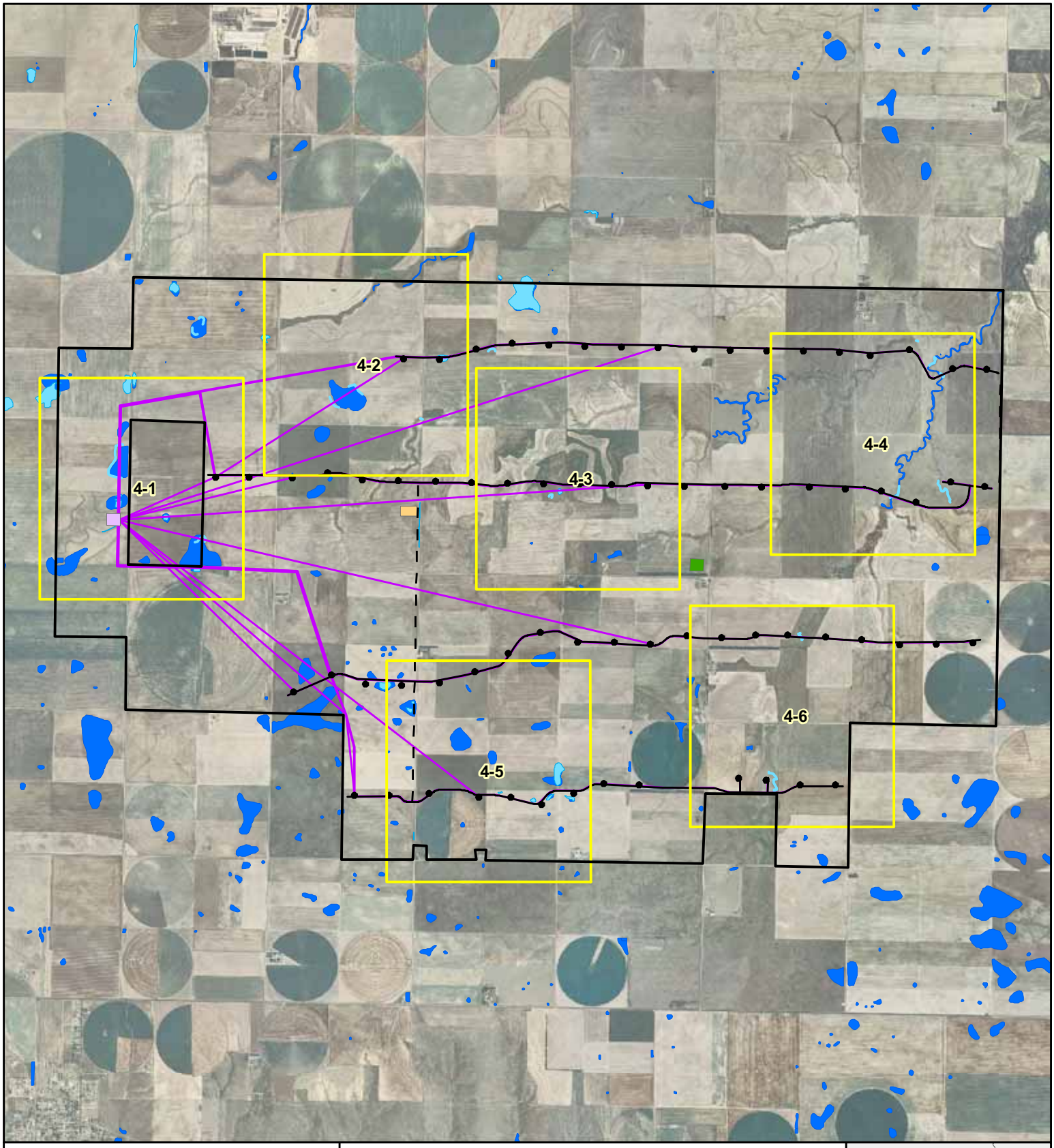


Figure 4
Delineation of Wetlands and Waters

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
Detail Map Index
Proposed Turbine
Proposed Collection Line
Proposed Access Road
Proposed Crane Path
Proposed Laydown
Proposed Substation
Proposed Batch Plant
NWI Wetlands
Delineated Stream
Delineated Wetland

N

0 0.5 1 Miles

Sources: ESRI, NWI,Tt EC.

KANSAS

Project Location

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase1\Figure4_Wetlands_Overview.mxd

