



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
SOUTHERN COLORADO REGULATORY OFFICE
200 SOUTH SANTA FE AVENUE, SUITE 301
PUEBLO, COLORADO 81003-4270

July 18, 2018

Regulatory Division

SUBJECT: No Permit Required – Palmer Solar (Action No. SPA-2018-00184-SCO)

Mr. Stuart Coles
juwi Inc.
1710 29th Street, Suite 1068
Boulder, CO 80301

This is only for overhead lines. It does not address the solar array areas....

Dear Mr. Coles:

I am writing this letter in response to your request for a determination of Department of the Army permit requirements for the proposed construction of an overhead utility line downstream of Calhan Reservoir at approximately latitude 38.630112, longitude -104.654611, in El Paso County, Colorado. The work, as described in your request, will involve placement of multiple poles spanning multiple potential waters of the U.S. with pole placements avoiding all potential jurisdictional areas. We have assigned Action No. SPA-2018-00184-SCO to this project. Please reference this number in all future correspondence concerning the project.

Based on the information provided, we have determined that a Department of the Army permit is not required since the project would not result in the discharge of dredged/fill material into waters of the United States.

This decision is based on an approved jurisdictional determination (JD) (attached) that there are no waters of the United States on the project site. The basis for this JD is that the project site contains entirely uplands. A copy of this JD is also available at <http://www.spa.usace.army.mil/reg/JD>. This approved JD is valid for five years unless new information warrants revision of the determination before the expiration date.

You may accept or appeal this approved JD or provide new information in accordance with the attached Notification of Administration Appeal Options and Process and Request for Appeal (NAAOP-RFA). If you elect to appeal this approved JD, you must complete Section II of the form and return it to the Army Engineer Division, South Pacific, CESPDPDS-O, Attn: Tom Cavanaugh, Administrative Appeal Review Officer, 1455 Market Street, Room 1760, San Francisco, CA 94103-1399 within 60 days of the date of this notice. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

If you have any questions concerning our regulatory program, please contact me at (719) 543-6914 or by e-mail at Joshua.G.Carpenter@usace.army.mil. At your convenience, please complete a Customer Service Survey on-line available at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0.

Sincerely,

Joshua G. Carpenter
Senior Project Manager

Enclosure

DRY LAND APPROVED JURISDICTIONAL DETERMINATION FORM¹
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Albuquerque District, Palmer Solar, SPA-2018-00184-SCO

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CO County/parish/borough: El Paso County City:

Center coordinates of site (lat/long in degree decimal format): Lat. 38.630112 °, Long. -104.654611°

Universal Transverse Mercator: 530062.97 W, 4275787.59 N, Zone 13

Name of nearest waterbody: Fountain Creek

Name of watershed or Hydrologic Unit Code (HUC): Fountain 11020003

- Check if map/diagram of review area is available upon request.
- Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- Office (Desk) Determination. Date: July 11, 2018
- Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are **no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There are **no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area.

SECTION III: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- Office concurs with data sheets/delineation report.
- Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- U.S. Geological Survey Hydrologic Atlas: Arkansas-White-Red Region
- USGS NHD data.
- USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: 1:24K; Fountain
- USDA Natural Resources Conservation Service Soil Survey. Citation:
- National wetlands inventory map(s). Cite name: Fountain
- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): 2018 Google Earth
- or Other (Name & Date):
- Previous determination(s). File no. and date of response letter:
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify):

B. REQUIRED ADDITIONAL COMMENTS TO SUPPORT JD. EXPLAIN RATIONALE FOR DETERMINATION THAT THE REVIEW AREA ONLY INCLUDES DRY LAND:

The utility line spans multiple wetlands and the Calhan Reservoir Ditch. Pole placement was selected to avoid any impacts to potential jurisdictional areas.

¹ This form is for use only in recording approved JDs involving dry land. It extracts the relevant elements of the longer approved JD form in use since 2007 for aquatic areas and adds no new fields.