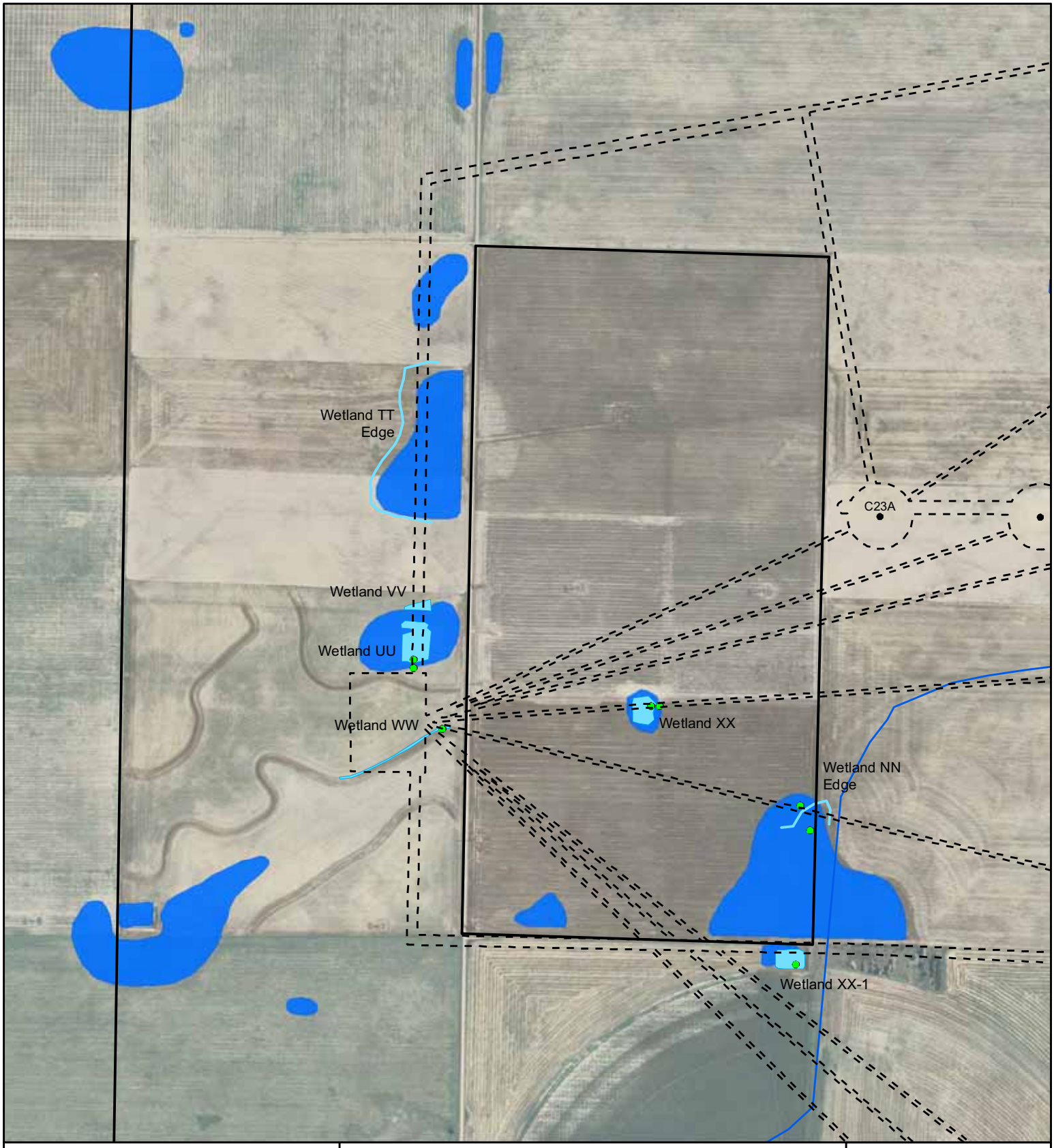


Figure 4-1
Wetlands and Waters Delineation Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

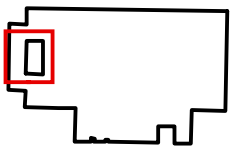
Project Area
Survey Area
Proposed Turbine
Sample Plot

NWI Wetland
NHD Stream
Delineated Wetland Edge
Delineated Wetland
Delineated Playa

N

0 0.1 0.2 Miles

Sources: ESRI, NWI, Tt EC.



Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase2\Figure3_Soils_Details.mxd

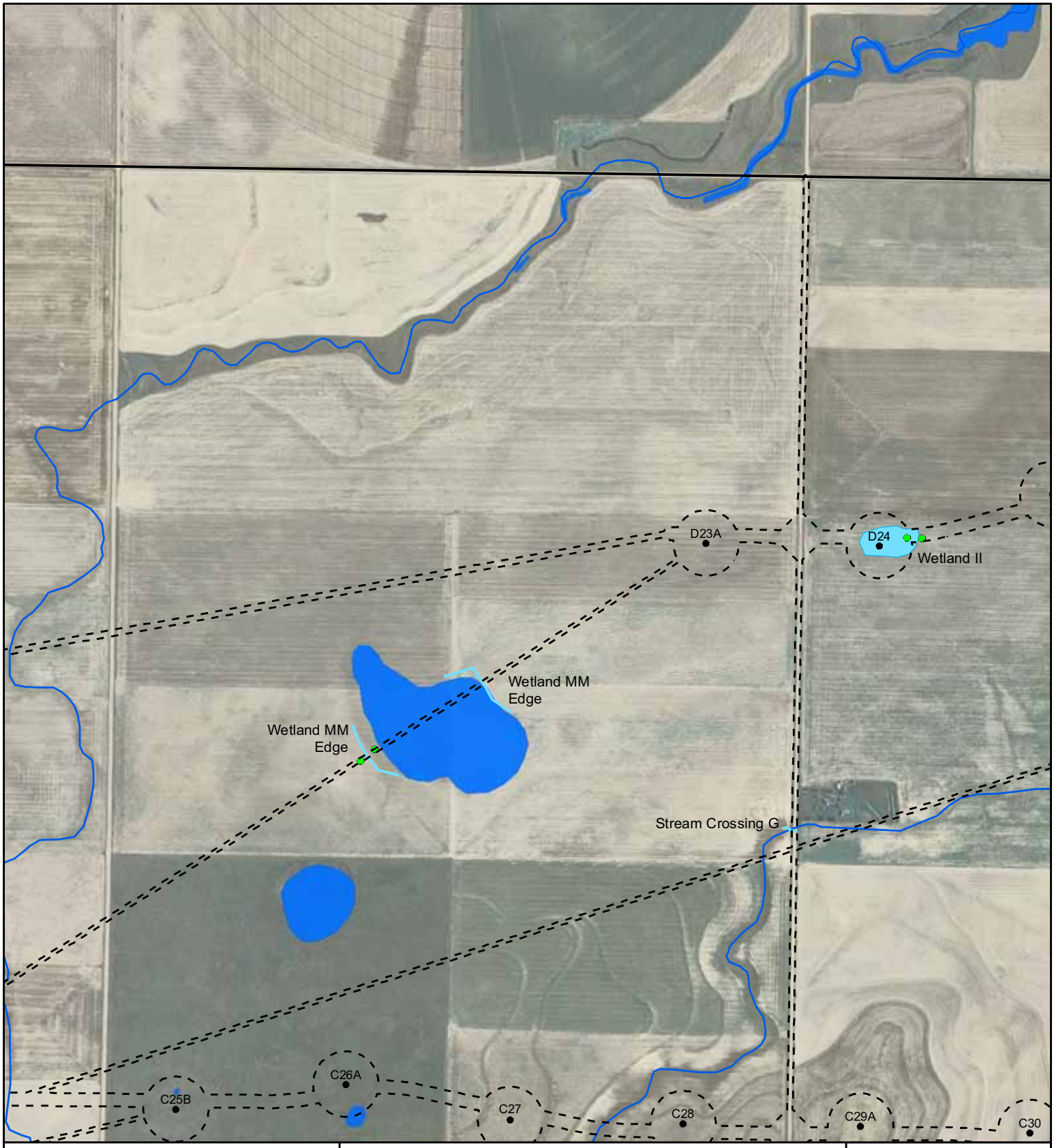


Figure 4-2
Wetlands and Waters Delineation Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
Survey Area
Proposed Turbine
Sample Plot
NWI Wetland
NHD Stream
Delineated Wetland Edge
Delineated Wetland
Delineated Playa

N

0 0.1 0.2 Miles

Sources: ESRI, NWI, Tt EC.

Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase2\Figure3_Soils_Details.mxd

Figure 4-3
Wetlands and Waters Delineation Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
Survey Area
Proposed Turbine
Sample Plot
NWI Wetland
NHD Stream
Delineated Wetland Edge
Delineated Wetland
Delineated Playa

N

0 0.1 0.2 Miles

Sources: ESRI, NWI, Tt EC.

Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase2\Figure3_Soils_Details.mxd

Figure 4-4
Wetlands and Waters Delineation Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
Survey Area
Proposed Turbine
Sample Plot

NWI Wetland
NHD Stream
Delineated Wetland Edge
Delineated Wetland
Delineated Playa

N

0 0.1 0.2 Miles

Sources: ESRI, NWI, Tt EC.

Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase2\Figure3_Soils_Details.mxd

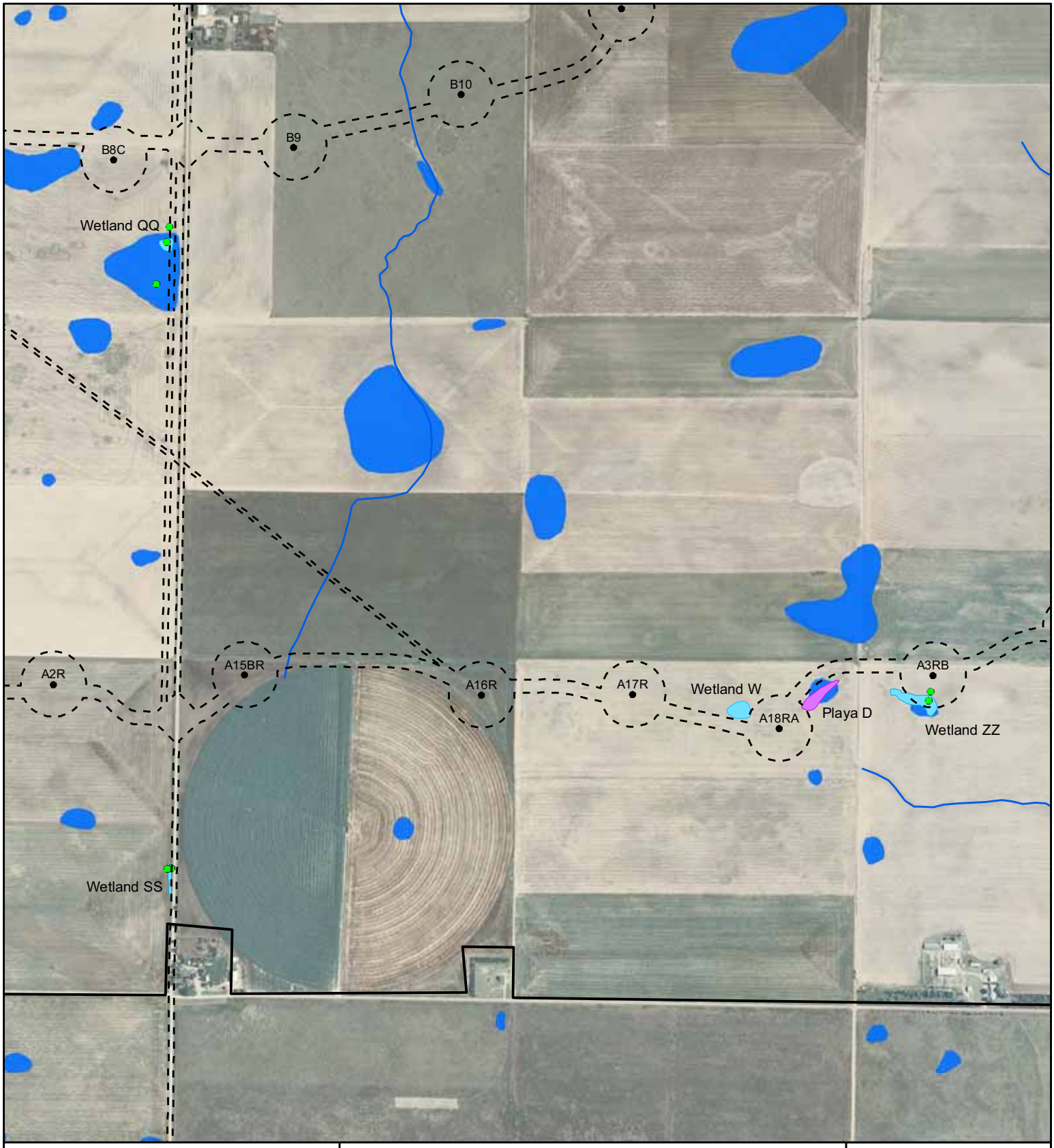


Figure 4-5
Wetlands and Waters Delineation Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

Project Area
Survey Area
Proposed Turbine
Sample Plot

NWI Wetland
NHD Stream
Delineated Wetland Edge
Delineated Wetland
Delineated Playa

N

0 0.1 0.2 Miles

Sources: ESRI, NWI, Tt EC.

Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase2\Figure3_Soils_Details.mxd

Figure 4-6
Wetlands and Waters Delineation Detail

Cimarron Wind Energy Project-Phase 1
Gray County, Kansas

CPV Renewable Energy Company, LLC

TETRA TECH EC, INC.

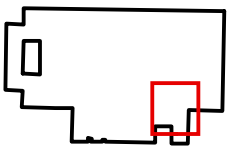
Project Area
Survey Area
Proposed Turbine
Sample Plot

NWI Wetland
NHD Stream
Delineated Wetland Edge
Delineated Wetland
Delineated Playa

N

0 0.1 0.2 Miles

Sources: ESRI, NWI, Tt EC.



Map Detail Area

Z:\Gdrive\Projects_2008\CPV_Cimarron\Maps\Field_Wetlands_Reports_April_2011\Phase2\Figure3_Soils_Details.mxd

APPENDIX A

Wetland Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 4/30/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: W II-WETL

Investigator(s): JV TK Section, Township, Range: S9 T25S R27W

Landform (hillslope, terrace, etc.): micro depression Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): Great Plains, Central (H) Lat: 385915.14m E Long: 4194632.13m N Datum: NAD83

Soil Map Unit Name: Spearville Silty Clay loam 0-1% NWI classification: PEMA

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: vegetation managed - cultivated sorghum prevents native community from colonizing. Subtle depression in cultivated field where surface water ponds during wet period. Isolated feature

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Sorghum bicolor	45		NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	45 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 55

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Remarks: Sorghum is visibly reduced stalks within wetland area. Perimeter of depression observed increased & uniform yields of crop. Patches of bare ground where crop did not establish

SOIL

Sampling Point: II WETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	98	7.5YR 3/3	2	C	M	CL LO	
4-18	7.5YR 2/1	93	7.5YR 2.5/3	7	C	M	CL LO	

[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: Clay soils are friable & moist – not saturated. Clay component is dominant below plow layer

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: Sparsely vegetated surface associated with ponding. Crops did not establish in wetland

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: GRAY Sampling Date: 4/30/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: II UPL

Investigator(s): JV TK Section, Township, Range: S9 T25S R27W

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): Central Great Plains (H) Lat: 385951.39m E Long: 4194630.76m N Datum: NAD83

Soil Map Unit Name: Spearville Silty Clay Loam 0-1% NWI classification: UPL

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Vegetation managed commercially in sorghum field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Sorghum bicolor	65		NA
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 35

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Remarks: Crop is uniform and no evidence of stress or reduced yield as observed in adjacent wetland.

SOIL

Sampling Point: II UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/2						SICLLO	

[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: CL

Depth (inches): 8"

Hydric Soil Present? Yes ___ No ✓

Remarks: Soils are brighter & drier than in adjacent wetland. Soils are crumbling & fall out of auger when sampled. texture is noticeably more silty.

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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 4/30/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: KK-WETL

Investigator(s): JV TK Section, Township, Range: S16 T25S R27W

Landform (hillslope, terrace, etc.): Slight depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): Central Great Plains H Lat: 387125.6 Long: 4193136.09 Datum: NAD 83

Soil Map Unit Name: Spearville Silty Clay loam 0-1% NWI classification: PEM1

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Vegetation altered by farming practices. Harvested wheat field recently plowed. Wetland recently burned to control herbaceous species

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Polygonum pensylvanicum	<5	✓	FACW+
2.			
3.			
4.			
5.			
	<5 = Total Cover		
Herb Stratum (Plot size: 5')			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. None			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 100

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Remarks: recently plowed wheat field. Wetland has been burned to control encroaching herbaceous vegetation species. Polygonum pensylvanica restricted to wetland. Remainder of field was not burned.

SOIL

Sampling Point: KK WETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 - 10	7.5 YR 2.5/1	90	7.5YR 2.5/3	10	C	M	CL LO	

[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: Cl

Depth (inches): 10"

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: Wetland is isolated mow depression within ag field. Woody vegetation species observed within wetland only. Remaining field was planted as row crop

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 4/30/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: KK UPL

Investigator(s): JV TK Section, Township, Range: S16 T25S R27W

Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): great plains Central, H Lat: 3907220.5 Long: 4193142.4 Datum NAD 83

Soil Map Unit Name: Spearville Silty Clay loam 0-1% NWI classification: UPL

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Vegetation managed for farming practices. Recent plowing & disked prescribed fire treatment within field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. None			
2.			
	_____ = Total Cover		
% Bare Ground in Herb Stratum 100			

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (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? NA Yes _____ No ✓

Remarks: Vegetation has been removed for farming - field recently plowed - Bare ground - no rooted vegetation however chaff/debris litter surface.

SOIL

Sampling Point: KK UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/2						CL LO	
4-10	7.5YR 3/2						CL LO	

[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: CL

Depth (inches): 10

Hydric Soil Present? Yes ___ No ✓

Remarks: Low chroma soil is not indicative of hydric soils. Mollisols naturally dark soils are notably brighter compared to wetland soils.

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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 5/1/11
Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WMM WETL
Investigator(s): JV TK Section, Township, Range: S8 T25S R27W
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): Concave Slope (%): 0-1
Subregion (LRR): Central Great plains H Lat: 384677.21mE Long: 4194140.03mN Datum: NAD 83
Soil Map Unit Name: Ness Clay NWI classification: PEM1

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Vegetation has been managed for farming. NWI/playa boundary is consistent with mapped NWI/KSU figures.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. none			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5)			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. none			
2.			
	_____ = Total Cover		
% Bare Ground in Herb Stratum 100			

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): N/A (A)
Total Number of Dominant Species Across All Strata: N/A (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: N/A (A/B)

Prevalence Index worksheet:

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

Remarks: All rooted vegetation has been removed by plowing. Wetland was planted with wheat. Chaff/debris litter surface.

SOIL

Sampling Point: WMM - WETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 2.5/1	90	7.5YR 3/3	10	C	M	CL LO	

[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: Ross clays are listed as hydric soils – playa / 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)
- ___ 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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 7/1/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WMM-UPL

Investigator(s): JV TK Section, Township, Range: S8 T25S R27W

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

Subregion (LRR): Great Plains - Central (H) Lat: 384643.19m E Long: 4194112.41m N Datum: NAD 83

Soil Map Unit Name: Harney Silt loam 0-1% NWI classification: UPL

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Vegetation is managed for farming.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Wheat	60		NA
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	_____ = Total Cover		
% Bare Ground in Herb Stratum 40			

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Remarks: Wheat crop is growing around perimeter of wetland

SOIL

Sampling Point: WMM UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2+						SI CL LO	
4-10	10YR 4/3						SI CL LO	
10-12	10YR 5/4						SI CL LO	

[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: CL LO
Depth (inches): 12"

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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 5/2/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WN-WET

Investigator(s): JV TK Section, Township, Range: 9 18 T25S R27W

Landform (hillslope, terrace, etc.): slight depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): Central Great Plains H Lat: 3831961.9 Long: 4192576.26 Datum: NAD 83

Soil Map Unit Name: Ness Clay NWI classification: PEM1

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: All rooted vegetation has been removed by plowing. NWI wetland mapped on figure. Soils & topography correspond to mapped NWI feature despite cultivation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	____ = Total Cover		
% Bare Ground in Herb Stratum ____			

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Remarks: All vegetation has been removed from plowing & harvesting.

SOIL

Sampling Point: NN - WETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/2	100					CL LO	
4-20	7.5YR 3/1	94	7.5YR 2.5/3	6	C	M	CL LO	

[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: Most soils are listed as hydric possible, clay soils are moist to touch - but not saturated

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: Wetland is situated within the corner of crop field bordering another field. Topography from the north slopes to wetland. Slight depression in wetland collects & ponds water during wetter months.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: gray Sampling Date: 5/2/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WNN-UPL

Investigator(s): JV TK Section, Township, Range: S18 T25S R27W

Landform (hillslope, terrace, etc.): slight slope Local relief (concave, convex, none): concave Slope (%): 1-2%

Subregion (LRR): Central Great Plains H Lat: 383174.76 Long: 412633.55 Datum: NAD83

Soil Map Unit Name: Spearville silty clay loam 0-1% NWI classification: UPL

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: located in plowed/harvested wheat field. Soils & topography provide basis for boundary determination

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (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? NA Yes _____ No _____

Remarks: all rooted vegetation has been removed from plowing & harvesting. Calystegia sepium sporadically rooted throughout upland.

SOIL

Sampling Point: NN UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/1						SICL LO	
6-18	7.5YR 5/2						SICL LO	

[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: Low chroma associated with characteristics of Mollisol. Soils are notably lighter compared 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)
- ___ 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: Upland topography is level then grades to the south into wetland.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 5/3/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: GQ-WETL

Investigator(s): JV TK Section, Township, Range: S20 T25S R27W

Landform (hillslope, terrace, etc.): Slight depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): Central Great Plains H Lat: 385552.60 Long: 410808.5 Datum: NAD83

Soil Map Unit Name: Spearville Silty Clay loam 0-1% NWI classification: PEM

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	Is the Sampled Area within a Wetland? Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: NWI mapped wetland (dry playa) in cultivated field. Vegetation has been controlled to promote cultivation however wetland species persist. Wetland was burned recently. Wetland has been broken into (2) isolate features (WRR)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Lythrum californicum	35	✓	OBL
2. Link grass	20	✓	—
3. Marsilea vestita	15		OBL
4. Polygonum pensylvanicum*	0		FACW+
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

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

Remarks: Link forbs (annual) (2 plants) observed within wetland plot not contributing to cover. *polygonum would have been dominant species if species was burned. Charred stalks lay on surface.

SOIL

Sampling Point: WQQWETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2.5/1	90	7.5YR 3/3	10	C	M	CL LO	

[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: CL

Depth (inches): 8"

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:

NWI mapped wetland

Remarks: Playa is dominated with OBL species, Cultivation is excluded from playa.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 5/3/11
Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WQ UPL
Investigator(s): JV TK Section, Township, Range: S20 T25S R27W
Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): Central great plains Lat: 385560.7 Long: 410841.7 Datum: NAD83
Soil Map Unit Name: Spearville Silty Clay loam 0-1% NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	Is the Sampled Area within a Wetland? Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: Vegetation management for cultivation. Vegetation has been removed from site. Prescribed burn has been limited to wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. None			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 100

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (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 NA No _____

Remarks: Vegetation has been removed by plowing. Chaff & litter cover surface.