Palmer Solar Facility Wetland Delineation Report

El Paso County, Colorado

Prepared for:
Palmer Solar LLC and JSI Construction Group LLC
1710 29th Street, Suite 1068
Boulder, CO 80301

Prepared by:



Ecology and Environment, Inc.
4949 Pearl East Circle, #300
Boulder, CO 80301

June 2018

Does the analysis include the complete site and arrays?

Table of Contents

EXECUTIVE SUMMARY ii

1. INTRODUCTION 3

 Aquatic Resources and Waters of the U.S..... 3

2. METHODS..... 3

 Desktop Review 3

 Site Visit 4

3. RESULTS..... 4

 Gen-tie Crossing..... 4

 Desktop Analysis..... 4

 Field Survey..... 4

 Eastern Pole Location and Sampling Point 1 5

 Western Pole Location and Sampling Point 2 5

4. INTERMITTENT STREAM EAST OF THE GEN-TIE CROSSING..... 6

 Former Stock Pond 1 6

 Former Stock Pond 2 6

5. REFERENCES 7

ATTACHMENT A Photos..... A-1

ATTACHMENT B Wetland Data Sheets..... B-1

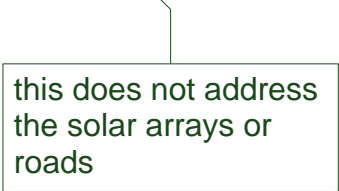
TABLE

Table 1: Summary of Vegetation Observed at Pole Locations and Sampling Points.....6

EXECUTIVE SUMMARY

This report presents the methods and findings of a wetland delineation that was conducted at the Palmer Solar LLC JSI Construction Group LLC (JSI) Palmer Solar Facility on June 8, 2018. The wetland delineation was completed for areas within the project area identified as wetlands, potential wetlands, intermittent streams, and freshwater emergent wetlands in the U.S. Fish and Wildlife Service National Wetland Inventory. The delineation was performed according to the U.S. Army Corps of Engineers methodology and focused specifically on areas near a proposed gen-tie crossing identified by JSI and on three areas identified by the National Wetland Inventory elsewhere on the property.

The wetland delineation confirmed that the proposed power pole locations are in non-wetland areas. In addition, the National Wetland Inventory areas outside of the gen-tie area do not contain wetlands. Descriptions of findings that support this conclusion are provided, along with photos and wetland data sheets. A geospatial file showing delineated wetland boundaries was submitted previously.



this does not address
the solar arrays or
roads

1. INTRODUCTION

As requested by Palmer Solar LLC and JSI Construction Group LLC (JSI), Ecology and Environment (E & E) conducted a wetland delineation at the proposed Palmer Solar facility (project) in El Paso County, Colorado, on June 8, 2018. The methods used and results obtained from the wetland investigation are presented in this report. This information will facilitate the evaluation of project-related impacts under Section 404 of the Clean Water Act, as administered by the U.S. Army Corps of Engineers (USACE).

The proposed project is located in southern El Paso County, Colorado, approximately 4 miles south of the town of Fountain, and 1.5 miles east of Fountain Creek and Old Pueblo Road (Figure 1). The site includes Township 16 South, Range 65 West, Portions of Sections 22, 26-28, and 35. Elevations range from 5,360 feet to 5,520 feet. The major land use is rangeland grazing, and the project area contains intermittent stream drainages, dirt roads, and numerous overhead power lines.

The purpose of this wetland delineation is to determine if wetlands (also known as waters of the U.S., and aquatic resources, in USACE terminology) are present on the project site, and if their presence might necessitate a Section 404 Nationwide Permit. JSI requested that the wetland delineation occur in two locations (Figure 1):

- 1) The vicinity of a proposed gen-tie route and, specifically, the proposed location of two power line poles.
- 2) An intermittent stream east of the gen-tie route where two freshwater emergent wetlands have been identified in the National Wetland Inventory (NWI).

Aquatic Resources and Waters of the U.S.

Waters of the U.S. under the jurisdiction of the USACE include streams, wetlands, and other special aquatic sites are regulated by the U.S. Environmental Protection Agency (EPA) and USACE under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

The USACE defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” These wetlands are considered to be waters of the U.S. within the jurisdiction of the USACE (33 Code of Federal Regulations Part 328.3[b]).

Uplands are neither wetlands nor other special aquatic sites, and may include developed or undeveloped land. Activities occurring in these areas are generally not regulated under the Clean Water Act.

2. METHODS

The two areas listed in Section 1 where wetlands were to be delineated were previously observed by E & E on March 30, 2018. At that time, per JSI direction, an approximate wetland boundary was identified near the proposed gen-tie route based on visual examination of vegetation and surface hydrology only, and a protocol-level wetland delineation was not conducted. In March 2018, E & E also observed the second area listed in Section 1 (an intermittent stream), for wetland characteristics and none were found.

Desktop Review

Prior to the June 2018 site visit, E & E reviewed the following information:

- National Agriculture Imagery Program (NAIP) aerial imagery (USDA 2009).
- The U.S. Geological Survey (USGS) National Hydrography Dataset (NHD; USGS 2017).
- USFWS National Wetlands Inventory (NWI) (USFWS 2017).

- Natural Resources Conservation Service (NRCS) soils maps for hydric soils.

Site Visit

An E & E ecologist visited the site and conducted the wetland delineation on June 8, 2018, within the proposed gen-tie area, where the probability of wetland presence had been noted in March 2018, and at the intermittent stream east of the gen-tie area.

3. RESULTS

Gen-tie Crossing

Desktop Analysis

The gen-tie crossing area is located downstream from the Calhan Reservoir. The NHD indicates that an agricultural ditch and an un-named intermittent stream drainage occur downstream from the Calhan Reservoir on the project site (Figure 1). The NWI defines three wetland types in this area (Figure 1); however, only one is located in the gen-tie crossing area:

- R5UBFx: Riverine Unknown Perennial Unconsolidated Bottom Semi-permanently Flooded
This code describes a wetland occurring within a channel, has less than 30% vegetation cover on the channel bottom, and has surface water throughout the growing season. This designation occurs on a ditch east of the un-named intermittent stream.

An additional area identified by the NWI is located west of the gen-tie location. It is classified as:

- PEM1Ah: Palustrine Emergent Persistent Temporary-flooded
This code describes a non-tidal wetland with herbaceous or woody vegetation that remains standing until the next growing season and has water present for brief periods during the growing season.

Examination of the aerial imagery determined that wetland characteristics are not present at this area.

The NRCS Soil Survey (NRCS 2018) indicates one area of hydric soil in the drainage downstream from the Calhan Reservoir, in the vicinity of the gen-tie crossing. The NRCS defines hydric soils as those that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

A phone conversation with the USACE Pueblo regulatory office (Pers. Comm., Joshua Carpenter, April 24, 2018) verified that it is highly likely that the USACE would determine the intermittent stream and the ditch in the vicinity of the gen-tie crossing to be jurisdictional Waters of the U.S.

Field Survey

In accordance with the methods described in the USACE Great Plains Regional Supplement (USACE 2010), wetlands were identified based on a three-factor approach involving indicators of hydrophytic vegetation, hydric soil, and wetland hydrology. Under normal circumstances, all three of these parameters must be present for an area to be considered a jurisdictional wetland under Section 404 of the Clean Water Act.

During fieldwork, the E & E ecologist carried a hand-held GPS unit containing maps showing NWI data, NHD data, the pole location polygons provided by JSI, and the wetland boundary that had been identified on March 30, 2018. During the investigation, the survey was focused on the two pole location polygons.

Plant species were identified according to U.S. Department of Agricultural nomenclature (USDA 2018) and the National Wetland Plant List (Lichvar 2016).