SOIL

Sampling Point: DQ UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/3						SI CL LO	
6-10	7.5YR 5/3						SI CL LO	

[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: CL LO

Depth (inches): 10

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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: gray Sampling Date: 5/4/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WSS-WETL

Investigator(s): JV JF Section, Township, Range: S27 T25S R27W

Landform (hillslope, terrace, etc.): Slight depression Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): Central Great Plains H Lat: 38.5565.3 Long: 418347.6 Datum: NAD83

Soil Map Unit Name: Spearville Silty Clay loam, 0-1% NWI classification: PEM

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Wetland is a roadside swale resulting from drainage. Swale was recently burned to control herbaceous species. Isolated, no culverts observed within vicinity of wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Polygonum pensylvanicum	30	✓	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 70

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Remarks: Polygonum OBL species concentrated in the northern boundary of the wetland. Lythrum californicum

SOIL

Sampling Point: BUSS-WETR

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 3/1	98	5YR 4/6	2	C	M	CL-LO	plant material
9-18+	10.5YR 2.5/1	97	5YR 5/8	3	C	M	CL	

[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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: gray Sampling Date: 5/4/11
Applicant/Owner: CPV Alternative Energy State: _____ Sampling Point: WSS-UPL
Investigator(s): JF JW Section, Township, Range: S27 T25S R27W
Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): Central great plains H Lat: 38 55 56.3 Long: 419 93 46.2 Datum: NAD83
Soil Map Unit Name: Spearville Silty Clay loam 0-1% NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Vegetation has been removed for cultivation. Soils recently tilled & crop has not been planted.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	_____ = Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

Herb Stratum (Plot size: 5')			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Remarks: All rooted vegetation has been removed. Chaff & debris cover surface. Wetland species (un-rooted) mixed in with tilled upland soils.

SOIL

Sampling Point: LDSS-UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 5/2	100					SICL	
8-20+	7.5YR 4/3	100					CL	

[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 have been tilled. Dark chroma characteristic of Mollisols.

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:

WETLAND DETERMINATION DATA FORM -- Great Plains Region

Project/Site: CPV Cimarron Phase 1 City/County: Cimarron Sampling Date: 5-4-11

Applicant/Owner: CPV State: KS Sampling Point: WPT-WETL

Investigator(s): J. Fennell, J. Vitella Section, Township, Range: S13 T25S R28W

Landform (hillslope, terrace, etc.): slight depression Local relief (concave, convex, none): concave Slope (%): 0.5

Subregion (LRR): Central Great Plains H Lat: 38.2297.07 Long: -41.931638.3 Datum: NAD83

Soil Map Unit Name: NCSS clay NWI classification: PEM1F

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

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

Remarks: Farmed agricultural field (sorghum)
NWI/KS plants coincides with existing field conditions.

VEGETATION – Use scientific names of plants.

HGM: Depressional closed

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		
Herb Stratum (Plot size: 5')			
1. Sorghum	50	Y	NI
2. Rorippa sinuata	5	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum 45

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Remarks: Rorippa and ragweed beginning to emerge before sorghum is planted during growing season.

SOIL

Sampling Point: WTT-WET

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 3/1	100					Silty clay loam	
6-18+	7.5YR 3/2	98	10YR 4/6	2	C	M	Clay	

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

Hydric Soil Indicators: (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): ___ No

Hydric Soil Present? Yes ✓ No ___

Remarks: Red clay soils listed as hydric

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:

NWI / KS mapped playa

Remarks: Very slight gradient from west into WL where water sets.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Phase 1 City/County: gray Sampling Date: 5-4-11

Applicant/Owner: CPV State: KS Sampling Point: WTT-UPL

Investigator(s): J. Fennell, J. Vitella Section, Township, Range: S13 T25S R30W

Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): none Slope (%): 0-5

Subregion (LRR): H Lat: 382297.02 Long: 41936680.86 Datum: NAD83

Soil Map Unit Name: Spearville Silty Clay Loam 0-1% NWI classification: UPL

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

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

Remarks: Agricultural field - vegetation tilled

VEGETATION – Use scientific names of plants.

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

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

Herb Stratum (Plot size: 5')			
1. Sorghum	50		
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50 = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 50

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Remarks: upland sample was collected from adjacent sorghum field

SOIL

Sampling Point: WTT-UPL1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7	7.5YR 4/2	100					Silty Clay Loam	
7-18+	7.5YR 4/5	100					Clay Loam	

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

Hydric Soil Indicators: (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): _____ No

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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: gray Sampling Date: 5/4/11

Applicant/Owner: CPV Alternative Wind State: KS Sampling Point: WTL1-UPL

Investigator(s): JP JV Section, Township, Range: S13 T25S R28W

Landform (hillslope, terrace, etc.): Slight slope Local relief (concave, convex, none): depression Slope (%): 0

Subregion (LRR): Central Great plains H Lat: 387275.1 Long: 419254.77 Datum: NAD 83

Soil Map Unit Name: Ness clay NWI classification: PEM1Af

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Vegetation has been removed for cultivation. Crop does not appear to have uniform establishment within wetland indicating possible prolonged periods of saturation. Wetland associated w/ WVV

VEGETATION – Use scientific names of plants.

HGM: Depressional Closed

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. None			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. None			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____

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 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (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 ✓

Remarks: Rooted vegetation has been plowed. All vegetation within wetland is dry & unrooted. Difficult to sample entire plant. Polygonum pensylvanicum stalks observed (burned) throughout wetland.

SOIL

Sampling Point: ULWETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 3/1	97	7.5YR 4/6	3	C	M	CL LO	

[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: CL

Depth (inches): 9

Hydric Soil Present? Yes ✓ No ___

Remarks: Soils listed as hydric on national list

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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: gray Sampling Date: 5/4/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WLL1-UPL

Investigator(s): JF JV Section, Township, Range: S13 T25S R28W

Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): Great plains Central H Lat: 3822275.1 Long: 4192954.77 Datum: NAD 83

Soil Map Unit Name: Spearville silty Clay loam 0-1% NWI classification: UPL

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Rooted Vegetation has been removed by plowing. UPL plot was historically NWI/KS mapped wetland. Cultivation altered flow regime

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	____ = Total Cover		

Sapling/Shrub Stratum (Plot size 15')			
1. none			
2.			
3.			
4.			
5.			
	____ = Total Cover		

Herb Stratum (Plot size: 5')			
1. Wheat	70		NA
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 30

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Remarks: Harvested wheat chaff/debris cover soil. Xanthium, Helianthus, Kochia, Amaranthus - unrooted on soil surface. Wheat crop is limited to wetland.