Eastern Pole Location and Sampling Point 1

The E & E ecologist walked the entire eastern pole location provided by JSI and did not observe any indications of wetlands. Dominant vegetation includes three upland species common to the area: blue grama (*Bouteloua gracilis*), plains prickly pear (*Opuntia polyacantha*), and Cholla cactus (*Opuntia imbricata*) (Attachment A, Photos 1 and 2).

Because it is adjacent to the eastern pole location and identified by the NWI, the ditch that is east of the intermittent stream was examined for wetland characteristics (Attachment A, Photo 3). At Sampling Point 1, which is in the ditch bottom, vegetation was inventoried, a soil sample pit was dug, and signs of hydrology were observed. All wetland indicators were negative, with the exception of 20% cover of one vegetation species that occurs in wetlands (Table 1, Figure 1). However, the presence of a relatively small percentage of cover of wetland vegetation was not sufficient to define the ditch as a wetland. The data sheet from this sampling point is provided in Attachment B.

Western Pole Location and Sampling Point 2

The western pole location also occurs within an upland. The area is higher in elevation than a nearby wetland, and the soils are dry (Attachment A, Photo 3). The wetland indicator status of the dominant vegetation species, alkali sacaton (*Sporobolus airoides*), is that it could occur either in a wetland or an upland (Table 1, Figure 1). The lack of hydrology and surface water indicate that the vegetation may be responding to fluctuating water table elevations. However, the three wetland indicators are not all present.

The area in between the two possible pole locations was identified as a potential wetland during the March 30, 2018, site visit. A wetland delineation was performed in this area on June 8, 2018, to provide JSI with more definitive information about the location of the wetland boundaries. The E & E ecologist began digging soil sampling holes, starting at the wetland line that was identified in March, closest to the western pole location (Figure 1). There were no indicators of hydric soil or hydrology. Four additional holes were dug to examine soil for hydric characteristics, each moving successively eastward (i.e., away from the pole location and toward the wetland) and lower in elevation from the pole location, until hydric soil indicators were found. Data Sampling Point 2 was established here (Figure 1).

Dominant vegetation at Sampling Point 2 consists of two species: broadleaf cattail (*Typha latifolia*) and common threesquare (*Schoenoplectus pungens*; Attachment A, Photo 4). Both species are hydric (Table 1). Soils showed three different hydric indicators: a dark brown/black matrix; rust-colored patches (when soil is saturated for long periods, iron present in the soil oxidizes and becomes concentrated in patches and along root channels and other parts); and gleying (grayish-colored patches that result from water saturation) (Attachment A, Photo 5). Indicators of the presence of wetland hydrology are a trickle of water near the center of the wetland area and soil saturation within the top 3 inches.

Table 1: Summary of Vegetation Observed at Pole Locations and Sampling Points

Common Name	Scientific Name	Approximate Cover ¹	Wetland Indicator Status ²	Colorado Noxious Weed Status ³
Eastern Pole Location				
Blue grama	<i>Bouteloua gracilis</i>	65%	UPL	N/A
Prickly pear	<i>Opuntia polyacantha</i>	20%	UPL	N/A
Cholla cactus	<i>Opuntia imbricata</i>	3%	UPL	N/A
Sampling Point 1				
Common threesquare	<i>Schoenoplectus pungens</i>	20%	OBL	N/A
Common teasel	<i>Dipsacus fullonum</i>	3%	FACU	B List
Common sunflower	<i>Helianthus annuus</i>	2%	FACU	N/A
Canada thistle	<i>Cirsium arvense</i>	1%	FACU	B List
Western Pole Location				
Alkali sacaton	<i>Sporobolus airoides</i>	85%	FAC	N/A
Greasewood	<i>Sarcobatus vermiculatus</i>	5%	FAC	N/A
Sampling Point 2				
Broadleaf cattail	<i>Typha latifolia</i>	75%	OBL	N/A
Common threesquare	<i>Schoenoplectus pungens</i>	25%	OBL	N/A

Notes:

¹By ocular estimation.²USACE 2016Key:

OBL: >99% probability of occurring in a wetland

FAC: 34%-75% probability of occurring in either a wetland or non-wetland

FACU: 67%-99% probability of occurring in a non-wetland

³CDOA 2018. B-List species must be managed in accordance with state and local provisions.

4. INTERMITTENT STREAM EAST OF THE GEN-TIE CROSSING

The NHD identifies two areas within this intermittent stream. Both are classified as:

- PEM1Ah: Palustrine Emergent Persistent Temporary-flooded
This code describes a non-tidal wetland with herbaceous or woody vegetation that remains standing until the next growing season and has water present for brief periods during the growing season.

The NRCS Soil Survey does not include hydric soils in either of these areas.

Former Stock Pond 1

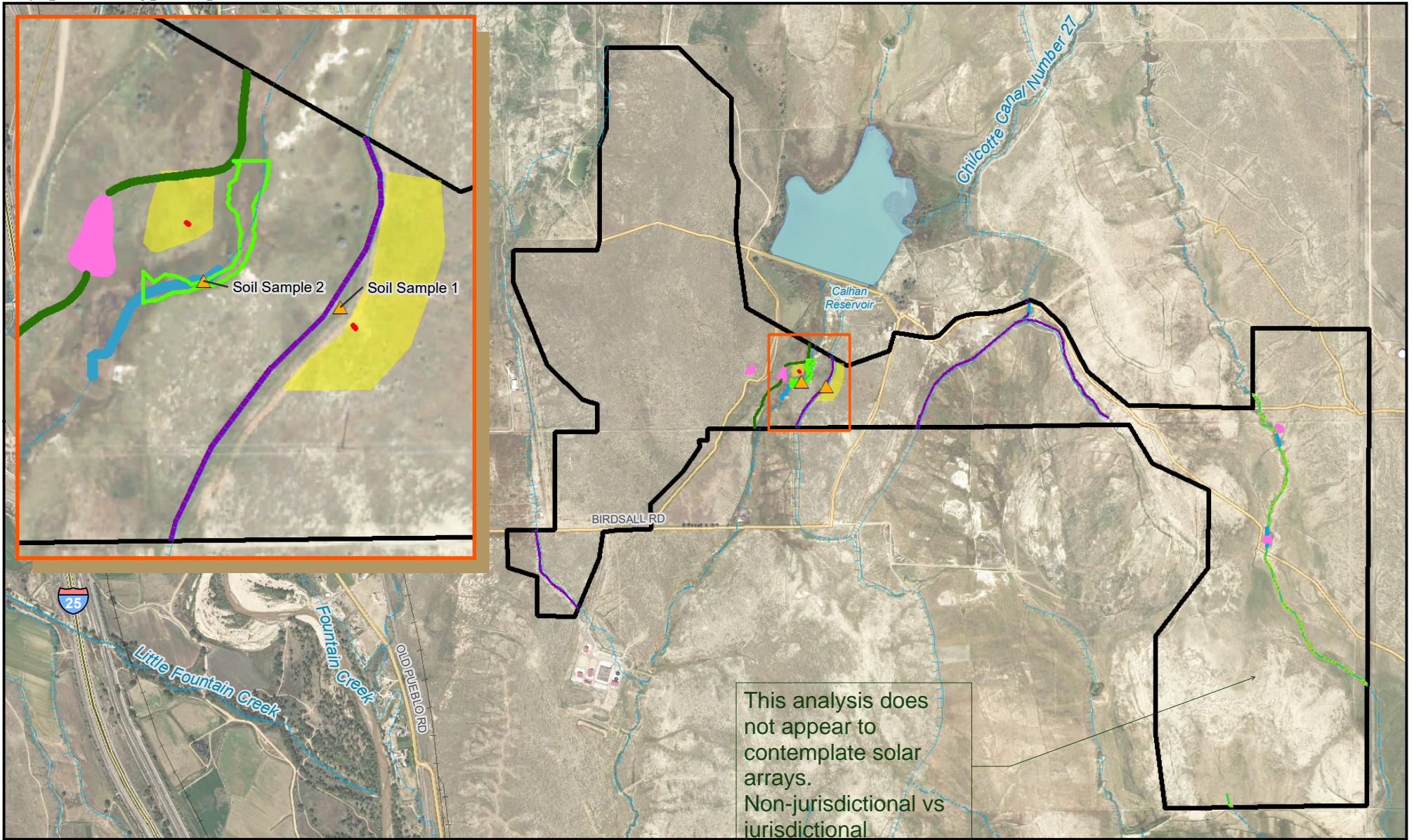
The NWI area at the downstream/west end of the intermittent drainage appears to have not held water in the recent past. No water is present, and soils are dry (Attachment A, Photos 6 and 7). Hydric vegetation is present: broadleaf cattail and arctic rush (*Juncus arcticus*). Yet, due to the lack of supporting hydrology, their heights are a fraction of the normal height were they to occur in wetlands, and they appear to be sprouting from remnant root stock.