SOIL

Sampling Point: WUU-UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 3/1	99	5YR 4/6	1	RM	M	CL LO	

[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 hydrophylic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: CL

Depth (inches): 9

Hydric Soil Present? Yes ___ No ✓

Remarks: Low chroma is characteristic of Mollisols
Reducing conditions in upper 9"

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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 5/4/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WVV-WETL

Investigator(s): JF JV Section, Township, Range: S13 T25S R28W

Landform (hillslope, terrace, etc.): Central great plains H Local relief (concave, convex, none): depression Slope (%): 0

Subregion (LRR): Central great plains H Lat: 392275.1 Long: 419254.77 Datum: NAD83

Soil Map Unit Name: Ness clay NWI classification: PEMAf

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Rooted vegetation removed for cultivation. Wetland was initially part of a larger complex and would have been attached to wetland WVV however, cultivation has altered regime and currently function seperately. HGM: Depressional closed

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. None			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5)			
1. unk herb.	30	✓	NA
2. poa sp.	10		NI
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. None			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 40

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: 0 (A/B)

Prevalence Index worksheet:

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

Remarks: Rooted vegetation has been plowed. All vegetation within wetland is dry & difficult to id. Polygonum pensylvanicum stalks (burned) observed throughout wetland.

SOIL

Sampling Point: WVV-WETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/1	97	7.5YR 7/2	3	C	M	CL LO	

[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: C

Depth (inches): 8

Hydric Soil Present? Yes ✓ No ___

Remarks: Soils listed as hydric on national list.

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:

NWI / KS mapped wetland

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 5/4/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: UW-UPL

Investigator(s): JF JV Section, Township, Range: S13 T25S R28W

Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): Central Great plains Lat: Long: Datum: NAD 83

Soil Map Unit Name: Spearville Silty Clay loam 0-1% NWI classification: UPL

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Vegetation managed for cultivation. UPL plot was historically altered flow regime. NWI/KS mapped wetland. Cultivation

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. None			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Wheat	7	✓	NA
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 30

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Remarks: harvested wheat chaff/debris on soil surface. Xanthium, Helianthus, Salsola, Amaranthus – unrooted on soil surface. Wheat crop limited to upland.

SOIL

Sampling Point: WVV-UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 3/1	99	5YR 4/6	1	RM	M	CL LO	

[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: CL

Depth (inches): 5

Hydric Soil Present? Yes ___ No ✓

Remarks: "low chroma is characteristic of Mollisols
Reducing conditions in upper"

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

W-WETL

H6M: Depressional closed

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 09/20/09

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: SP-W2

Investigator(s): Laura Miller, PWS; Amy Bensted Section, Township, Range: S28 T25S R27W

Landform (hillslope, terrace, etc.): slight depression Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): H-Central Great Plains Lat: 37.84794113 Long: -100.28539181 Datum: NAD 83

Soil Map Unit Name: Harney silt loam, 0-1% slopes NWI classification: PEMA

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Ambrosia grayii	25	✓	FAC
2. Echinochloa crusgalli	5		FACW
3. Scoparius esculentus	5		NOL
4. Polygonum pensylvanicum	10	✓	FACW+
5.			
6.			
7.			
8.			
9.			
10.			
	45 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 55

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

W-WETL

SOIL

Sampling Point: SP-W2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100	none				si lm	
4-9	10YR 4/1	100	none				si cl lm	
9-16	10YR 4/1	98	none				silty clay	

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

Hydric Soil Indicators: (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)
- X 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)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: silty clay

Depth (inches): 9"

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:

W-UPL

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV CIMARRON WIND City/County: GRAY Sampling Date: 9/28/09
Applicant/Owner: CPV ALTERNATIVE ENERGY State: KS Sampling Point: SP-W1
Investigator(s): Laura Miller, PWS; Amy Bensted Section, Township, Range: S28 T25S R27W
Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): H- Central Great Plains Lat: 37.84794113 Long: -100.28539181 Datum: NAD83
Soil Map Unit Name: Harney silt loam, 0-1% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	Is the Sampled Area within a Wetland? Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Amaranthus retroflexus	20	✓	FACU
2. Kochia scoparia	20	✓	FACU
3. Ambrosia grayii	30	✓	FAC
4.			
5.			
6. dead wheat stubble also			
7.			
8.			
9.			
10.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	____ = Total Cover		
% Bare Ground in Herb Stratum 30			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

W-UPL

SOIL

Sampling Point: SP-W1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/2	100	none				si/m	
9-12	10YR 3/2	100	none				sicl/m	
12-16	10YR 4/2	95	none				sicl/m	

[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)
- ___ 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 X

Remarks:
Although soil has low chroma matrix of 2, because it is a Mollisol, it is naturally dark and thus not deemed hydric. Compare with adjacent wetland soil with a chroma of 1 in surface layers.

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 X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 5/4/11
Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WWW-WETL
Investigator(s): JF JV Section, Township, Range: S13
Landform (hillslope, terrace, etc.): berm channel Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR): Great plains Central H Lat: 382310.9 Long: -1192973.1 Datum: NAD 83
Soil Map Unit Name: Ness clay NWI classification: PEMAF
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ✓, Soil ___ ___, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____
Are Vegetation ___, Soil ___ ___, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Vegetation managed for cultivation. Wetland is narrow channel situated on the back side of a berm. field has been tilled.

VEGETATION – Use scientific names of plants.

HGM. Depressional Closed

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 1')			
1. none			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Tall herb 2	25	✓	UI
2. Chenopodium leptophyllum	15		FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	____ = Total Cover		
% Bare Ground in Herb Stratum: 60			

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Remarks: Seedlings beginning to emerge within wet. polygonum pensylvanicum stalks (burned) observed on soil surface. Vegetation is rooted in blocks of soil broken from tilling

SOIL

Sampling Point: WW-WETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	96	10YR 6/8	4	C	M	CL CO	

[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: CL

Depth (inches): 8

Hydric Soil Present? Yes ✓ No ___

Remarks: Soils listed as hydric on National list

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:

NWI / KS mapped playa

Remarks:

Wetland is limited to concave portion of basin

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: gray Sampling Date: 5/4/11
Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WWW UPL
Investigator(s): JF JV Section, Township, Range: S13 T25S R28W
Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): Central Great plains H Lat: 382342.06 Long: 4192828.6 Datum: NAD 83
Soil Map Unit Name: Spearville silty clay loam 0-1% NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	Is the Sampled Area within a Wetland? Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks: Vegetation managed for cultivation. field recently plowed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Sisymbrium altissimum	15	✓	
2. Wheat	5		N1
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 80

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 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (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 ✓

Remarks: Wheat seedlings beginning to sprout in patches. field has not been planted for the season.
Xanthium observed near road. & Salsola observed uprooted within UPL.

SOIL

Sampling Point: (WLW) - UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5YR 3/2						CL LO	

[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:

South

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: gray Sampling Date: 5/4/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WXX-WETL

Investigator(s): JF JV Section, Township, Range: S12 T25S R27W

Landform (hillslope, terrace, etc.): Slight depression Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR) Central Great Plains H Lat: 38.28272 Long: 41.28666.7 Datum: NAD 83

Soil Map Unit Name: 2714 NWI classification: PEMAf

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Isolated wetland (closed). Mapped Southern boundary only. Northern boundary does not intersect anything mapped NWI in cultivated field. Portions recently burned. Wheat crop surrounds wetland – Dressed farm wetland.