Former Stock Pond 2

The NWI area at the upstream end of the intermittent drainage also shows no indication of having held water recently (Attachment A, Photo 8). Hydric soils, hydric vegetation, and a source of hydrology were not observed. The drainage leading into the former stock pond also exhibits no indicators of recent water flow (Attachment A, Photo 9).

5. REFERENCES

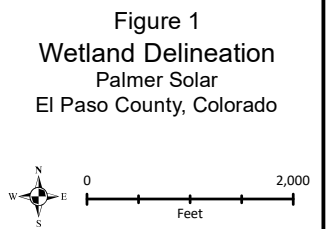
- Colorado Department of Agriculture (CDOA). 2018. Colorado Noxious Weed Lists. Available: <https://www.colorado.gov/pacific/agconservation/noxious-weed-species>. Accessed April, 2018. Accessed March 26, 2018.
- Lichvar et. al. 2016. The National Wetland Plant List: 2016 wetland ratings.
- Natural Resources Conservation Service (NRCS). 2018. Custom Soil Report for El Paso County Area, Colorado. US Department of Agriculture.
- U.S. Army Corps of Engineers (USACE). 2010. 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-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Department of Agriculture (USDA). 2009. National Agriculture Imagery Program (NAIP). Accessed: March 2018. Available: <https://www.fsa.usda.gov/programs-and-services/aerial-photography/imageryprograms/naip-imagery/>. Accessed March 26, 2018.
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- U.S. Fish and Wildlife Service (USFWS). 2017. National Wetlands Inventory - Version 2 - Surface Waters and Wetlands Inventory. Available: <http://www.fws.gov/wetlands/data/Data-Download.html>. Accessed March 26, 2018.
- U.S. Geological Survey (USGS). 2017. USGS National Hydrography Dataset (NHD) for HU-4 Subregions 1408 FileGDB 10.1 Model Version 2.2.1. Available: ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/Hydrography/NHD/HU4/HighResolution/GDB/NHD_H_1408_HU4_GDB.zip. Accessed March 26, 2018.



- Soil Sample Point
- Wetland Boundary (Field Surveyed June 8, 2018)
- Planned Pole Location
- Possible Pole Location Area
- Palmer Solar Boundary
- PEM1Ah; Palustrine Emergent Persistent, Temporarily Flooded

- Legend**
- PEM1C; Palustrine Emergent Persistent, Seasonally Flooded
 - R4SBC; Riverine Intermittent Streambed, Seasonally Flooded
 - R5UBFx; Riverine Unknown Perennial Unconsolidated Bottom, Semipermanently Flooded (excavated)
 - R5UBH; Riverine Unknown Perennial Unconsolidated Bottom, Permanently Flooded

- Perennial Stream
- Intermittent Stream
- Canal Ditch
- Lake/Pond
- Interstate
- County Roads



ATTACHMENT A

Photos



Photo 1: From eastern pole location, looking north/northeast. 6-8-18



Photo 2: Close-up photo of ground and vegetation, from eastern pole location. 6-8-18



Photo 3: From western pole location, looking east. For visual comparison, wetland is in upper center of photo. 6-8-18



Photo 4: Sampling Point 2, view upstream. 6-8-18



Photo 5: Hydric soils at Sampling Point 2. 6-8-18



Photo 6: Stock Pond 1 soil surface and vegetation. 6-8-18



Photo 7: Stock Pond 1 outlet. 6-8-18



Photo 8: Stock Pond 2. 6-8-18



Photo 9: Intermittent drainage (in center of photo) approximately 100' upstream of Former Stock Pond 2. 6-8-18

ATTACHMENT B

Wetland Data Sheets

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Palmer Solar City/County: El Paso Sampling Date: 6-8-18
 Applicant/Owner: Juwi-JSI Construction State: CO Sampling Point: 2
 Investigator(s): J. Noldstrom Section, Township, Range: S27, T16S, R65W
 Landform (hillslope, terrace, etc.): small drainage Local relief (concave, convex, none): _____ Slope (%): 5%
 Subregion (LRR): G Lat: 38.63023 Long: -104.654066 Datum: NAD83
 Soil Map Unit Name: Z9 Fluvaquentic Haplaquolls, nearly level NWI classification: R5UBH

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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>N/A</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	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 = _____	
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 = _____																				
Sapling/Shrub Stratum (Plot size: <u>N/A</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover																				
Herb Stratum (Plot size: <u>5' Radius</u>) 1. <u>Broadleaf cattail - Typha latifolia</u> <u>75%</u> <u>Y</u> <u>OBL</u> 2. <u>Common threeleaflet, Schoenoplectus purpureus</u> <u>25%</u> <u>Y</u> <u>OBL</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ _____ = Total Cover																				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover																				
% Bare Ground in Herb Stratum <u>0</u> <u>100%</u> = Total Cover																				

Remarks:

SOIL

Sampling Point: 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 2/1	100%					sandy clay; moist	
6-12"	10YR 2/1	45%	7.5YR 4/6	3%	S5			
at 10"	10YR 6/1	95%	7.5YR 4/6	5%	S4		a 3" layer of gley	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> ³ Indicators of hydrophytic vegetation and welland hydrology must be present, unless disturbed or problematic.
<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input checked="" type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:
<u>Primary Indicators (minimum of one required; check all that apply)</u>
<input checked="" type="checkbox"/> Surface Water (A1) approx 10' away
<input type="checkbox"/> High Water Table (A2)
<input type="checkbox"/> Saturation (A3)
<input type="checkbox"/> Water Marks (B1)
<input type="checkbox"/> Sediment Deposits (B2)
<input type="checkbox"/> Drift Deposits (B3)
<input type="checkbox"/> Algal Mat or Crust (B4)
<input type="checkbox"/> Iron Deposits (B5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)
<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled)
<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Other (Explain in Remarks)
<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> 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: Palmer Solar City/County: El Paso Sampling Date: 6.8.18
 Applicant/Owner: Juni - JSI Construction State: CO Sampling Point: 1
 Investigator(s): S. Nowakson Section, Township, Range: S 27, T16S, R65W
 Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): G Lat: 38.63023 Long: -104.654066 Datum: NAD 83
 Soil Map Unit Name: 29 Fluvaquentic Haplaquolls, nearly level NWI classification: N/A in this area