VEGETATION – Use scientific names of plants.

HGM: Depressional Closed

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	____ = Total Cover		

Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
	____ = Total Cover		

Herb Stratum (Plot size: 5')			
1. Poa sp.	60	✓	FAC*
2. Panicum capillare	15	✓	FAC
3. Helianthus sp.	10		FAC
4. Polygonum pensylvanicum	10		FACW-
5. Xanthium strumarium	5		FAC
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Remarks: *Assumed FAC – Polygonum was burned – as well as Helianthus. Vegetation is dry & most inflorescence are missing. Difficult to I.d.

SOIL

Sampling Point: WXX-WETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5YR 2.5/2	95	7.5YR 6/8	5	C	PL	CL LO	
10-18	7.5YR 3/1	97	7.5YR 7/8	3	C	M	CL LO	

[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:

NWI mapped wetland.

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: gray Sampling Date: 5/4/11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WXX-UPL

Investigator(s): JF JV Section, Township, Range: S12 T25S R27W

Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): Central great plains H Lat: 38 28 46.9 Long: 419 28 65.8 Datum: NAD 83

Soil Map Unit Name: 274 NWI classification: UPL

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Wheat field – natural vegetation controlled for cultivation. Did not observe any forbs emerging.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. none			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Wheat	85	✓	N1
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1. none			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 15

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Remarks: Cultivated Wheat field.

north

SOIL

Sampling Point: WXX-UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/2						SI CL LO	
8-18	7.5YR 3/3						CL LO	

[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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: Gray Sampling Date: 5/5/11

Applicant/Owner: CPV Renewable Energy State: KS Sampling Point: WXX-1W ETL

Investigator(s): JF JV Section, Township, Range: S19 T25S R27W

Landform (hillslope, terrace, etc.): excavated pond Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): Great Plains – H Lat: 38.31165.1 Long: [illegible] Datum: NAD83

Soil Map Unit Name: Deep Clay NWI classification: PUBHx

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks: Artificial excavated farm pond. Evidence of hydrology remnant, lack of hydric soil indicators. Notable changes in vegetation on bank – indicates rack line. Culvert at eastern edge.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5')			
1. Bothriochloa saccharoides	10	✓	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 90

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Remarks: Photo => W at pubh => S at bank. Bank vegetation consists of [illegible], Hoarythus, polygonum, [illegible], [illegible], panicum, [illegible]. Bed of pubh very sparsely vegetated.

SOIL

Sampling Point: WXX-1WETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 4/1						CLLO	
12-18	5YR 5/6						CLLO	

[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:

NHD map & Photo

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Wind City/County: GRAY Sampling Date: 5-5-11
Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: WXX-1-UPL
Investigator(s): JF, JV Section, Township, Range: S19 T25S R27W
Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR): Great Plains-H Lat: 38.3165 Long: 41.922263 Datum: NAD83
Soil Map Unit Name: Loess Clay NWI classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: Actively cultivated field. Sparse weeds throughout.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 30')			
1. Sorghum	40	Y	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30

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: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: Actively managed

Sampling Point: WX-1-UPL

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR 3/1	100					CL LO	

[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)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: Clay

Depth (inches): 8"

Hydric Soil Present? Yes ___ No X

Remarks: Refusal at 8"

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 X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Phase I City/County: GRAY Sampling Date: 5-5-11
Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: W2 WETL
Investigator(s): J. Fennell, T. Vitela Section, Township, Range: S27 T25S R27W
Landform (hillslope, terrace, etc.): slight depression Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR): H Lat: 387321.6 Long: 4189715.0 Datum: NAD83
Soil Map Unit Name: Harney silt loam 0-1% NWI classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: NWI wetland. Isolated wetland in active ag field. Vegetation has been burned to control herbaceous species.

VEGETATION – Use scientific names of plants.

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

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

Herb Stratum (Plot size: 5')			
1. Polygonum pensylvanicum	35		FACW
2. Helianthus sp.	10		–
3. Agrostis stolonifera	5		NI
4. Rorippa sinuata	5		FACW
5. Xanthium strumarium	5		FAC-
6. Poa sp.	5		NI
7.			
8.			
9.			
10.			
	65 = Total Cover		

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 35

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

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

Remarks: Vegetation in stark contrast to surrounding veg. Chaff & debris litter soil surface

SOIL

Sampling Point: W22-WETL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5YR3/1	95%	2.5YR4/8	5	C	M	CL	
8-18+	7.5YR4/1	97	7.5YR5/8	3	C	M	CL	

[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:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: CPV Cimarron Phase 1 City/County: GRAY Sampling Date: 5-5-11

Applicant/Owner: CPV Alternative Energy State: KS Sampling Point: W22-UPL

Investigator(s): JF JV Section, Township, Range: S27 T25S R27W

Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): H Lat: 387328.4 Long: 418959.2 Datum: NAD83

Soil Map Unit Name: Harney Silt loam NWI classification: UPL

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

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

Remarks: Actively farmed field

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		
Herb Stratum (Plot size: 5')			
1. Wheat	11	Y	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum 40

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Remarks:

SOIL

Sampling Point: W22-UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 3/2	100					CL	

[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: Clay

Depth (inches): 9

Hydric Soil Present? Yes ___ No ✓

Remarks:

Refusal at 9"

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:

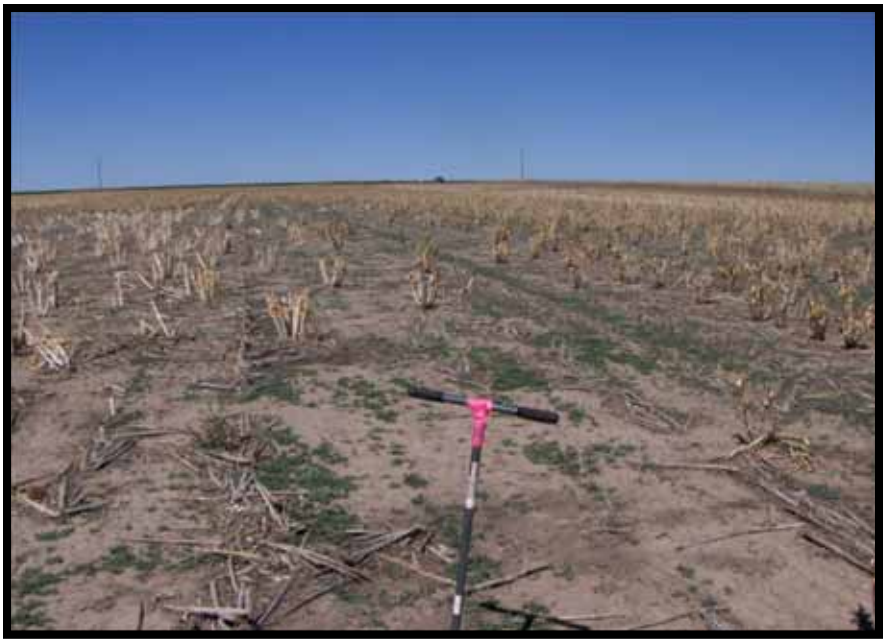
Remarks:

APPENDIX B

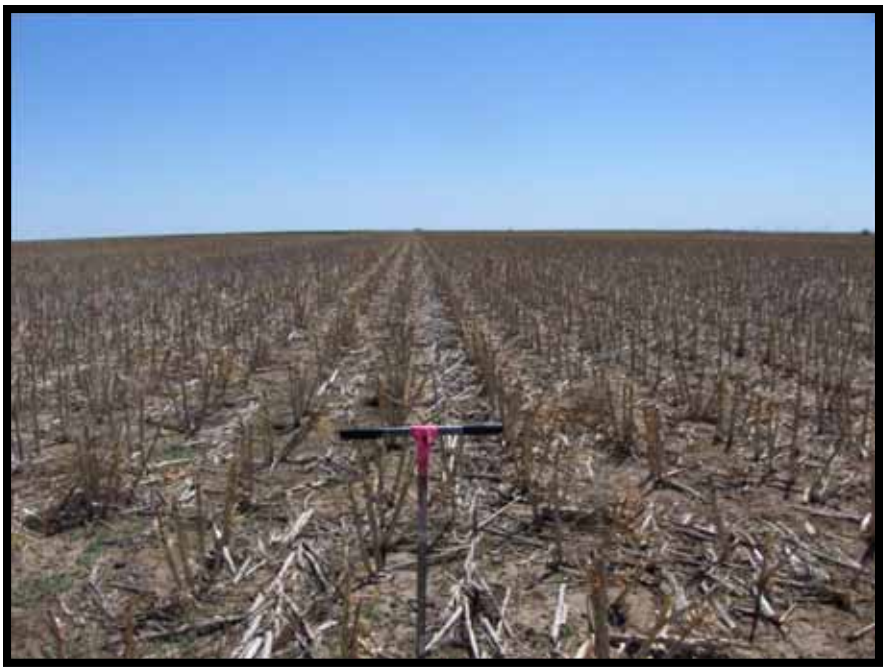
Site Photographs

Facing north, northeast at eroded ephemeral stream F (Buckner Creek) crossing the collection line near turbine D38. Stream F is an extended portion of Tetra Tech delineated stream Sa.

Facing southwest at stream B located between turbines C41 and C42A. Crossing was extended from Tetra Tech delineated feature Sb.



Facing west at isolated low-lying wetland II located in a sorghum field near turbine D24.



Facing east at upland adjacent to wetland II.

Facing west at recently plowed and burned wetland KK crossing the collection line south of turbines C32 and C33.

Facing southwest at wetland MM located within the collection line southwest of turbine D23A.

Facing east at NHD channel crossing G toward culvert located west of 23rd Road south of turbine C28.

Facing west at outflow of stream G. Stream G enters cultivated field to the east but has no defined bed and bank. Farmer grades field following topography of NHD channel.

Facing north at cultivated NHD channel toward low-lying depression approximately 60 meters north of collection line. NHD channel crosses collection line east of turbine C24.

Facing east, northeast at farmed NHD channel crossing the collection line south of turbine C24. Topography has been altered during cultivation.

Facing south at mapped NWI wetland NN crossing the collection line west of 20th Road. Wetland determination based on soils and hydrology.

Facing west at upland adjacent to wetland QQ.

Facing west at NWI wetland QQ crossing the collection line. Wetland was initially connected to wetland RR however, it has been disturbed by cultivation.

Comparative photo of TtEC delineated wetland W. Wetland was initially delineated during 2009.

View of roadside wetland SS facing south

View of upland adjacent to wetland SS facing west.

Facing south at mapped playa, wetland TT. NWI playa follows farm field edges.

Facing north at upland adjacent to wetland TT.

Facing west at wetlands UU and VV. Wetlands are separated only by small upland strip within Study Area.

Facing south at upland adjacent to wetland UU and VV.

Facing west at wetland WW.

Facing south at upland adjacent to wetland WW.

Isolated NWI wetland XX in cultivated field facing south.

Upland adjacent to wetland XX facing north.

Excavated dry pond wetland XX-1. Sparse vegetation within basin. Did not support hydric soils.

Facing NW, upland adjacent of to wetland XX-1.

Wetland YY in cultivated wheat field. Photo facing west.

Upland wheat field adjacent to wetland YY.

Isolated NWI wetland ZZ in active farm field facing west. Vegetation is significantly different than surroundings.

Upland agricultural field adjacent to wetland ZZ. Photo facing north.

Ephemeral stream feature H (South Fork Buckner Creek) facing north. Some areas of stream are widened by farm animals walking within stream bed.

Extension of formerly delineated ephemeral stream C (South Fork Buckner Creek). Continues north and south off study area. Stream does not cross turbine buffer.

Non-wetland playa D.

Upland adjacent to non-wetland playa D

APPENDIX C

Comparison of 2008 vs. 2011 USACE Guidance Defining Waters of the U.S. Protected under the CWA

Appendix C. Comparison of 2008 vs. 2011 USACE Guidance Defining Waters of the U.S. Protected under the CWA

2008 Guidance	2011 Draft Guidance
Waters **Categorically Protected** under CWA (EPA/USACE will categorically assert jurisdiction)	
• Traditional navigable waters • Wetlands adjacent to traditional navigable waters • Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (typically three months) • Wetlands that directly abut such tributaries	• Traditional navigable waters • Interstate waters • Wetlands adjacent to either traditional navigable waters or interstate waters • Non-navigable tributaries to traditional navigable waters that are relatively permanent, meaning they contain water at least seasonally • Wetlands that directly abut relatively permanent waters.
• Waters with a demonstrated **Significant Nexus Projected under CWA** (EPA/USACE will assert jurisdiction if a fact-based analysis determines a Significant Nexus to a Traditional Navigable Water or interstate water exists)	
• Non-navigable tributaries that are not relatively permanent • Wetlands adjacent to non-navigable tributaries that are not relatively permanent • Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary	• Tributaries to traditional navigable waters or interstate waters • Wetlands adjacent to jurisdictional tributaries to traditional navigable waters or interstate waters • Waters that fall under the "other waters" category of the regulations, at 33 C.F.R. § 328.3(a)(3). The guidance divides these waters into two categories, those that are physically proximate to other jurisdictional waters and those that are not, and discusses how each category should be evaluated.
Waters Generally **Not Protected** under CWA (EPA/USACE generally will not assert jurisdiction)	
• Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow) • Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water	• Wet areas that are not tributaries or open waters and do not meet the agencies' regulatory definition of "wetlands" • Waters excluded from coverage under the CWA by existing regulations • Waters that lack a "significant nexus" where one is required for a water body to be protected by the CWA • Artificially irrigated areas that would revert to upland should irrigation cease • Artificial lakes or ponds created by excavating and/or diking dry land and used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing • Artificial reflecting pools or swimming pools created by excavating and/or diking dry land • Small ornamental waters created by excavating and/or diking dry land for primarily aesthetic reasons • Water-filled depressions created incidental to construction activity • Groundwater drained through subsurface drainage systems • Erosional features (gullies and rills), and swales and ditches that are not tributaries or wetlands