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <u>→ Past agricultural use has changed; ditches have been filled or ditched up.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____) <u>N/A</u>	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:																								
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>N/A</u> (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																								
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
_____ = Total Cover																												
Sapling/Shrub Stratum (Plot size: <u>N/A</u>)				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"></td> <td style="width:25%; text-align: center;">Total % Cover of:</td> <td style="width:25%; text-align: center;">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;"><u>1</u></td> <td style="text-align: center;">x 1 = <u>1</u></td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;"><u>0</u></td> <td style="text-align: center;">x 2 = <u>0</u></td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;"><u>0</u></td> <td style="text-align: center;">x 3 = <u>0</u></td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;"><u>4</u></td> <td style="text-align: center;">x 4 = <u>16</u></td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">_____</td> <td style="text-align: center;">x 5 = _____</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;"><u>5</u> (A)</td> <td style="text-align: center;"><u>17</u> (B)</td> </tr> <tr> <td colspan="3" style="text-align: center;">Prevalence Index = B/A = <u>3.4</u></td> </tr> </table>		Total % Cover of:	Multiply by:	OBL species	<u>1</u>	x 1 = <u>1</u>	FACW species	<u>0</u>	x 2 = <u>0</u>	FAC species	<u>0</u>	x 3 = <u>0</u>	FACU species	<u>4</u>	x 4 = <u>16</u>	UPL species	_____	x 5 = _____	Column Totals:	<u>5</u> (A)	<u>17</u> (B)	Prevalence Index = B/A = <u>3.4</u>		
	Total % Cover of:	Multiply by:																										
OBL species	<u>1</u>	x 1 = <u>1</u>																										
FACW species	<u>0</u>	x 2 = <u>0</u>																										
FAC species	<u>0</u>	x 3 = <u>0</u>																										
FACU species	<u>4</u>	x 4 = <u>16</u>																										
UPL species	_____	x 5 = _____																										
Column Totals:	<u>5</u> (A)	<u>17</u> (B)																										
Prevalence Index = B/A = <u>3.4</u>																												
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
3. _____	_____	_____	_____																									
4. _____	_____	_____	_____																									
_____ = Total Cover																												
Herb Stratum (Plot size: <u>5' Radius</u>)																												
1. <u>Common three square Schizanthus purshii</u>	<u>20%</u>	<u>N</u>	<u>OBL</u>																									
2. <u>polygobum/petiscana ssp. serotinum</u>	<u>20%</u>	<u>N</u>	<u>?</u>																									
3. <u>common vesel. Dipsacus fullonum</u>	<u>3%</u>	<u>N</u>	<u>FACU</u>																									
4. <u>Chenopodium album</u>	<u>3%</u>	<u>N</u>	<u>FACU</u>																									
5. <u>Canada thistle - Cirsium arvense</u>	<u>2%</u>	<u>N</u>	<u>FACU</u>																									
6. <u>helianthus annuus common sunflower</u>	<u>2%</u>	<u>N</u>	<u>FACU</u>																									
7. _____	_____	_____	_____																									
8. _____	_____	_____	_____																									
9. _____	_____	_____	_____																									
10. _____	_____	_____	_____																									
_____ = Total Cover																												
Woody Vine Stratum (Plot size: <u>N/A</u>)																												
1. _____	_____	_____	_____																									
2. _____	_____	_____	_____																									
_____ = Total Cover																												
% Bare Ground in Herb Stratum <u>50%</u> <u>100%</u> = Total Cover																												

Remarks: Photos # 47-51

SOIL

Sampling Point: 1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR ³ 1 ₁	90	7.5YR ⁴ 1/6	10			clay dry	-
6-12"	10YR ³ 1 ₂	70	7.5YR ⁴ 1/6	30			clay fossil barely moist	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> (MLRA 72 & 73 of LRR H)	

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)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> (where tilled)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> (where not tilled)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No

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

Remarks:
 No indications of water presence this year and probably last year. Herbaceous vegetation is present in ditch bottom - probably would not be if water ran in it.